

About the Author



Kajal Sihag

Kajal Sihag is a well-known educator and subject expert in General Science and General Awareness, with 10+ years of teaching experience in the field of competitive education. She holds a B.Sc. in Biotechnology, M.Sc., and is pursuing a Ph.D., which provides her with a strong academic foundation and deep conceptual clarity. She has guided thousands of students through her structured, student-centric teaching approach that emphasizes conceptual understanding, topic-wise clarity and analysis of important previous-year questions. Her methodology helps learners focus not only on what to study but also on how to study smartly for better outcomes. Through her books and the Futurekul Coaching YouTube platform, Kajal Sihag strives to simplify complex concepts and eliminate common learning gaps faced by aspirants. She strongly believes that the right strategy, consistent practice and concept-based preparation are the real keys to success in today's highly competitive environment. This book reflects her vast teaching experience, academic research, and continuous interaction with students, making it a reliable, practical and confidence-boosting learning resource for aspirants.

About the Book

This book is specially designed for aspirants preparing for all major Railway examinations. It is a chapter-wise, type-wise and exam-wise General Awareness & General Science Question Bank, prepared according to the latest exam pattern of RRB NTPC (CBT - 1 & 2), RRB Group D (CBT-1), RRB JE (CBT-1), RRB ALP & Technician (CBT-1 & 2), RPF Constable and SI (CBT-1). The book provides focused practice to help candidates build strong factual knowledge, better concept understanding and high scores in the exam.

Key Features of the Book:

- Covers all major Railway exams, including RRB NTPC, RRB Group D, RRB JE, RRB ALP & Technician, RPF Constable and SI.
- Questions are arranged chapter-wise, type-wise and exam-wise, making practice systematic, structured and exam-oriented.
- Includes 15 important chapters of General Awareness and General Science with complete coverage.
- Contains 7100+ TCS-based Previous Years' Questions (PYQs) asked in Railway examinations.
- Questions are selected based on the most frequently asked and high-weightage topics in past Railway exams.
- All questions strictly follow the actual exam level and latest Railway exam pattern.
- Helps candidates understand exam trends and repeatedly asked topics through extensive practice.
- Strengthens static GK, current-based awareness and core science concepts required for Railway exams.
- A reliable, result-oriented and highly useful Question Bank for Railway exam aspirants.

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			➤ RRB JE	2		
		30. Elections in India and Election Commission	➤ RPF SI	6		
			➤ RPF Constable	5		
			➤ RRB NTPC	4		
			➤ RRB JE	1		
		31. Basic Structure of Constitution	➤ RPF NTPC	4		
			➤ RPF JE	1		
		32. Political Parties and Anti Defection Law	➤ RPF SI	2		
			➤ RPF Constable	3		
			➤ RRB NTPC	1		
		33. Miscellaneous	➤ RPF SI	1		
			➤ RPF Constable	10		
			➤ RRB GROUP D	3		
			➤ RRB NTPC	54		

Chapter No.	Chapter Name	Name of Topic	Exam Name (Best Questions Covered till October, 2025)	No. of Ques.	Total Questions	Page No.
9.	Indian Economy	1. Introduction to Economics	> RPF SI	3	673 Questions With Solutions	183-220
			> RPF Constable	11		
			> RRB NTPC	23		
		2. National Income	> RRB Technician	1		
			> RPF SI	4		
			> RPF Constable	2		
			> RRB GROUP D	2		
			> RRB NTPC	8		
		3. Inflation and Trade	> RRB NTPC	3		
			> RPF SI	1		
			> RPF Constable	3		
			> RRB GROUP D	1		
			> RRB JE	1		
		4. Growth, Development and Happiness	> RRB NTPC	29		
			> RPF SI	6		
			> RPF Constable	19		
			> RRB JE	1		
		5. Economic Planning and Reforms	> RPF SI	2		
			> RPF Constable	26		
			> RRB GROUP D	1		
			> RRB NTPC	33		
			> RRB JE	1		
		6. Agriculture and Food Management	> RRB Technician	1		
			> RPF SI	12		
			> RPF Constable	12		
			> RRB NTPC	25		
		7. Industries and Manufacturing	> RPF Constable	12		
			> RRB GROUP D	3		
			> RRB NTPC	32		
			> RRB JE	2		
		8. Service Sector	> RRB NTPC	6		
			> RPF Constable	5		
		9. Poverty and Unemployment	> RRB NTPC	23		
> RRB Technician	1					
> RPF SI	13					
> RPF Constable	20					
> RRB GROUP D	1					

Chapter No.	Chapter Name	Name of Topic	Exam Name (Best Questions Covered till October, 2025)	No. of Ques.	Total Questions	Page No.
		10. Indian Financial Market	➤ RPF SI	4		
			➤ RPF Constable	1		
			➤ RRB GROUP D	3		
			➤ RRB NTPC	5		
		11. Banking and Insurance System in India	➤ RPF SI	14		
			➤ RPF Constable	7		
			➤ RRB GROUP D	2		
			➤ RRB NTPC	19		
			➤ RRB ALP	1		
			➤ RRB JE	3		
		12. Security Market in India	➤ RRB NTPC	2		
			➤ RPF SI	1		
			➤ RPF Constable	2		
		13. Public Finance in India	➤ RPF SI	3		
			➤ RPF Constable	3		
			➤ RRB GROUP D	2		
			➤ RRB NTPC	6		
		14. Tax Structure in India	➤ RPF SI	1		
			➤ RRB NTPC	10		
		15. Foreign Region in India	➤ RRB Technician	2		
			➤ RPF SI	1		
			➤ RPF Constable	9		
			➤ RRB GROUP D	1		
			➤ RRB NTPC	28		
			➤ RRB JE	2		
		16. Human Development in India	➤ RPF SI	4		
			➤ RPF Constable	13		
			➤ RRB NTPC	32		
		17. Indian and Foreign Economic Organisations	➤ RPF SI	5		
			➤ RPF Constable	9		
			➤ RRB GROUP D	1		
			➤ RRB NTPC	11		
		18. Miscellaneous	➤ RRB Technician	2		
			➤ RPF SI	23		
			➤ RPF Constable	20		
			➤ RRB GROUP D	9		
			➤ RRB NTPC	59		
			➤ RRB JE	4		

Chapter No.	Chapter Name	Name of Topic	Exam Name (Best Questions Covered till October, 2025)	No. of Ques.	Total Questions	Page No.
10.	Physics	1. Measurement and Dimensions	> RRB Technician	14	947 Questions With Solutions	221-269
			> RPF SI	3		
			> RRB GROUP D	4		
			> RRB NTPC	21		
			> RRB ALP	33		
			> RRB JE	2		
		2. Physical Properties of Substances	> RRB GROUP D	1		
			> RRB ALP	9		
		3. Force and Motion	> RRB Technician	31		
			> RRB GROUP D	3		
			> RRB NTPC	7		
			> RRB ALP	35		
			> RRB JE	10		
		4. Work, Power and Energy	> RRB Technician	56		
			> RRB GROUP D	3		
			> RRB NTPC	4		
			> RRB ALP	43		
			> RRB JE	2		
		5. Gravitational Force and Acceleration	> RRB Technician	27		
			> RRB GROUP D	1		
			> RRB NTPC	4		
			> RRB ALP	12		
			> RRB JE	4		
		6. Pressure and Buoyancy	> RRB Technician	6		
			> RRB GROUP D	1		
			> RRB NTPC	1		
			> RRB ALP	1		
			> RRB JE	3		
		7. Heat and Thermodynamics	> RRB Technician	4		
			> RPF SI	1		
> RRB NTPC	8					
> RRB ALP	41					

Chapter No.	Chapter Name	Name of Topic	Exam Name (Best Questions Covered till October, 2025)	No. of Ques.	Total Questions	Page No.
		8. Electric Current	➤ RRB Technician	97		
			➤ RRB GROUP D	15		
			➤ RRB NTPC	9		
			➤ RRB ALP	78		
			➤ RRB JE	16		
		9. Magnetism	➤ RRB Technician	48		
			➤ RPF SI	1		
			➤ RRB GROUP D	19		
			➤ RRB NTPC	11		
			➤ RRB ALP	3		
		10. Wave Motion	➤ RRB GROUP D	2		
			➤ RRB NTPC	7		
			➤ RRB ALP	1		
			➤ RRB JE	1		
		11. Sound	➤ RRB GROUP D	1		
			➤ RRB NTPC	13		
			➤ RRB ALP	10		
			➤ RRB JE	15		
		12. Light	➤ RRB Technician	85		
			➤ RPF SI	1		
			➤ RRB GROUP D	26		
			➤ RRB NTPC	9		
			➤ RRB ALP	21		
			➤ RRB JE	15		
		13. Optical Instruments	➤ RRB Technician	1		
		14. Modern Physics	➤ RRB Technician	17		
			➤ RRB NTPC	1		
		15. Major Inventions and their Inventors	➤ RRB NTPC	4		
		16. Miscellaneous	➤ RRB Technician	1		
			➤ RRB GROUP D	4		
			➤ RRB NTPC	4		
			➤ RRB ALP	16		

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11.	Chemistry	1. Matter and its States	> RRB Technician	55	661 Questions With Solutions	270-302
			> RRB NTPC	9		
			> RRB ALP	2		
			> RRB JE	2		
		2. Atomic Structure	> RRB Technician	19		
			> RRB GROUP D	2		
			> RRB NTPC	6		
			> RRB ALP	4		
			> RRB JE	6		
		3. Physical and Chemical Changes	> RRB Technician	81		
			> RPF SI	2		
			> RRB GROUP D	15		
			> RRB NTPC	15		
			> RRB ALP	7		
			> RRB JE	14		
		4. Classification of Elements	> RRB Technician	20		
			> RRB GROUP D	7		
			> RRB NTPC	23		
			> RRB ALP	21		
			> RRB JE	8		
		5. Acid, Base and Salts	> RRB Technician	63		
			> RPF SI	2		
			> RRB GROUP D	11		
			> RRB NTPC	21		
			> RRB ALP	8		
			> RRB JE	7		
		6. Electrochemistry	> RRB Technician	9		
			> RRB GROUP D	3		
			> RRB NTPC	3		
			> RRB ALP	2		
		7. Metals, Non-Metals and Metalloids	> RRB Technician	36		
			> RRB NTPC	3		
			> RRB ALP	9		
		8. Minerals, Ores and Alloys	> RRB Technician	2		
			> RRB GROUP D	1		
			> RRB NTPC	7		
			> RRB JE	2		
		9. Some Important Elements and Compounds	> RRB GROUP D	4		
			> RRB NTPC	8		
			> RRB ALP	9		
			> RRB JE	7		

Chapter No.	Chapter Name	Name of Topic	Exam Name (Best Questions Covered till October, 2025)	No. of Ques.	Total Questions	Page No.
		10. Organic Compounds	> RRB Technician	45		
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			> RRB ALP	1		
			> RRB JE	18		
		11. Chemical Bonding and Molecular Structure	> RRB Technician	1		
			> RRB NTPC	3		
		12. Fuel and Combustion	> RRB Technician	1		
			> RRB NTPC	4		
			> RRB ALP	2		
			> RRB JE	5		
		13. Man Made Substances	> RRB GROUP D	3		
			> RRB NTPC	4		
			> RRB ALP	1		
		14. Prominent Inventions and their Inventors	> RRB NTPC	6		
		15. Miscellaneous	> RRB GROUP D	4		
			> RRB NTPC	6		
			> RRB ALP	6		
			> RRB JE	1		
		12.	Biology	1. Classification of Organisms		
> RPF SI	1					
> RRB GROUP D	3					
> RRB NTPC	8					
> RRB ALP	9					
> RRB JE	2					
2. Cell and Tissue	> RRB Technician			77		
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	> RRB NTPC			14		
	> RRB ALP			8		
	> RRB JE			1		
3. Plant Physiology	> RRB Technician			42		
	> RRB Group D			15		
	> RRB NTPC			13		
	> RRB ALP			14		
	> RRB JE			4		

Chapter No.	Chapter Name	Name of Topic	Exam Name (Best Questions Covered till October, 2025)	No. of Ques.	Total Questions	Page No.
		4. Human Body Systems	> RRB Technician	60		
			> RRB GROUP D	12		
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			> RRB ALP	18		
		5. Hormones and Enzymes	> RRB Technician	32		
			> RRB GROUP D	4		
			> RRB NTPC	8		
			> RRB ALP	7		
		6. Nutrition and their Efficiency Diseases	> RRB Technician	1		
			> RRB GROUP D	5		
			> RRB NTPC	19		
			> RRB ALP	1		
			> RRB JE	9		
		7. Microbes and Their Diseases	> RRB Technician	5		
			> RPF SI	1		
			> RRB NTPC	11		
			> RRB JE	6		
		8. Other Diseases Related to Human Body	> RRB Technician	5		
			> RPF SI	1		
			> RRB GROUP D	3		
			> RRB NTPC	10		
			> RRB ALP	2		
			> RRB JE	16		
		9. Genetics and Biological Evolution	> RRB Technician	22		
			> RPF SI	2		
			> RRB GROUP D	2		
			> RRB NTPC	16		
			> RRB ALP	13		
> RRB JE	2					
10. Prominent Inventions and their Inventors	> RRB NTPC	5				
	> RRB JE	1				
11. Miscellaneous	> RRB Technician	36				
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	> RRB ALP	11				

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13.	Science and Technology	1. Space Technology	> RPF Constable	3	76 Questions With Solutions	333-337
			> RPF SI	5		
			> RRB GROUP D	2		
			> RRB NTPC	7		
			> RRB JE	5		
		2. Defence Technology	> RPF SI	4		
			> RRB GROUP D	1		
			> RRB NTPC	13		
			> RRB JE	4		
		3. Bio Technology	> RPF SI	2		
			> RRB NTPC	2		
			> RRB JE	1		
		4. Robotics and Automation	> RRB NTPC	1		
			> RPF SI	1		
		5. Nanotechnology	> RRB ALP	1		
		6. Information and Communication Technology	> RPF Constable	2		
			> RRB GROUP D	1		
			> RRB NTPC	5		
		7. Other Emerging Technologies (AI, Laser etc.)	> RPF Constable	3		
			> RPF SI	1		
			> RRB NTPC	3		
		8. Miscellaneous	> RPF Constable	2		
			> RPF SI	2		
			> RRB NTPC	5		
14.	Computer	1. Function and Structure of Computer	> RRB NTPC	10	415 Questions With Solutions	338-363
			> RRB ALP	5		
		2. Softwares and Hardwares	> RRB Technician	4		
			> RRB NTPC	17		
		3. Input and Output Devices	> RRB Technician	5		
			> RRB NTPC	18		
		4. Memory	> RRB Technician	1		
			> RRB NTPC	28		
			> RRB ALP	1		
		5. Operating Systems	> RRB Technician	8		
			> RRB NTPC	131		
			> RRB ALP	2		
		6. MS Office	> RRB Technician	13		
			> RRB NTPC	120		
			> RRB ALP	3		
		7. Internet and Email	> RRB Technician	3		
			> RRB NTPC	1		
			> RRB ALP	10		
		8. Computer Network	> RRB Technician	3		
			> RRB NTPC	6		
		9. Network and Data Security	> RRB Technician	1		
			> RRB NTPC	5		
			> RRB ALP	3		

Chapter No.	Chapter Name	Name of Topic	Exam Name (Best Questions Covered till October, 2025)	No. of Ques.	Total Questions	Page No.
		10. Multimedia	> RRB Technician	1		
			> RRB ALP	2		
		11. Virus and Anti-Virus	> RRB Technician	3		
		12. Miscellaneous	> RPF NTPC	8		
			> RRB ALP	2		
			> RPF Constable	1		
15.	Static G.K.	1. First Person in India and the World	> RRB JE	2	183 Questions With Solutions	364-373
			> RPF Constable	1		
			> RPF SI	2		
			> RRB NTPC	1		
		2. First Woman in India and the World	> RPF Constable	2		
			> RPF SI	1		
			> RRB NTPC	1		
			> RRB JE	1		
		3. First Man in India and the World	> RRB NTPC	1		
		4. Major Personalities in India and the World	> RPF Constable	1		
			> RRB SI	4		
			> RRB NTPC	2		
			> RRB ALP	3		
		5. Nicknames of Prominent Persons	> RPF Constable	1		
			> RRB NTPC	5		
		6. Major Works Associated with Personalities	> RRB GROUP D	1		
		7. Largest, Longest, Highest in India and the world	> RPF SI	1		
		8. National Symbols of India and the World	> RPF SI	1		
		9. International Boundaries	> RRB NTPC	6		
			> RRB JE	1		
		10. Parliaments of Different Countries	> RPF SI	1		
			> RRB ALP	2		
		11. United Nations and Other Important Organisations	> RPF Constable	2		
			> RRB NTPC	5		
			> RRB JE	1		
		12. Important Tourist Places of India and the World	> RRB NTPC	3		
			> RRB ALP	1		
			> RRB JE	2		
		13. Important Institutes in India	> RRB Technician	1		
			> RRB GROUP D	1		
			> RRB NTPC	3		
		14. Awards and Honours in India and the World	> RPF Constable	4		
			> RRB SI	1		
			> RRB NTPC	7		
			> RRB ALP	1		
		15. National and International Years, Weeks and Days	> RPF Constable	1		
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			> RRB JE	1		
		16. Important Authors and their Books	> RPF Constable	9		
			> RRB SI	16		
			> RRB JE	8		
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			> RRB NTPC	22		
			> RRB ALP	8		
			> RRB JE	2		
		17. Sports and Associated Awards	> RRB Technician	1		
			> RPF Constable	3		
			> RRB GROUP D	3		
			> RRB NTPC	15		
			> RRB ALP	2		
			> RRB JE	4		
		18. Important Index	> RRB Technician	1		
			> RPF Constable	5		
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Total Questions					7101	

Solutions

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1.	Ancient Indian History	1-5
2.	Medieval Indian History	6-7
3.	Modern Indian History	8-14
4.	Art and Culture	15-21
5.	Indian Geography	22-30
6.	World Geography	31-37
7.	Environment and Ecology	38-41
8.	Indian Polity and Constitution	42-49
9.	Indian Economy	50-56
10.	Physics	57-87
11.	Chemistry	88-101
12.	Biology	102-117
13.	Science and Technology	118-119
14.	Computer	120-122
15.	Static G.K.	123-125



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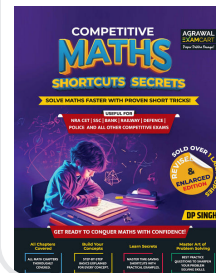
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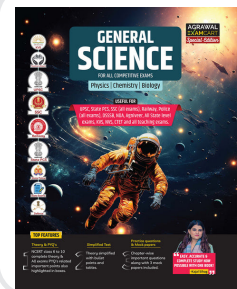
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STATIC
GK
(Text Book)



Chapter 12

Biology

Classification of Organisms

RRB Technician

1. In which simple multi-cellular organism does sporangia develop on hyphae and spore formation occurs in sporangia?
(A) Leishmania (B) Yeast
(C) Amoeba (D) Rhizopus
[RRB Technician Grade-III 23/12/2024 Shift -1]
2. Which of the following organisms is commonly referred to as bread mould?
(A) Spirogyra (B) Rhizopus
(C) Planaria (D) Yeast
[RRB Technician Grade-III 23/12/2024 Shift -1]
3. Modes of reproduction in various organisms depend on the _____.
(A) Respiratory pigments of the organisms
(B) Nutritive strategy of the organisms
(C) Body design of the organisms
(D) Nervous system of the organisms
[RRB Technician Grade-III 23/12/2024 Shift -2]
4. If future shoot hidden in a germinating seed is called plumule, then future root of the germinating seed would be _____.
(A) Cotyledon (B) Petal
(C) Sepal (D) Radicle
[RRB Technician Grade-III 23/12/2024 Shift -3]
5. In which of the following organisms can individuals change sex, indicating that sex is NOT genetically determined?
(A) Frogs (B) Ostriches
(C) Snails (D) Lizards
[RRB Technician Grade-III 24/12/2024 Shift -1]
6. Which of the following is an example of a unicellular organism?
(A) House fly (B) Hydra
(C) Amoeba (D) Lizard
[RRB Technician Grade-III 26/12/2024 Shift -3]
7. Which of the following is a unicellular ciliary organism?

- (A) Ticks (B) Paramecium
(C) Amoeba (D) Leeches

[RRB Technician Grade-III 27/12/2024 Shift -2]

8. Biodegradable material are broken down into simpler material by the action of which of the following?
(A) Wind (B) Bacteria
(C) Sunlight (D) Virus
[RRB Technician Grade-III 27/12/2024 Shift -2]
9. Select the bisexual flower from the provided options.
(A) Papaya (B) Pumpkin
(C) Mustard (D) Watermelon
[RRB Technician Grade-III 28/12/2024 Shift -2]
10. Which of the following organisms have three-chambered hearts?
(A) Birds (B) Fishes
(C) Mammals (D) Amphibians
[RRB Technician Grade-III 28/12/2024 Shift -2]
11. Organisms whose cells lack a nuclear membrane are called _____.
(A) Chromatin (B) Cytoplasm
(C) Eukaryotes (D) Prokaryotes
[RRB Technician Grade-III 28/12/2024 Shift-3]
12. Which of the following is NOT a unicellular organism?
(A) Paramecium
(B) Bacteria
(C) Chlamydomonas
(D) Fungi
[RRB Technician Grade-III 30/12/2024 Shift -2]
13. Which of the following unicellular organism change their shape?
(A) Bacteria (B) Paramecium
(C) Amoeba (D) Yeast
[RRB Technician Grade-III 30/12/2024 Shift -3]
14. Select the correct statement related to the characteristics of prokaryotic cell.
(A) It has a single chromosome.

- (B) Membrane bound cell organelles are present.
(C) It has more than one chromosome.
(D) Nuclear region is well defined and surrounded by nuclear membrane.

[RRB Technician Grade-III 30/12/2024 Shift-3]

RPF SI

15. To which phylum do round worms belong?
(A) Annelida
(B) Ctenophora
(C) Platyhelminthes
(D) Aschelminthes

[RPF SI 03/12/2024 Shift 3]

RRB GROUP D

16. In which of the following animals does blood go through the heart twice during each cycle ?
(A) Fishes, birds and reptiles
(B) Mammals, birds and fishes
(C) Mammals, fishes and reptiles
(D) Mammals, birds and reptiles
[RRB GROUP- D 29/09/2022 Shift-III]
17. From the options given below, select the organism having a three-chambered heart.
(A) Tiger (B) Pigeon
(C) Fish (D) Salamander
[RRB GROUP-D 09-09-2022 Shift-II]
18. To which of the following organisms is the Cell Theory given by Schleiden and Schwann NOT applicable ?
(A) Fungi (B) Animals
(C) Viruses (D) Algae

[RRB GROUP-D 22-08-2022 Shift-II]

RRB NTPC

19. Animals with high energy needs, like birds and mammals, have :
(A) a single-chambered heart
(B) a four-chambered heart
(C) a two-chambered heart
(D) a three-chambered heart

[RRB NTPC Graduate Level II, 13/10/2025, Shift-II]

20. Which of the following organisms exhibits both autotrophic and heterotrophic modes of nutrition?

- (A) Plasmodium (B) Amoeba
(C) Paramecium (D) Euglena

[RRB NTPC Graduate Level,
13/06/2025, Shift-3]

21. What is the third stage (after larva) in the life cycle of a butterfly called ?

- (A) Egg (B) Caterpillar
(C) Nymph (D) Pupa

[RRB NTPC CBT-2 16-06-2022 Shift-III]

22. Magnoliophyta are the flowering plants which are also known as :

- (A) Gymnosperms (B) Pteridophytes
(C) Angiosperms (D) Bryophytes

[RRB NTPC CBT-2 13-06-2022 Shift-I]

23. Which of the following is an example of a living fossil tree ?

- (A) Silver oak (B) Funaria
(C) Ginkgo biloba (D) Dryopteris

[RRB NTPC CBT-2 12-06-2022 Shift-I]

24. Which of the following is not an invertebrate?

- (A) Molluscs
(B) Arachnids
(C) Reptiles (Snakes)
(D) Insects

[RRB NTPC 30-12-2020 (Shift-I)]

25. Choose the one in the group given below which is not alike %

lizard, snake, crocodile, reptile

- (A) Snake (B) Lizard
(C) Crocodile (D) Reptile

[RRB (NTPC) CBT-2 18.01.2017 Shift 1]

26. The earliest hominoids to be classified as Homo sapiens were.....

- (A) Ergaster line (B) Cro-Magnon
(C) Neanderthal (D) Proconsul

[RRB (NTPC) 02.04.2016 Shift 2]

RRB ALP

27. Which of the following animals do NOT belong to the class of reptiles?

- (A) Crocodile (B) Snake
(C) Toad (D) Turtle

[RRB ALP CBT1, 13/08/2018, Shift 2]

28. Which of the following is NOT a characteristic of dicotyledons plants ?

- (A) These plants have a tap root
(B) These plants have reticulate venation
(C) These plants have fibrous roots
(D) These plants have 2 cotyledons

[RRB ALP CBT1, 14/08/2018, Shift 1]

29. Which of the following animals has comparatively longer intestine?

- (A) Fox (B) Tiger
(C) Dog (D) Rabbit

[RRB ALP CBT1, 14/08/2018, Shift 2]

30. Amphibian plants are placed in which of the following groups?

- (A) Bryophyta (B) Gymnosperms
(C) Pteridophyta (D) Thallophyta

[RRB ALP CBT1, 14/08/2018, Shift 3]

31. What is the basic unit of classification in taxonomy?

- (A) Genus (B) Species
(C) Family (D) Order

[RRB ALP CBT1, 17/08/2018, Shift 2]

32. Which of the following animals can change its sex?

- (A) Planarian (B) Snail
(C) Ascaris (D) Nereis

[RRB ALP CBT1, 20/08/2018, Shift 3]

33. Which group of animals are exclusively free living marine animals?

- (A) Arthropoda (B) Echinodermata
(C) Mollusca (D) Nematoda

[RRB ALP CBT1, 20/08/2018, Shift 3]

34. Which of the following is the largest group of animals?

- (A) Nematoda (B) Porifera
(C) Arthropoda (D) Mollusca

[RRB ALP CBT1, 21/08/2018, Shift 3]

35. The first photosynthetic oxygen liberating organisms to appear on earth were:

- (A) Cyanobacteria (B) Bacteria
(C) Bryophytes (D) Green algae

[RRB ALP CBT1, 30/08/2018, Shift 2]

RRB JE

36. Cutaneous respiration occurs through

- (A) In earthworm
(B) In humans
(C) In fish
(D) In birds

[RRB JE CBT-1 Exam 26-05-2019 S-I]

37. What is a sponge in biology?

- (A) a fungus (B) a fossil
(C) a plant (D) an animal

[RRB JE CBT - 1 Exam 27/05/2019 S-I]

Cell and Tissue

RRB Technician

38. Which process ensures half the amount of DNA in reproductive cells as compared to non-reproductive cells?

- (A) Meiosis (B) Mitosis
(C) Cytokinesis (D) Amitosis

[RRB Technician Grade-III 18/12/2024
Shift -2]

39. Which functions both as a passageway for intracellular transport and as a manufacturing surface?

- (A) Ribosome
(B) Endoplasmic reticulum
(C) Mitochondria
(D) Plastids

[RRB Technician Grade-III 20/12/2024
Shift-2]

40. When plant cells lose water by osmosis, the contents shrink away from the cell wall; this process is known as _____.

- (A) Diffusion
(B) Active Transport
(C) Plasmolysis
(D) Passive Transport

[RRB Technician Grade-III 20/12/2024
Shift -2]

41. The flexibility in plants is due to which permanent tissue that allows bending of various parts of a plant like tendrils and stems of climbers without breaking?

- (A) Parenchyma (B) Collenchyma
(C) Chlorenchyma (D) Aerenchyma

[RRB Technician Grade-III 20/12/2024
Shift-2]

42. All of the following are examples of connective tissue, EXCEPT:

- (A) Tracheid (B) Bone
(C) Blood (D) Cartilage

[RRB Technician Grade-III 20/12/2024
Shift-2]

43. Which of the following in eukaryotes is separated from the cytoplasm by a double-layered membrane and it directs the life processes of the cell?

- (A) Nucleus
(B) Endoplasmic reticulum
(C) Ribosome
(D) Plastids

[RRB Technician Grade-III 20/12/2024
Shift-3]

44. Which of the following contracts and relaxes to cause movement and contains special proteins?

- (A) Blood (B) Muscles
(C) Bone (D) Cartilage

[RRB Technician Grade-III 20/12/2024
Shift -3]

45. There are dead tissues in the _____.

- (A) Orange peel
(B) Guava peel
(C) Banana peel
(D) Coconut husk

[RRB Technician Grade-III 23/12/2024
Shift -1]

46. The carbohydrates which are not used immediately are stored in the form of _____, which serves as the internal energy reserve to be used as and when required by the plant.
(A) Glycogen (B) Cellulose
(C) Glucose (D) Starch
[RRB Technician Grade-III 23/12/2024 Shift -2]
47. Which body part in the human body is composed of stratified squamous epithelium?
(A) Lining of the intestine
(B) Skin
(C) Lining of the kidney tubules
(D) Oesophagus
[RRB Technician Grade-III 23/12/2024 Shift -2]
48. Many nerve fibres are bound together by which tissue make up a nerve?
(A) Connective tissue
(B) Epithelial tissue
(C) Vascular tissue
(D) Meristematic tissue
[RRB Technician Grade-III 23/12/2024 Shift -2]
49. Which of the following are small-sized in animal cells while in plant cells these are very large in size?
(A) Golgi apparatus
(B) Lysosomes
(C) Plastids
(D) Vacuoles
[RRB Technician Grade-III 23/12/2024 Shift -2]
50. An organism simply splits into two equal halves during cell division. What is it known as?
(A) Binary fission (B) Budding
(C) Regeneration (D) Spore formation
[RRB Technician Grade-III 23/12/2024 Shift -2]
51. Which of the following tissues is present in stems, around vascular bundles, in the veins of leaves and the hard covering of seeds and Nuts?
(A) Sclerenchyma
(B) Epidermis
(C) Apical meristem
(D) Parenchyma
[RRB Technician Grade-III 23/12/2024 Shift -2]
52. Which of the following statements is correct about transport in plants?
(A) Plants have low energy needs and use relatively slow transport systems.
(B) The xylem transports products of photosynthesis from the leaves where they are synthesised to other parts of the plant.
(C) The phloem moves water and minerals obtained from the soil.
(D) In herbs and shrubs, the distances over which transport systems have to operate are very large.
[RRB Technician Grade-III 23/12/2024 Shift -3]
53. Which of the following pigments is present in the red blood corpuscles of human beings?
(A) Melanin (B) Xanthophyll
(C) Haemoglobin (D) Chlorophyll
[RRB Technician Grade-III 23/12/2024 Shift -3]
54. In a situation where we are injured and start bleeding, the bleeding could lead to a loss of pressure that could reduce the efficiency of the pumping system. To avoid this, which cells mainly help to clot blood at the injury point?
(A) White blood corpuscles
(B) Red blood corpuscles
(C) Blood platelets
(D) Lymph
[RRB Technician Grade-III 23/12/2024 Shift -3]
55. What similarities do plastids share with mitochondria?
(A) Both contain their own DNA and ribosomes.
(B) Both produce ATPs.
(C) Both are present only in plant cells.
(D) Both contain chlorophyll.
[RRB Technician Grade-III 23/12/2024 Shift -3]
56. The oesophagus and the lining of the mouth are also covered with:
(A) Ciliated columnar epithelium
(B) Squamous epithelium
(C) Cuboidal epithelium
(D) Glandular epithelium
[RRB Technician Grade-III 23/12/2024 Shift -3]
57. Which of the following is INCORRECT about parenchyma?
(A) It allows the bending of various parts of a plant like tendrils and stems of climbers without breaking.
(B) In aquatic plants, large air cavities are present in parenchyma to help them float.
(C) It consists of relatively unspecialised cells with thin cell walls.
(D) The cells of parenchyma are living cells and are usually loosely arranged.
[RRB Technician Grade-III 23/12/2024 Shift -3]
58. Which of the following is absent in cells of meristematic tissue?
(A) Cytoplasm (B) Cell walls
(C) Nuclei (D) Vacuoles
[RRB Technician Grade-III 23/12/2024 Shift -3]
59. If glucose :: six-carbon molecule, then pyruvate :: _____.
(A) Five-carbon molecule
(B) Three-carbon molecule
(C) Two-carbon molecule
(D) Four-carbon molecule
[RRB Technician Grade-III 24/12/2024 Shift -1]
60. Plant cells have cell walls because _____.
(A) They defend plant cells from a variety of external effects
(B) They do not have cytoplasm
(C) They are required for photosynthesis
(D) They do not have proper genetic material
[RRB Technician Grade-III 24/12/2024 Shift -1]
61. Which of the following plant cells have large membranous organelles that help in photosynthesis?
(A) Golgi body (B) Nucleus
(C) Lysosomes (D) Plastids
[RRB Technician Grade-III 24/12/2024 Shift -2]
62. Identify the body part that does NOT contain involuntary muscles.
(A) Heart (B) Lungs
(C) Stomach (D) Biceps
[RRB Technician Grade-III 24/12/2024 Shift -2]
63. Which tissue is a distinctive feature of complex plants, one that has made possible their survival in the terrestrial environment?
(A) Vascular tissue
(B) Epithelial tissue
(C) Connective tissue
(D) Meristematic tissue
[RRB Technician Grade-III 24/12/2024 Shift -2]
64. Which of the following is the rod-shaped structure found in the nucleus only when the cell is about to divide?
(A) Chromosomes (B) Chromatin
(C) Mitochondria (D) Lysosomes
[RRB Technician Grade-III 24/12/2024 Shift -2]

65. Identify the INCORRECT statement related to transportation in plants.
- Phloem helps in mineral and water absorption from the soil.
 - Root hair increases the root's surface area for water and mineral absorption.
 - Special vascular tissue in plants transports water and nutrients from the soil.
 - Roots and leaves are joined by a continuous network of xylem channels.

- (A) b and c (B) c and d
(C) Only a (D) Only d

[RRB Technician Grade-III 24/12/2024 Shift -2]

66. Which of the listed cellular organelles is/are found exclusively in plant cells?

- Mitochondria
- Plastids
- Golgi apparatus
- Vacuoles
- Cell wall
- Lysosomes

- (A) c and d (B) b, d and e
(C) f (D) a and c

[RRB Technician Grade-III 24/12/2024 Shift -2]

67. How many types of endoplasmic reticulum are there in cells?

- (A) Five (B) Two
(C) Four (D) Three

[RRB Technician Grade-III 24/12/2024 Shift -2]

68. Involuntary actions including blood pressure, salivation and vomiting are controlled by :

- (A) The cerebellum in the fore-brain
(B) Only the heart
(C) The medulla in the hind-brain
(D) Only the spinal cord

[RRB Technician Grade-III 24/12/2024 Shift -3]

69. Match the cell organelles with their respective functions.

Cell organelles	Functions
1. Cell wall	a. Digests any foreign matter and worn out cellular components
2. Ribosomes	b. Gives plants their structural strength
3. Lysosomes	c. Sites involved in protein manufacture

Cell organelles	Functions
4. Golgi apparatus	d. Linked to the production of lysosomes

- (A) 1 - b, 2 - d, 3 - c, 4 - a
(B) 1 - c, 2 - a, 3 - d, 4 - b
(C) 1 - a, 2 - b, 3 - c, 4 - d
(D) 1 - b, 2 - c, 3 - a, 4 - d

[RRB Technician Grade-III 24/12/2024 Shift-3]

70. Identify the INCORRECT statement about complex permanent tissue.

- (A) Cells in a complex tissue work together to perform a common function.
(B) There is more than one type of cell in a complex tissue.
(C) Complex tissue includes parenchyma and collenchyma.
(D) Vascular bundles are a characteristic feature of complex tissues.

[RRB Technician Grade-III 24/12/2024 Shift -3]

71. Which of the following is true about nuclear membranes and other cell organelles in cells?

- (A) The nuclear membrane is present in prokaryotic cells.
(B) The nuclear membrane is absent in prokaryotic cells.
(C) The nuclear membrane is absent in eukaryotic cells.
(D) All cytoplasmic organelles are present in prokaryotic cells.

[RRB Technician Grade-III 26/12/2024 Shift -1]

72. During meiosis, a cell divides to create _____ new cells.

- (A) Four (B) Twenty-four
(C) Eight (D) Sixteen

[RRB Technician Grade-III 26/12/2024 Shift -2]

73. When water enters into the guard cells, the guard cells _____ and the stomatal pore _____.

- (A) shrink; opens (B) shrink; closes
(C) swell; opens (D) swell; shrinks

[RRB Technician Grade-III 26/12/2024 Shift -3]

74. What type of plant tissue is classified as apical, lateral and intercalary?

- (A) Meristematic tissue
(B) Simple permanent tissue
(C) Connective tissue
(D) Complex permanent tissue

[RRB Technician Grade-III 26/12/2024 Shift -3]

75. When an action or a movement is to be performed, which tissue will do the final job in animals?

- (A) Epithelial tissue
(B) Connective tissue
(C) Muscular tissue
(D) Meristematic tissue

[RRB Technician Grade-III 27/12/2024 Shift -1]

76. Who discovered free living cells in pond water for the first time?

- (A) Robert Brown in 1831
(B) Virchow in 1855
(C) Robert Hooke in 1665
(D) Leeuwenhoek in 1674

[RRB Technician Grade-III 27/12/2024 Shift -1]

77. Which is/are present at the growing tips of stems and roots and increase(s) the length of the stem and the root?

- (A) Only lateral meristem
(B) Only intercalary meristem
(C) Lateral meristem and intercalary meristem
(D) Only apical meristem

[RRB Technician Grade-III 27/12/2024 Shift -1]

78. In plants, some waste products are stored as resins and gums especially in the :

- (A) Cellular vacuoles
(B) Old xylem
(C) Leaves
(D) Tissues with dead cells

[RRB Technician Grade-III 27/12/2024 Shift -1]

79. If a ligament connects two bones, which of the following connects muscles to bones?

- (A) Cartilage (B) Fibroblast
(C) Tendon (D) Blood

[RRB Technician Grade-III 27/12/2024 Shift -1]

80. Plasma membrane is made up of _____.

- (A) Only proteins
(B) Only cellulose
(C) Both proteins and lipids
(D) Only lipids

[RRB Technician Grade-III 27/12/2024 Shift -2]

81. Which of the following statements is/are correct related to respiration?

- (i) Pyruvate is converted into ethanol and carbon dioxide in yeast during fermentation.
(ii) The break-down of pyruvate using oxygen takes place in chloroplast.
(iii) In muscle cells, pyruvate is converted into lactic acid.

- (A) Only (i) and (iii)
 (B) Only (i)
 (C) Only (i) and (ii)
 (D) (i), (ii) and (iii)
[RRB Technician Grade-III 27/12/2024 Shift -2]
82. Which of the following cell organelles have their own DNA and ribosomes?
 (A) Golgi apparatus
 (B) Mitochondria
 (C) Lysosomes
 (D) Endoplasmic reticulum
[RRB Technician Grade-III 27/12/2024 Shift -2]
83. Which of the following is/are NOT present in the plasma?
 (A) Salts (B) Undigested food
 (C) Hormones (D) Proteins
[RRB Technician Grade-III 27/12/2024 Shift -3]
84. Which tissue is responsible for the movement in our body?
 (A) Epithelial tissue
 (B) Areolar tissue
 (C) Muscular tissue
 (D) Cartilage
[RRB Technician Grade-III 27/12/2024 Shift -3]
85. Which of the following is a connective tissue?
 (A) Muscle
 (B) Columnar epithelium
 (C) Blood
 (D) Cuboidal epithelium
[RRB Technician Grade-III 27/12/2024 Shift -3]
86. Every cell has a _____ around it to keep its own contents separate from the external environment.
 (A) Mitochondria (B) Membrane
 (C) Cell wall (D) Nucleus
[RRB Technician Grade-III 28/12/2024 Shift -1]
87. _____ is found as chromatin material in a non-dividing cell's structure.
 (A) Ribosome (B) DNA
 (C) RNA (D) Nucleus
[RRB Technician Grade-III 28/12/2024 Shift -1]
88. Rough endoplasmic reticulum looks rough under a microscope because it has particles called _____ attached to its surface.
 (A) chromosomes (B) ribosomes
 (C) lysosomes (D) protein particles
[RRB Technician Grade-III 28/12/2024 Shift -2]
89. Apical meristem increases the _____ of the stem and the root.
 (A) Length (B) Branches
 (C) Girth (D) Flowers
[RRB Technician Grade-III 28/12/2024 Shift -2]
90. Which part of the flower grows and ripens to form a fruit?
 (A) Ovary (B) Petal
 (C) Pollen tube (D) Anther
[RRB Technician Grade-III 28/12/2024 Shift-3]
91. Genes that control the characteristics of a trait are located on :
 (A) Vacuoles
 (B) Endoplasmic reticulum
 (C) Chromosomes
 (D) Lysosome
[RRB Technician Grade-III 28/12/2024 Shift-3]
92. All activities inside the cell and interactions of the cell with its environment are possible due to three important features observed in almost every cell. Which are the three features?
 (A) Plasma membrane, nucleus and Golgi apparatus
 (B) Mitochondria, nucleus and cytoplasm
 (C) Mitochondria, nucleus and Golgi apparatus
 (D) Plasma membrane, nucleus and cytoplasm
[RRB Technician Grade-III 29/12/2024 Shift -1]
93. Different cell organelles such as mitochondria, ribosome, etc., together constitute the basic unit of life called the :
 (A) Organ system (B) Tissue
 (C) Cell (D) Organ
[RRB Technician Grade-III 29/12/2024 Shift-1]
94. Select the correct statement related to the characteristics of prokaryotic cell.
 (A) Membrane bound cell organelles are present.
 (B) Nuclear region is well defined and surrounded by nuclear membrane.
 (C) It has a single chromosome.
 (D) It has more than one chromosome.
[RRB Technician Grade-III 29/12/2024 Shift-1]
95. The rigid outer covering present outside the plasma membrane in plants is called the:
 (A) Nuclear membrane
 (B) Selectively permeable membrane
 (C) Cell envelope
 (D) Cell wall
[RRB Technician Grade-III 29/12/2024 Shift -1]
96. Flexibility in plants is due to :
 (A) Cambium (B) Collenchyma
 (C) Parenchyma (D) Sclerenchyma
[RRB Technician Grade-III 29/12/2024 Shift -2]
97. Which of the following is a function of epithelial tissues?
 (A) Storage of fats
 (B) Provides response to stimulus
 (C) Responsible for Involuntary movements
 (D) Protection
[RRB Technician Grade-III 29/12/2024 Shift -2]
98. Apical meristem is present in which of the following?
 (A) Bacteria (B) Plants
 (C) Virus (D) Animals
[RRB Technician Grade-III 29/12/2024 Shift-2]
99. The number of chromosomes become half in a daughter cell by the process of :
 (A) Binary fission (B) Mitosis
 (C) Meiosis (D) Amitosis
[RRB Technician Grade-III 29/12/2024 Shift -2]
100. Which of the following is the longest cell in our body?
 (A) Ovum (B) Fat cell
 (C) Blood cell (D) Nerve cell
[RRB Technician Grade-III 29/12/2024 Shift -2]
101. The contraction and relaxation of which of the following results in movement of the organ?
 (A) Nerve cells (B) Cartilages
 (C) Muscle cells (D) Bones
[RRB Technician Grade-III 29/12/2024 Shift -2]
102. Identify the INCORRECT statement related to neurons.
 (A) The cell body of a neuron has many nuclei.
 (B) Each neuron has multiple short, branching sections called dendrites.
 (C) Nervous tissue consists of cells known as neurons.
 (D) Neurons typically have one long section called the axon.
[RRB Technician Grade-III 29/12/2024 Shift -3]

103. Which of the following does NOT have neurons?

- (A) Brain (B) Nerves
(C) Spinal cord (D) Adipocyte

[RRB Technician Grade-III 29/12/2024
Shift -3]

104. In phloem, which of the following cells are dead cells?

- (A) Companion cells
(B) Phloem parenchyma
(C) Sieve cells
(D) Phloem fibres

[RRB Technician Grade-III 30/12/2024
Shift -1]

105. What is the name of the connective tissue that connects two bones to each other?

- (A) Tendon (B) Ligament
(C) Adipose tissue (D) Cartilage

[RRB Technician Grade-III 30/12/2024
Shift -1]

106. Which organelle is the powerhouse of the cell?

- (A) Endoplasmic reticulum
(B) Golgi apparatus
(C) Plastids
(D) Mitochondria

[RRB Technician Grade-III 30/12/2024
Shift -1]

107. Which of the following statements is/are INCORRECT?

- (i) The transport of insoluble product of photosynthesis is known as translocation.
(ii) Respiration is the evaporative loss of water through stomata.
(iii) Photosynthesis is the process by which autotrophs take in substances from outside and in the absence of sunlight convert them into stored forms of energy.
- (A) (i), (ii) and (iii)
(B) Only (i)
(C) Only (i) and (ii)
(D) Only (ii) and (iii)

[RRB Technician Grade-III 30/12/2024
Shift -1]

108. Which of the following cells have dendrites and axons?

- (A) White blood cells
(B) Fibres
(C) Nerve cells
(D) Red blood cells

[RRB Technician Grade-III 30/12/2024
Shift -1]

109. Which of the following is NOT a function of blood?

- (A) Helps in the synthesis of starch
(B) Transports hormones
(C) Transports gases
(D) Transports waste materials

[RRB Technician Grade-III 30/12/2024
Shift -1]

110. In which organelle of the plant cells does photosynthesis take place?

- (A) Chloroplast (B) Ribosome
(C) Nucleus (D) Mitochondria

[RRB Technician Grade-III 30/12/2024
Shift -2]

111. Identify the INCORRECT statement about muscle tissue.

- (A) Microscopes reveal alternate light and dark bands in voluntary muscles.
(B) Special contractile proteins are present in muscles.
(C) The limbs have voluntary muscles.
(D) Muscle tissues are made up of cuboidal cells.

[RRB Technician Grade-III 30/12/2024
Shift -3]

112. Most mature plant cells have a _____ that helps to maintain the turgidity of the cell and store important substances including wastes.

- (A) Small ribosome
(B) Large central vacuole
(C) Chromoplasts
(D) Leucoplasts

[RRB Technician Grade-III 30/12/2024
Shift -3]

113. ATP is broken down giving rise to a fixed amount of energy that can drive the endothermic reactions taking place in which cell organelle of a cell?

- (A) Lysosome (B) Mitochondria
(C) Ribosome (D) Chloroplast

[RRB Technician Grade-III 30/12/2024
Shift -3]

114. Which of the following describes dendrites?

- (A) Long and unbranched
(B) Long and branched
(C) Short and branched
(D) Short and unbranched

[RRB Technician Grade-III 30/12/2024
Shift -3]

RRB GROUP D

115. Breakdown of pyruvate using oxygen takes place in the :

- (A) Chloroplast (B) Cytoplasm
(C) Mitochondria (D) Nucleoplasm

[RRB GROUP- D 06/10/2022 Shift-II]

116. Where in a human body can anaerobic respiration take place ?

- (A) Only in red blood cells in the veins
(B) In the cytoplasm of cells
(C) In mitochondria of all cells
(D) Only in striated muscle cells

[RRB GROUP- D 30/09/2022 Shift-II]

117. What is the difference between striated and smooth muscle cells ?

- (A) Smooth muscles are not connected to the nerves while striated muscles are connected.
(B) Striated muscles lack nuclei while smooth muscles are binucleated.
(C) Smooth muscles cannot contract at will, while voluntary muscles contract at will.
(D) All striated muscles work by reflex action as compared to smooth muscles.

[RRB GROUP-D 12-09-2022 Shift-II]

118. Which of the following sites are used for storage of waste products in plants ?

- (A) Guard cells (B) Old xylem
(C) Phloem fibres (D) Root hairs

[RRB GROUP-D 12-09-2022 Shift-III]

119. Cartilage tissue is absent in which of the following organs of the body ?

- (A) Nose (B) Larynx
(C) Ear (D) Kidney

[RRB GROUP-D 12-09-2022 Shift-III]

120. A part from nucleus of the cell, which two cell organelles have their own DNA and Ribosomes ?

- (A) Plastids and Mitochondria
(B) Plastids and Golgi bodies
(C) Mitochondria and Golgi bodies
(D) Mitochondria and Lysosomes

[RRB GROUP-D 09-09-2022 Shift-III]

121. Which cell organelle detoxifies toxins and drugs ?

- (A) Endoplasmic reticulum
(B) Ribosomes
(C) Golgi bodies
(D) Mitochondria

[RRB GROUP-D 25-08-2022 Shift-I]

122. Aerenchyma cells are present in

- (A) Pea
(B) Common water hyacinth
(C) Neem
(D) Cactus

[RRB GROUP-D 24-08-2022 Shift-II]

123. Which tissue in the coconut husk makes it hard and stiff ?

- (A) Parenchyma (B) Sclerenchyma
(C) Guard cells (D) Collenchyma

[RRB GROUP-D 23-08-2022 Shift-II]

124. Which of the following is an example of a human cell that has the ability to modify its shape ?
 (A) Liver cells (B) RBC
 (C) WBC (D) Brain cell

[RRB GROUP-D 17-08-2022 Shift-III]

125. Which is the largest organelle present in a cell?
 (A) Endoplasmic reticulum
 (B) Golgi bodies
 (C) Nucleus
 (D) Mitochondria

[RRB GROUP-D 10-10-2018 Shift 3]

RRB NTPC

126. Which meristematic tissue is found at nodes and helps in regrowth of grasses ?
 (A) Apical (B) Intercalary
 (C) Lateral (D) Permanent

[RRB NTPC Graduate Level II, 13/10/2025, Shift-I]

127. Which of the following material is classified as an elastomer ?
 (A) Tissue in aorta
 (B) Tissue in veins
 (C) Tissue in kidneys
 (D) Tissue in pancreas

[RRB NTPC Under Graduate CBT I, 01/09/2025, Shift-I]

128. Which area of the main stem and roots contains the spongy, soft parenchyma cells that carry and store nutrients for the plant ?
 (A) Pith (B) Cortex
 (C) Stele (D) Metaxylem

[RRB NTPC Under Graduate CBT I, 29/08/2025, Shift-I]

129. By what process does the exchange of gases between alveoli and tissues occur ?
 (A) Osmosis (B) Release
 (C) Diffusion (D) Filtration

[RRB NTPC Under Graduate CBT I, 28/08/2025, Shift-III]

130. How many pairs of false ribs are located above the floating ribs that are connected to each other by costal cartilage ?
 (A) 3 (B) 6
 (C) 5 (D) 2

[RRB NTPC Under Graduate CBT I, 19/08/2025, Shift-III]

131. The term 'complementary' in the context of DNA refers to which of the following properties ?
 (A) Hydrogen bonding potential based on base specificity
 (B) identical chemical composition of both strands

- (C) Parallel orientation of nucleotide chains
 (D) Matching number of sugar-phosphate units

[RRB NTPC Graduate Level, 05/06/2025, Shift-3]

132. What is the function of subsidiary cells ?
 (A) Secretion of enzymes for nutrient acquisition, defense and digestion
 (B) Absorption of light for photosynthesis
 (C) Support of guard cells in stomatal function
 (D) Transport of food through the phloem

[RRB NTPC Graduate Level, 13/06/2025, Shift-1]

133. The mention of DNA as a long polymer of deoxyribonucleotides implies which structural characteristic ?
 (A) Each nucleotide is linked by hydrogen bonds in a parallel fashion.
 (B) It is composed of a sugar-phosphate backbone and nitrogenous bases.
 (C) The molecule consists of multiple independent short chains.
 (D) The sequence is circular and self-replicating.

[RRB NTPC Graduate Level, 16/06/2025, Shift-1]

134. Which key event in the life cycle of Plasmodium causes rupture of red blood cells ?
 (A) Sexual reproduction inside mosquitoes in the erythrocytes
 (B) Maturation and multiplication of merozoites inside the RBCs
 (C) Multiplication inside liver cells
 (D) Conversion into sporozoites

[RRB NTPC Graduate Level, 19/06/2025, Shift-1]

135. Which cytoskeletal protein is the major component of neurofilaments that helps maintain the caliber and integrity of large axons ?
 (A) Neurofilament protein
 (B) Tubulin protein
 (C) Actin protein
 (D) Keratin protein

[RRB NTPC Graduate Level, 24/06/2025, Shift-3]

136. What is called the 'energy currency' of the cell?
 (A) AMP (B) ATP
 (C) DNA (D) RNA

[RRB NTPC 02-02-2021]

137. Which of the following elements is part of heme (haem) of human blood ?
 (A) Cobalt (B) Iron
 (C) Magnesium (D) Manganese

[RRB NTPC CBT-2 14-06-2022 Shift-II]

138. Which of the following organelle of the eukaryotic cells are also called suicidal bags ?
 (A) Lysosomes (B) Chloroplast
 (C) Mitochondria (D) Golgi Body

[RRB NTPC CBT-2 13-06-2022 Shift-II]

139. Which of the following is not a type of stem cell?
 (A) umbilical cord (B) embryo
 (C) embryonic root (D) fat

[RRB (NTPC) 02.04.2016 Shift-I]

RRB ALP

140. A fungal cell wall is made of:
 (A) lignin (B) hemi-cellulose
 (C) chitin (D) cellulose

[RRB ALP CBT1, 13/08/2018, Shift 3]

141. What is a tissue?
 (A) Cells which are similar in origin, but dissimilar in form and function
 (B) Cells which are dissimilar in origin, but are similar in form and function
 (C) Cells which are dissimilar in origin, form and function
 (D) Cells which are similar in origin, form and function

[RRB ALP CBT1, 09/08/2018, Shift 3]

142. The motile germ cell is called a/an:
 (A) Male gamete (B) Gamete
 (C) Female gamete (D) Isogamete

[RRB ALP CBT1, 17/08/2018, Shift 3]

143. In which of the following permanent tissues are the cells dead?
 (A) Parenchyma (B) Collenchymas
 (C) Sclerenchyma (D) Aerenchyma

[RRB ALP CBT1, 29/08/2018, Shift 1]

144. Which of the following organelles are called the Protein Factories of the cell?
 (A) Mitochondria (B) Ribosomes
 (C) Lysosomes (D) Chloroplasts

[RRB ALP CBT1, 30/08/2018, Shift 2]

145. is concerned with cell division.
 (A) Cytokinin
 (B) Gibberellin
 (C) Maleic hydrazide
 (D) Auxins

[RRB ALP CBT1, 30/08/2018, Shift 2]

146. The breakdown of glucose to pyruvate takes place in the during energy production.
 (A) cytoplasm
 (B) mitochondria
 (C) nucleus
 (D) endoplasmic reticulum

[RRB ALP CBT1, 30/08/2018, Shift 3]

147. Which of the following is NOT a simple permanent tissue?
 (A) Collenchyma (B) Xylem
 (C) Parenchyma (D) Sclerenchyma
[RRB ALP CBT1, 30/08/2018, Shift 3]

RRB JE

148. Which of the following is an example of insoluble dietary fiber?
 (A) Isabgol (B) Inulin
 (C) Cellulose (D) Pectin
[RRB JE CBT-1 Exam 26/06/2019 S-III]

Plant Physiology

RRB Technician

149. Seeds that are dispersed by animals often:
 (A) are very small and light weight
 (B) can float easily in water
 (C) have wings or parachutes
 (D) have hooks or edible flesh
[RRB Technician Grade-III 17/12/2024 Shift -1]
150. Which of the following is NOT an agent of dispersal of seeds?
 (A) Animal (B) Sunlight
 (C) Water (D) Wind
[RRB Technician Grade-III 16/12/2024 Shift -1]
151. Which of the following is a method of reproduction in plants, where only a single parent is involved?
 (A) Sexual reproduction
 (B) Fertilisation
 (C) Asexual reproduction
 (D) Pollination
[RRB Technician Grade-III 16/12/2024 Shift -1]
152. Self pollination is possible only in :
 (A) unisexual flowers with stamen maturing first
 (B) unisexual flowers with pistil maturing first
 (C) bisexual flowers with both stamens and pistil maturing at the same time
 (D) bisexual flowers with both stamens and pistil maturing at the different time
[RRB Technician Grade-III 16/12/2024 Shift -1]
153. In plants, spore formation is a mode of reproduction that involves the production of spores. Which of the following statements about spore formation is true?
 (A) Spores are formed through sexual reproduction in plants.

- (B) Spores are a form of vegetative propagation in angiosperms only.
 (C) Spores are produced by non-flowering plants like ferns and mosses, and they grow into new plants.
 (D) Spores are produced by flowers, and they grow into seeds.

[RRB Technician Grade-III 16/12/2024 Shift -3]

154. What is the role of the stigma in the process of fertilisation?
 (A) Producing pollen
 (B) Serving as the site where pollen lands
 (C) Developing into a seed
 (D) Fusing with the egg cell

[RRB Technician Grade-III 16/12/2024 Shift -3]

155. Pollen grains are transferred to which part of pistil?
 (A) Ovary (B) Ovule
 (C) Style (D) Stigma

[RRB Technician Grade-III 17/12/2024 Shift -1]

156. What is the role of the ovary in the process of fertilisation in plants?
 (A) To produce the egg cell
 (B) To store the male gametes
 (C) To provide nutrients to the pollen grains
 (D) To produce pollen

[RRB Technician Grade-III 17/12/2024 Shift -1]

157. In the process of vegetative propagation, which part of the plant is used in grafting?
 (A) Stem (B) Root
 (C) Leaf (D) Seed

[RRB Technician Grade-III 17/12/2024 Shift -1]

158. What develops into fruit after fertilisation?
 (A) Stigma (B) Style
 (C) Ovary (D) Anther

[RRB Technician Grade-III 17/12/2024 Shift -2]

159. Which part of the Bryophyllum plant develops new plants via vegetative propagation?
 (A) Flowers (B) Leaves
 (C) Roots (D) Stems

[RRB Technician Grade-III 17/12/2024 Shift -3]

160. A tube like structure grows down from the pollen grain to the style and reaches the ovule. This pollen tube is responsible for:

- (A) Carrying oxygen to the female germ cell in the ovary
 (B) Carrying the male germ cell to the female germ cell in the ovary
 (C) Carrying carbon dioxide to the female germ cell in the ovary
 (D) Carrying nutrition to the female germ cell in the ovary

[RRB Technician Grade-III 17/12/2024 Shift -3]

161. Rose flower pollen has reached Sunflower stigma through pollination. The pollen will be rejected by the stigma because:
 (A) pollen has nothing to do with stigma
 (B) pollen was not of sunflower
 (C) stigma has nothing to do with pollen
 (D) pollen was of rose flower

[RRB Technician Grade-III 17/12/2024 Shift -3]

162. What is the process of fusion of the male and female gametes called in plants?
 (A) Propagation (B) Germination
 (C) Pollination (D) Fertilisation

[RRB Technician Grade-III 18/12/2024 Shift -2]

163. A rose plant with white flowers was planted in soil by stem cutting without any grafting. The new plant produced similar white flowers- What does it indicate?
 (A) Stem cutting is a type of sexual reproduction, so there was no variation.
 (B) White flowers are the only type of variety available in rose.
 (C) Stem cutting is a type of asexual reproduction, so there was no variation.
 (D) White flowers look good so gardeners plant such roses.

[RRB Technician Grade-III 18/12/2024 Shift -3]

164. Which of the following is the female germ cell in plants?
 (A) Egg cell
 (B) Cell opposite to egg cell in an ovule
 (C) Cells outside the ovule
 (D) Cells in the centre of ovule

[RRB Technician Grade-III 18/12/2024 Shift -3]

165. Which of the following plants propagates through runners?
 (A) Strawberry (B) Potato
 (C) Rose (D) Jasmine

[RRB Technician Grade-III 18/12/2024 Shift -3]

166. A gardener wants to grow potato plants. He had put a potato with buds (eyes) in the soil. He succeeded to get a new potato plant because :
- (A) There was no animal to eat the potato buds
 (B) Potatoes can be grown by root cuttings
 (C) Vegetative propagation is by buds (eyes)
 (D) There are no other plant species in that area
- [RRB Technician Grade-III 18/12/2024 Shift -3]**
167. Which reproductive part(s) is/are essential for fertilisation?
- (A) Sepals
 (B) Pollen grain and ovule
 (C) Thalamus
 (D) Petals
- [RRB Technician Grade-III 20/12/2024 Shift -2]**
168. Which of the following grows rapidly and ripens to form a fruit?
- (A) Ovary (B) Pollen tube
 (C) Stigma (D) Anther
- [RRB Technician Grade-III 20/12/2024 Shift -3]**
169. Which of the following helps in the absorption and upward movement of water and minerals dissolved in it from roots to the leaves?
- (A) Transpiration (B) Respiration
 (C) Translocation (D) Photosynthesis
- [RRB Technician Grade-III 20/12/2024 Shift -3]**
170. _____ are found in the epidermis of a leaf.
- (A) Chlorenchyma (B) Aerenchyma
 (C) Stomata (D) Vascular bundle
- [RRB Technician Grade-III 23/12/2024 Shift -1]**
171. The tissue which makes the plant hard and stiff and provides strength to the plant parts is the :
- (A) Sclerenchyma (B) Chlorenchyma
 (C) Aerenchyma (D) Collenchyma
- [RRB Technician Grade-III 23/12/2024 Shift -1]**
172. Plant cells change shape by changing the amount of _____ in them, resulting in swelling or shrinking, and therefore in changing shapes.
- (A) Water (B) Chlorophyll
 (C) Fat (D) Carbon dioxide
- [RRB Technician Grade-III 23/12/2024 Shift -1]**
173. The roots of a plant always grow downwards while the shoots usually grow upwards and away from the earth. This upward and downward growth of shoots and roots is known as :
- (A) geotropism
 (B) chemotropism
 (C) hydrotropism
 (D) phototropic movement
- [RRB Technician Grade-III 23/12/2024 Shift -1]**
174. The pollen needs to be transferred from the stamen to the stigma. If this transfer of pollen occurs in the same flower, this phenomenon is known as:
- (A) spore formation
 (B) cross-pollination
 (C) self-pollination
 (D) fertilisation
- [RRB Technician Grade-III 23/12/2024 Shift -2]**
175. Which of the following is correct about fertilisation in plants?
- (A) The male germ-cell produced by pollen grain fuses with the female gamete present in the stigma.
 (B) The male germ-cell produced by the ovule fuses with the female gamete present in the pollen tube.
 (C) The male germ-cell produced by the ovary fuses with the female gamete present in the ovule.
 (D) The male germ-cell produced by pollen grain fuses with the female gamete present in the ovule.
- [RRB Technician Grade-III 24/12/2024 Shift -1]**
176. Which of the following parts of the plant is used in vegetative propagation?
- (A) Fruits and flowers
 (B) Root and flowers
 (C) Leaves and stem
 (D) Fruits and leaves
- [RRB Technician Grade-III 24/12/2024 Shift -1]**
177. Select the correct statement related to sexual reproduction in flowering plants.
- (A) After fertilisation, ovary develops into a seed.
 (B) After fertilisation, an embryo is formed without any division in zygote.
 (C) After fertilisation, ovule develops into fruit.
 (D) On a suitable stigma pollen tubes grow out of the pollen grain and travel through the style and reach the ovary.
- [RRB Technician Grade-III 24/12/2024 Shift -2]**
178. Which of the following parts of a plant does NOT take part in vegetative propagation?
- (A) Root (B) Flower
 (C) Stem (D) Leaves
- [RRB Technician Grade-III 24/12/2024 Shift -2]**
179. Buds procured in the notches along the leaf margin of Bryophyllum fall on the soil and develop into new plants. Such a mode of reproduction is known as :
- (A) regeneration
 (B) vegetative propagation
 (C) budding
 (D) fragmentation
- [RRB Technician Grade-III 26/12/2024 Shift -2]**
180. A pea plant climbs on other plants or fences with the help of :
- (A) tendrils (B) sepals
 (C) prickles (D) roots
- [RRB Technician Grade-III 26/12/2024 Shift -2]**
181. Some seeds are dispersed when the fruits burst with sudden jerks and the seeds are scattered far from the parent plant. This happens in fruits of which of the following plants?
- (A) Sunflower and Madar
 (B) Castor and Balsam
 (C) Xanthium and Urena
 (D) Drumstick and Maple
- [RRB Technician Grade-III 27/12/2024 Shift -1]**
182. Which of the following reactions is NOT an exothermic reaction?
- (A) Respiration
 (B) Dilution of a strong acid
 (C) Photosynthesis
 (D) Burning of natural gas
- [RRB Technician Grade-III 27/12/2024 Shift -3]**
183. Which one of the following plant parts is NOT used for vegetative propagation?
- (A) Seed (B) Leaves
 (C) Root (D) Stem
- [RRB Technician Grade-III 27/12/2024 Shift -3]**
184. Which of the following seeds are dispersed by animals, especially spiny seeds with hooks, that get attached to their bodies and are carried to distant places?
- (A) Sunflower and Madar
 (B) Castor and Balsam
 (C) Drumstick and Maple
 (D) Xanthium and Urena
- [RRB Technician Grade-III 28/12/2024 Shift -1]**

185. Select the parasitic plant from the given options.

- (A) Cabbage (B) Cucumber
(C) Cuscuta (D) Cactus

[RRB Technician Grade-III 28/12/2024 Shift -1]

186. In which plant do the buds produced in the notches along the leaf margin, fall on the soil and develop into a new plant?

- (A) Jasmine
(B) Rose
(C) Bryophyllum
(D) Grapes

[RRB Technician Grade-III 28/12/2024 Shift -1]

187. _____ is the process through which plants lose water in the form of water vapour.

- (A) Transcription
(B) Imbibition
(C) Transpiration
(D) Transportation

[RRB Technician Grade-III 28/12/2024 Shift -2]

188. What is the process by which autotrophs take in substance from outside and in the presence of sunlight, convert them into stored forms of energy?

- (A) Movement (B) Circulation
(C) Photosynthesis (D) Digestion

[RRB Technician Grade-III 29/12/2024 Shift -1]

189. In plants, after fertilisation the ovary develops into a _____.

- (A) Seedling (B) Seed
(C) Flower (D) Fruit

[RRB Technician Grade-III 30/12/2024 Shift -2]

190. Which of the following after fertilisation grows rapidly and ripens to form a fruit. Meanwhile, the petals, sepals, stamens, style and stigma may shrivel and fall off?

- (A) Gynoecium (B) Pistil
(C) Ovary (D) Ovule

[RRB Technician Grade-III 30/12/2024 Shift -3]

RRB GROUP D

191. In a plant cell, the act of respiration to take in oxygen and release energy and carbon dioxide from food occurs in the

- (A) Vacuoles
(B) Chloroplasts and mitochondria
(C) Peroxisomes
(D) Mitochondria

[RRB GROUP- D 07/10/2022 Shift-II]

192. What makes the xylem vessels waterproof?

- (A) Cellulose (B) Cutin
(C) Suberin (D) Lignin

[RRB GROUP- D 07/10/2022 Shift-III]

193. Which of the following options shows the main waste products produced by plants?

- (A) Only O₂ and water Vapour
(B) Only CO₂ and water Vapour
(C) CO₂, O₂ and water Vapour
(D) Only CO₂ and O₂

[RRB GROUP- D 30/09/2022 Shift-III]

194. During photosynthesis, the carbohydrates synthesised are stored in the form of:

- (A) Starch (B) Fats
(C) Proteins (D) Vitamins

[RRB GROUP- D 30/09/2022 Shift-II]

195. Which of the following helps in temperature regulation in plants?

- (A) Transpiration
(B) Photosynthesis
(C) Original pressure
(D) Absorption

[RRB GROUP- D 29/09/2022 Shift-I]

196. Why do plants lack a defined excretory system like kidneys in mammals?

- (A) Because plants lack a circulatory system.
(B) They excrete through their vegetative parts.
(C) Because plants do not produce waste materials.
(D) Because plants produce only gaseous wastes which diffuse out.

[RRB GROUP- D 29/09/2022 Shift-II]

197. Which of the following is NOT TRUE about vegetative propagation in plants?

- (A) Plants bear flowers and fruits earlier than those produced from seeds.
(B) Plants are grown from root, stem and leaves.
(C) Plants produced are genetically different from the parent plant.
(D) Plants that have lost the capacity to produce seeds can be grown.

[RRB GROUP-D 25-08-2022 Shift-I]

198. Which of the following excretory products is stored in the old xylem of the plants?

- (A) Resin
(B) Citric acid
(C) Carbon dioxide
(D) Morphin

[RRB GROUP-D 25-08-2022 Shift-II]

199. In which part of the leaves do massive amounts of gaseous exchange take place during respiration?

- (A) Thylakoid (B) Stomata
(C) Chlorophyll (D) Grana

[RRB GROUP-D 22-08-2022 Shift-III]

200. The amount of in a plant cell alters its structure in order to facilitate movement.

- (A) Water
(B) Electro chemical impulses
(C) Hormones
(D) Protein

[RRB GROUP-D 22-08-2022 Shift-II]

201. Colourless plastids are called

- (A) Leucoplastids (B) Apicoplastids
(C) Chromoplastids (D) Chloroplastids

[RRB GROUP-D 22-08-2022 Shift-I]

202. How will the plant be affected if the rate of respiration becomes more than the rate of photosynthesis?

- (A) Plant growth will increase due to more energy produced
(B) More food will be oxidised than that produced, and plant will starve and die.
(C) Plants will store a lot amount of food.
(D) Plant growth will slow down.

[RRB GROUP-D 18-08-2022 Shift-III]

203. Match the following:

A	B
(i) Red cabbage leaves	(a) Olfactory indicator
(ii) Methyl orange	(b) Acid base indicator
(iii) Onion, clove	(c) Natural acid base indicator

- (A) (i) – (a), (ii) – (b), (iii) – (c)
(B) (i) – (a), (ii) – (c), (iii) – (b)
(C) (i) – (c), (ii) – (a), (iii) – (b)
(D) (i) – (c), (ii) – (b), (iii) – (a)

[RRB GROUP-D 18-08-2022 Shift-I]

204. Which of the following flowers is a bisexual?

- (A) Mustard (B) Sunflower
(C) Hibiscus (D) Papaya

[RRB GROUP-D 23.10.2018]

205. Krutidev Who is considered the first botanist here?

- (A) Pliny (B) Plato
(C) Theophrastus (D) Archimedes

[RRB 02-11-2018 Shift-III]

RRB NTPC

206. The primary force responsible for pulling water upward in tall plants is _____ .
(A) osmosis (B) transpiration
(C) guttation (D) root pressure

[RRB NTPC Graduate Level II,
13/10/2025, Shift-I]

207. Which of the following is an example of plasticity in plants ?
(A) Phototropism (B) Heterophylly
(C) Vernalization (D) Photoperiodism

[RRB NTPC Under Graduate CBT I,
01/09/2025, Shift-II]

208. The seeds of which plant of the Fabaceae family are used as a spice, flavouring agent and food supplement ?
(A) Cajanus cajan
(B) Arachis hypogea
(C) Dolichos oleifera lablab
(D) Trigonella foenum graecum

[RRB NTPC Under Graduate CBT I,
03/09/2025, Shift-II]

209. Which macromolecule is primarily responsible for energy storage in plants ?
(A) Nucleic acids (B) Vitamins
(C) Proteins (D) Starch

[RRB NTPC Under Graduate CBT I,
08/09/2025, Shift-II]

210. Which organelle is responsible for photosynthesis in plants ?
(A) Mitochondria (B) Chloroplasts
(C) Leucoplasts (D) Chromoplasts

[RRB NTPC Under Graduate CBT I,
28/08/2025, Shift-I]

211. Which of the following processes is absent in C₄ plants ?
(A) Transpiration (B) Photorespiration
(C) Photosynthesis (D) Respiration

[RRB NTPC Under Graduate CBT I,
22/08/2025, Shift-II]

212. In angiosperms, which of the following organs represents the male reproductive part of a flower ?
(A) Gynoecium (B) Sepals
(C) Petals (D) Androecium

[RRB NTPC Under Graduate CBT I,
22/08/2025, Shift-III]

213. Which of the following pigments is present in vegetables like spinach, giving it the characteristic green colour ?
(A) Lutein (B) Xanthophyll
(C) Anthocyanin (D) Chlorophyll

[RRB NTPC Under Graduate CBT I,
18/08/2025, Shift-I]

214. Which of the following parts of the plant is primarily responsible for sexual reproduction in angiosperms ?
(A) Stem (B) Leaf
(C) Root (D) Flower

[RRB NTPC Under Graduate CBT I,
12/08/2025, Shift-III]

215. Which is the deadliest species of Plasmodium that causes malaria in humans ?
(A) Plasmodium knowlesi
(B) Plasmodium falciparum
(C) Plasmodium inui
(D) Plasmodium ovale

[RRB NTPC Under Graduate CBT I,
11/08/2025, Shift-III]

216. Which of the following organs represents the female reproductive part of a flower in angiosperms ?
(A) Stamen (B) Androecium
(C) Gynoecium (D) Petal

[RRB NTPC Under Graduate CBT I,
08/08/2025, Shift-III]

217. Which of the following statements is true regarding trichomes Located on the stem?
(A) they are present only in roots
(B) they are multicellular and can be secretory
(C) they never function in water retention
(D) they are always unbranched and unicellular

[RRB NTPC Graduate Level,
09/06/2025, Shift-2]

218. In a dicot root, which tissue(s) is/are found between the xylem and phloem?
(A) Conjunctive tissue
(B) trichomes
(C) Subsidiary cells
(D) Guard cells

[RRB NTPC Graduate Level,
20/06/2025, Shift-1]

RRB ALP

219. The female reproductive part of a flower is called :
(A) Petals (B) Sepals
(C) Carpel (D) Stamens

[RRB ALP CBT1, 13/08/2018, Shift 3]

220. Which of the following is present in the centre of a flower ?
(A) Carpel (B) Sepals
(C) Petals (D) Stamen

[RRB ALP CBT1, 10/08/2018, Shift 1]

221. What are the products formed during photosynthesis?
(A) Glucose, Water and Oxygen
(B) Glucose and Oxygen
(C) Starch and Oxygen
(D) Starch, Water and Oxygen

- [RRB ALP CBT1, 13/08/2018, Shift 1]

222. Plants bend towards light due to the diffusion of the hormone on the other side of the shoot.
(A) abscisic acid (B) auxin
(C) cytokinin (D) gibberellin

[RRB ALP CBT1, 13/08/2018, Shift 2]

223. The essential organs in a flower for reproduction are :
(A) the stamen and pistil
(B) the sepal and stamen
(C) the sepal and petal
(D) the petal and pistil

[RRB ALP CBT1, 17/08/2018, Shift 1]

224. Dwarfness can be controlled by treating plants with :
(A) Gibberellic acid
(B) Cytokinin
(C) Ethylene
(D) Auxin

[RRB ALP CBT1, 17/08/2018, Shift 3]

225. The reproductive parts of a flower are:
(A) Calyx and carpels
(B) Calyx and corolla
(C) Corolla and stamens
(D) Stamens and carpels

[RRB ALP CBT1, 20/08/2018, Shift 1]

226. Parthenocarpy is defined as :
(A) Development of root without fertilisation
(B) Development of fruit without fertilisation
(C) Development of fruit with fertilisation
(D) developing of root with fertilisation

[RRB ALP CBT1, 21/08/2018, Shift 1]

227. is a part of the male reproductive system in plants.
(A) Stamen (B) Stigma
(C) Ovary (D) Style

[RRB ALP CBT1, 21/08/2018, Shift 1]

228. Which of the following is a bisexual flower?
(A) Cucumber (B) Mustard
(C) Watermelon (D) Papaya

[RRB ALP CBT1, 21/08/2018, Shift 2]

229. Pollen grains are found in:
(A) stigma (B) ovules
(C) anthers (D) locule

[RRB ALP CBT1, 29/08/2018, Shift 2]

230. Primary growth in plants occurs by :
a. Vertical meristem
b. Lateral meristem
c. Intercalary meristem
d. Apical meristem

(A) c and d (B) a, b and d
(C) a, b, c and d (D) b, c and d
[RRB ALP CBT1, 31/08/2018, Shift 1]

231. has naked seeds.
 (A) Pinus (B) Lemon
 (C) Carrot (D) Wheat
[RRB ALP CBT1, 31/08/2018, Shift 3]
232. A common drug in a first aid box is Ibuprofen. Be taken?
 (A) To aid in clotting of blood
 (B) To bring relief from asthma
 (C) To ease indigestion and heartburn
 (D) To treat pain, fever and inflammation
[RRB ALP CBT2, 21/01/2019, Shift 2]

RRB JE

233. Which of the following flowers and fruits only once in its lifetime?
 (A) Peach (B) Banana
 (C) Guava (D) Fig
[RRB JE CBT - 1 Exam 26-06-2019 S- 15.30 -17.00]
234. Which of the following flowering plants is a creeper?
 (A) Sunflower (B) Rose
 (C) Hibiscus (D) Jasmine
[RRB JE CBT - 1 Exam 26-05-2019 S- 12.30 -14.00]
235. Which of the following is a carnivorous plant?
 (A) Pitcher plant (B) All of these
 (C) Sundew (D) Venus fly.
[RRB JE CBT - 1 Exam 30/06/ 2019 S-09.00 -10.30]
236. Onion and garlic are examples of...
 (A) Tuber (B) Stem tuber
 (C) Rhizome (D) Corm
[RRB JE CBT - 1 Exam 30/05/2019 S-12.30 -14.00]

Human Body Systems

RRB Technician

237. Yeast reproduces through which asexual mode of reproduction?
 (A) Fission
 (B) Budding
 (C) Fusion
 (D) Vegetative propagation
[RRB Technician Grade-III 17/12/2024 Shift -3]
238. What is the purpose of using devices like Copper-T in family planning?
 (A) To alter hormonal levels in women
 (B) To act as a physical barrier to sperm
 (C) To prevent fertilised eggs from implanting in the uterus
 (D) To block sperm transfer in males
[RRB Technician Grade-III 17/12/2024 Shift -3]
239. What unique feature do the sex chromosomes in humans have compared to other chromosomes?
 (A) They are always perfectly paired.
 (B) They are not always a perfect pair in males.
 (C) They are identical in males and females.
 (D) They are the largest chromosomes in the body.
[RRB Technician Grade-III 18/12/2024 Shift -3]
240. Which of the following connects the kidney with the urinary bladder?
 (A) Ureter (B) Penis
 (C) Pelvis (D) Urethra
[RRB Technician Grade-III 20/12/2024 Shift-3]
241. In males, if the _____ is surgically cut, sperm transfer will be prevented.
 (A) seminal vesicle
 (B) vas deferens
 (C) prostate gland
 (D) fallopian tube
[RRB Technician Grade-III 27/12/2024 Shift -2]
242. Select the correct option related to the function regulated by ovaries.
 (A) Menstrual cycle
 (B) Stimulates growth in all organs
 (C) Regulates metabolism
 (D) Stimulates pituitary glands
[RRB Technician Grade-III 20/12/2024 Shift -2]
243. The main thinking part of the brain that receives sensory impulses from various receptors is the :
 (A) fore-brain (B) spinal cord
 (C) mid-brain (D) hind-brain
[RRB Technician Grade-III 20/12/2024 Shift -3]
244. Select the correct option related to the function of villi in the small intestine.
 (A) Increases absorptive surface area
 (B) Protection from acid
 (C) Secretion of minerals
 (D) Helps in excretion
[RRB Technician Grade-III 20/12/2024 Shift -3]
245. All information from our environment is detected by the specialised tips of some nerve cells and these receptors are usually located in our sense organs such as :
 (A) the nose
 (B) the inner ear
 (C) the inner ear, the nose and the tongue
 (D) the tongue
[RRB Technician Grade-III 20/12/2024 Shift -3]
246. Sometimes, when there is a lack of oxygen in our muscle cells, the pyruvate by anaerobic respiration is converted into:
 (A) acetic acid (B) methyl alcohol
 (C) ethyl alcohol (D) lactic acid
[RRB Technician Grade-III 23/12/2024 Shift -1]
247. Which of the following is specialised for conducting information via electrical impulses from one part of the body to another?
 (A) Glomerulus (B) Alveoli
 (C) Neuron (D) Spinal cord
[RRB Technician Grade-III 23/12/2024 Shift -1]
248. Which of the following statements is correct related to male reproductive system?
 (A) Testes secrete testosterone hormone.
 (B) Formation of sperm takes place in seminal vessel.
 (C) Testes are located in the abdominal cavity.
 (D) Sperm formation requires higher temperature than the normal body temperature.
[RRB Technician Grade-III 23/12/2024 Shift -2]
249. Select the INCORRECT pair.
 (A) Plastic-does not breakdown by the action of bacteria
 (B) Protein-digested in our body
 (C) Coal-digested in our body
 (D) Rice - digested in our body
[RRB Technician Grade-III 23/12/2024 Shift -2]
250. The term _____ refers to the densely packed kidney filtration unit.
 (A) Nephron (B) Capillary
 (C) Neurone (D) Glomerulus
[RRB Technician Grade-III 23/12/2024 Shift -2]
251. Which of the following transports food, carbon dioxide and nitrogenous wastes in a dissolved form?
 (A) Blood platelets
 (B) Lymph
 (C) Red blood corpuscles
 (D) Plasma
[RRB Technician Grade-III 23/12/2024 Shift -2]
252. Which of the following statements is/are correct related to transportation?

- (i) Arteries are the vessels which carry blood away from the heart to various organs of the body.
 - (ii) The arteries have thin and elastic walls.
 - (iii) Veins have valves that ensure that blood flows only in one direction.
- (A) Only (i)
 (B) (i), (ii) and (iii)
 (C) Only (i) and (iii)
 (D) Only (i) and (ii)

[RRB Technician Grade-III 23/12/2024 Shift -2]

253. Which of the following is INCORRECTLY matched related to the excretory system of humans?
- (A) Ureter - a pair
 (B) Urinary bladder - unpaired
 (C) Kidney - a pair
 (D) Urethra - a pair

[RRB Technician Grade-III 23/12/2024 Shift -3]

254. Match the following columns I and II.

Column I	Column II
a. Placenta	i. Nutrition
b. Fallopian tube	ii. Fertilization
c. Uterus	iii. Implantation

- (A) a-ii, b-i, c-iii (B) a-iii, b-ii, c-i
 (C) a-i, b-ii, c-iii (D) a-i, b-iii, c-ii

[RRB Technician Grade-III 24/12/2024 Shift -1]

255. Muscles present in our limbs move when we want them to and stop when we so decide. Such muscles are called:
- (A) unstriated muscles
 (B) cardiac muscles
 (C) voluntary muscles
 (D) involuntary muscles

[RRB Technician Grade-III 24/12/2024 Shift -1]

256. In which of the following life processes is the creation of a DNA copy, a basic event?
- (A) Circulation (B) Reproduction
 (C) Excretion (D) Respiration

[RRB Technician Grade-III 24/12/2024 Shift -1]

257. In human beings, air is taken into the body through the nostrils and from here the air passes through the throat and into the lungs- Which of the following ensures that the air-passage does NOT collapse in the throat?
- (A) Nostrils large pores
 (B) Nostrils large hairs

- (C) Size of mouth cavity
 (D) Rings of cartilage

[RRB Technician Grade-III 24/12/2024 Shift -1]

258. Testes are located outside the abdominal cavity in scrotum because sperm formation requires :
- (A) higher body temperature
 (B) lower temperature than the normal body temperature
 (C) higher temperature than the normal body temperature
 (D) normal body temperature

[RRB Technician Grade-III 24/12/2024 Shift -1]

259. Which of the following are parts of the male reproductive system?
- (A) Vas deferens and oviduct
 (B) Uterus and Vagina
 (C) Fallopian tube and penis
 (D) Vas deferens and scrotum

[RRB Technician Grade-III 24/12/2024 Shift -2]

260. Which of the following carries egg from the ovary to the womb?
- (A) Fallopian tube (B) Vagina
 (C) Cervix (D) Placenta

[RRB Technician Grade-III 24/12/2024 Shift -3]

261. What is the function of gustatory receptors?
- (A) They detect light.
 (B) They detect taste.
 (C) They detect smell.
 (D) They detect sound.

[RRB Technician Grade-III 24/12/2024 Shift -3]

262. After fertilisation, which of the following is formed when the zygote divides several times within the ovule?
- (A) Pistil (B) Pollen grain
 (C) Embryo (D) Stamen

[RRB Technician Grade-III 26/12/2024 Shift -1]

263. Which of the following is a reflex action?
- (A) Walking on the street
 (B) Talking to a child
 (C) Pulling hand from the flame
 (D) Dancing on the stage

[RRB Technician Grade-III 26/12/2024 Shift -1]

264. Which of the following are parts of the peripheral nervous system?
- (A) Only spinal nerves
 (B) Only cranial nerves

- (C) Neither cranial nor spinal nerves
 (D) Both cranial and spinal nerves

[RRB Technician Grade-III 26/12/2024 Shift -1]

265. How many pairs of sex chromosomes are present in humans?
- (A) One pair
 (B) Twenty two pairs
 (C) Forty six pairs
 (D) Two pairs

[RRB Technician Grade-III 26/12/2024 Shift -1]

266. Which of the following statements is/ are INCORRECT related to excretion in human being?
- (i) In human beings, kidney is located in the thoracic region.
 - (ii) Urine is stored in the urinary bladder.
 - (iii) CO₂ is removed from the blood into the lungs.
- (A) Only (i) and (ii)
 (B) (i), (ii) and (iii)
 (C) Only (i) and (iii)
 (D) Only (i)

[RRB Technician Grade-III 26/12/2024 Shift -2]

267. The central nervous system that receives information from all parts of the body and integrates it is constituted by :
- (A) only the heart
 (B) only the brain
 (C) the brain and the spinal cord
 (D) only the spinal cord

[RRB Technician Grade-III 26/12/2024 Shift -2]

268. Select the correct option related to the function of villi in the small intestine.
- (A) Helps in excretion
 (B) Secretion of minerals
 (C) Protection from acid
 (D) Increases absorptive surface area

[RRB Technician Grade-III 26/12/2024 Shift -3]

269. Which of the following actions are regulated by the medulla in the hind brain?
- (A) Riding a bicycle
 (B) Maintaining balance and posture
 (C) Salivation
 (D) Walking

[RRB Technician Grade-III 26/12/2024 Shift -3]

270. Which of the following statements is/are correct related to respiration?
- (i) In alveoli, exchange of gases takes place.

- (ii) The walls of alveoli contain an extensive network of blood vessel.
 (iii) In human beings, the respiratory pigments is haemoglobin.
 (A) Only (i) and (iii)
 (B) Only (i) and (ii)
 (C) (i), (ii) and (iii)
 (D) Only (i)
[RRB Technician Grade-III 26/12/2024 Shift -3]
271. After the process of fertilisation which part of the flower undergoes transformation to develop into a seed?
 (A) Stigma (B) Style
 (C) Ovary (D) Ovule
[RRB Technician Grade-III 26/12/2024 Shift -3]
272. Spinal cord is made up of which tissue?
 (A) Nervous tissue
 (B) Connective tissue
 (C) Apithelial tissue
 (D) Muscular tissue
[RRB Technician Grade-III 27/12/2024 Shift -2]
273. The male organ, the penis, helps in transfer of :
 (A) Eggs (B) Polar bodies
 (C) Sperms (D) Zygotes
[RRB Technician Grade-III 27/12/2024 Shift -2]
274. Accumulation of which substance in our muscles during sudden activity causes cramps?
 (A) Glucose (B) Lactic acid
 (C) Pyruvic acid (D) Sucrose
[RRB Technician Grade-III 27/12/2024 Shift -3]
275. Which organ of the human body pumps blood?
 (A) Liver (B) Pancreas
 (C) Heart (D) Stomach
[RRB Technician Grade-III 27/12/2024 Shift -3]
276. Which of the following processes involves the transfer of a source of energy (food) from outside the body of an organism to inside?
 (A) Translocation (B) Nutrition
 (C) Transportation (D) Metabolism
[RRB Technician Grade-III 27/12/2024 Shift -3]
277. Which of the following is INCORRECTLY matched related to the excretory system of humans?
 (A) Kidney - a pair
 (B) Urethra - a pair
 (C) Urinary bladder – unpaired
 (D) Ureter - a pair
[RRB Technician Grade-III 27/12/2024 Shift -3]
278. Which of the following statements is/are correct related to respiration?
 (i) Pyruvate is converted into ethanol and carbon dioxide in yeast during fermentation.
 (ii) The break.down of pyruvate using oxygen takes place in chloroplast.
 (iii) In muscle cells, pyruvate is converted into lactic acid.
 (A) Only (i) and (iii)
 (B) Only (i)
 (C) Only (i) and (ii)
 (D) (i), (ii) and (iii)
[RRB Technician Grade-III 28/12/2024 Shift -1]
279. How many eggs are produced every month by one of the ovaries?
 (A) Two (B) Four
 (C) Three (D) One
[RRB Technician Grade-III 28/12/2024 Shift -1]
280. Which of the following statements is correct related to male reproductive system?
 (A) Testes are located in the abdominal cavity.
 (B) Testes secrete testosterone hormone.
 (C) Formation of sperm takes place in seminal vessel.
 (D) Sperm formation requires higher temperature than the normal body temperature.
[RRB Technician Grade-III 28/12/2024 Shift -2]
281. Which of the following is the longest part of the alimentary canal?
 (A) Food pipe
 (B) Large intestine
 (C) Stomach
 (D) Small intestine
[RRB Technician Grade-III 28/12/2024 Shift -2]
282. Cranial nerves arising from the brain and spinal nerves arising from the spinal cord together constitute the :
 (A) peripheral nervous system
 (B) endocrine system
 (C) central nervous system
 (D) autonomic nervous system
[RRB Technician Grade-III 28/12/2024 Shift -3]
283. What is the filtration unit of the kidney?
 (A) Sperm
 (B) Neuron
 (C) Seminiferous tubule
 (D) Nephron
[RRB Technician Grade-III 28/12/2024 Shift -3]
284. The ovule develops and gets converted into which of the following after fertilisation?
 (A) Sepal (B) Fruit
 (C) Seed (D) Anther
[RRB Technician Grade-III 28/12/2024 Shift -3]
285. Nutrition is provided to the embryo from the mother's blood with the help of the :
 (A) scrotum (B) placenta
 (C) oviduct (D) ovary
[RRB Technician Grade-III 28/12/2024 Shift -3]
286. Protein digesting enzyme pepsin is secreted in the:
 (A) duodenum (B) ileum
 (C) stomach (D) mouth
[RRB Technician Grade-III 29/12/2024 Shift -1]
287. The upward and downward growth of a plant is due to which of the following tropisms?
 (A) Hydrotropism (B) Phototropism
 (C) Chemotropism (D) Geotropism
[RRB Technician Grade-III 29/12/2024 Shift -1]
288. Gastric glands present in the wall of the stomach do NOT release :
 (A) saliva
 (B) mucus
 (C) hydrochloric acid
 (D) pepsin
[RRB Technician Grade-III 29/12/2024 Shift -1]
289. Which of the following statements is/are correct related to transportation?
 (i) Arteries are the vessels which carry blood away from the heart to various organs of the body.
 (ii) The arteries have thin and elastic walls.
 (iii) Veins have valves that ensure that blood flows only in one direction.
 (A) (i), (ii) and (iii)
 (B) Only (i) and (iii)
 (C) Only (i) and (ii)
 (D) Only (i)
[RRB Technician Grade-III 29/12/2024 Shift -2]

290. Select the correct option related to the function regulated by ovaries.
- (A) Regulates metabolism
(B) Menstrual cycle
(C) Stimulates growth in all organs
(D) Stimulates pituitary glands

[RRB Technician Grade-III 29/12/2024 Shift -2]

291. Match the following-

(i) Ovary	(a) Fertilization
(ii) Oviduct	(b) Implantation
(iii) Uterus	(c) Nourishes the growing embryo
(iv) Placenta	(d) Makes the female gametes

- (A) (i)-(d), (ii)-(a), (iii)-(b), (iv)-(c)
(B) (i)-(d), (ii)-(c), (iii)-(b), (iv)-(a)
(C) (i)-(d), (ii)-(a), (iii)-(b), (iv)-(c)
(D) (i)-(d), (ii)-(b), (iii)-(a), (iv)-(c)

[RRB Technician Grade-III 29/12/2024 Shift -3]

292. Which of the following functions is NOT regulated by the medulla in the hind brain?

- (A) Blood pressure regulation
(B) Vomiting control
(C) Salivary regulation
(D) Regulation of hearing

[RRB Technician Grade-III 30/12/2024 Shift -1]

293. The sperms produced in the testes are transported via the _____.

- (A) seminal vesicle (B) urethra
(C) vas deferens (D) urinary bladder

[RRB Technician Grade-III 30/12/2024 Shift -2]

294. Which of the following substances is NOT selectively reabsorbed as the urine flows along the tubules?

- (A) Glucose (B) Salts
(C) Amino acids (D) Urea

[RRB Technician Grade-III 30/12/2024 Shift -2]

295. Which of the following forms a common passage for both the sperms and urine in males?

- (A) Urethra (B) Urinary bladder
(C) Scrotum (D) Vas deferens

[RRB Technician Grade-III 30/12/2024 Shift -3]

296. After fertilisation, which of the following develops a tough coat, is gradually converted into a seed and the zygote divides several times to form an embryo within it?

- (A) Gynoecium (B) Ovule
(C) Ovary (D) Pistil

[RRB Technician Grade-III 30/12/2024 Shift -3]

RRB GROUP D

297. What is the reason that the lungs have alveoli ?

- (A) To give mechanical support to the lungs
(B) To provide pumping action for the lungs
(C) To increase the surface area
(D) To increase the volume of the lungs

[RRB GROUP- D 07/10/2022 Shift-III]

298. In the human heart, the pulmonary vein is connected to the

- (A) Left auricle (B) Right auricle
(C) Left ventricle (D) Right ventricle

[RRB GROUP- D 06/10/2022 Shift-II]

299. An adult human urine consists of :

- (A) 85% water, 2.0% urea and 2.0% creatinine
(B) 95% water, 2.0% urea and 2.0% ammonia
(C) 95% water, 2.5% urea and 2.5% other waste products
(D) 85% water, 2.5% urea and 2.5% ammonia

[RRB GROUP- D 06/10/2022 Shift-III]

300. Which of the following converts acidic food into alkaline in the alimentary canal ?

- (A) Gastric juice (B) Intestinal juice
(C) Bile juice (D) Pancreatic juice

[RRB GROUP- D 29/09/2022 Shift-II]

301. How is urea removed from the blood by an artificial kidney ?

- (A) By filtration
(B) By osmosis
(C) By absorption
(D) By enzymatic action

[RRB GROUP- D 30/09/2022 Shift-I]

302. In which part of the human body are villi present ?

- (A) Liver (B) Small intestine
(C) Eye (D) Kidney

[RRB GROUP- D 28/09/2022 Shift-III]

303. As a result of tooth decay ... happens.

- (A) Soft enamel (B) Bleeding gums
(C) Bad breath (D) Broken tooth

[RRB GROUP-D 12-09-2022 Shift-II]

304. Which of the following is the common product produced during aerobic and anaerobic respiration initially in the first step ?

- (A) Ethanol (B) Pyruvate
(C) Lactic acid (D) Water

[RRB GROUP-D 23-08-2022 Shift-II]

305. Some features of the circulatory systems in humans are mentioned below. Select the INCORRECT option.

- (A) Capillaries join to form veins
(B) Lymph is also called tissue fluid
(C) Platelets help in clotting of blood
(D) Hypertension is caused by constriction of veins

[RRB GROUP-D 22-08-2022 Shift-III]

306. The DOES NOT function as an excretory organ in humans.

- (A) Lungs
(B) Small intestine
(C) Skin
(D) Large intestine

[RRB GROUP-D 18-08-2022 Shift-III]

307. Helps in emulsification of fat :

- (A) HCL
(B) Vitamin-K Trypsin
(C) Pepsin
(D) Bile salts

[RRB GROUP-D 18-08-2022 Shift-III]

308. Which of the following substances are selectively reabsorbed from the initial filtrate by the tubular portion of the nephron in human kidney ?

- (A) Salts, glucose, fats and water
(B) Glucose, water, amino acids and proteins
(C) Glucose, water, salts and amino acids
(D) Water, glucose, salts and proteins

[RRB GROUP-D 17-08-2022 Shift-III]

RRB NTPC

309. The blood pressure recorded when the heart relaxes is called

- (A) systolic (B) pulse
(C) venous (D) diastolic

[RRB NTPC Graduate Level II, 13/10/2025, Shift-II]

310. Which of the following is the correct terminology for the gap between two neurons where they communicate ?

- (A) Axonal gap (B) Node gap
(C) Synaptic cleft (D) Dendritic cleft

[RRB NTPC Under Graduate CBT I, 01/09/2025, Shift-I]

311. Which of the following minerals is essential for oxygen transport in the blood ?

- (A) Zinc (B) Magnesium
(C) Iron (D) Calcium

[RRB NTPC Under Graduate CBT I, 02/09/2025, Shift-I]

312. What is the name of the glycoprotein produced in the liver that plays a crucial role in blood clotting ?
 (A) Fibrinogen (B) Mucins
 (C) Selectin (D) Cadherin
[RRB NTPC Under Graduate CBT I, 29/08/2025, Shift-III]
313. How many facial bones are there in the face skeleton, each with its own anatomical landmarks and stage of development ?
 (A) 14 (B) 21
 (C) 18 (D) 11
[RRB NTPC Under Graduate CBT I, 28/08/2025, Shift-II]
314. Which blood vessels carry oxygenated blood from the heart to all parts of the body in humans ?
 (A) Vein (B) Venous
 (C) Capillary (D) Artery
[RRB NTPC Under Graduate CBT I, 18/08/2025, Shift-II]
315. The synapse's effectiveness in transmitting nerve impulses is most Importantly determined by which of the following.
 (A) The concentration of neurotransmitters and number of receptors in the postsynaptic membrane
 (B) Presence of myelin sheath with dermatomyositis
 (C) Length of denedrtic arborisation
 (D) Diameter of axon
[RRB NTPC Graduate Level, 10/06/2025, Shift-1]
316. Afferent neurons in the peripheral nervous system are responsible for which of the following ?
 (A) Transmitting sensory information from receptors to the central nervous system
 (B) facilitating secretion of neurotransmitters exclusive
 (C) Integrates reflex responses only at the spinal cord level
 (D) conveying motor commands from the brain to the muscles
[RRB NTPC Graduate Level, 16/06/2025, Shift-2]
317. In renal physiology, which segment of the nephron is most critical for generating the osmotic gradient that concentrates urine ?
 (A) Distal convoluted tubule
 (B) Proximal convoluted tubule
 (C) Collecting convoluted
 (D) Loop of Henle
[RRB NTPC Graduate Level, 18/06/2025, Shift-1]
318. Which type of muscle fibres are primarily found in the gastrointestinal tract, and what a key characteristic of their contraction?
 (A) Skeletal muscle fibres, rapid and voluntary contraction
 (B) Striated muscle fibers, intermittent and forceful contraction
 (C) Cardiac muscle fibres, rhythmic and involuntary contraction
 (D) Smooth muscle fibres, slow and sustained involuntary contraction
[RRB NTPC Graduate Level, 21/06/2025, Shift-1]
319. The efficiency of gas exchange in the alveoli is primarily attributed to which structural characteristic ?
 (A) Large surface area combined with a thin alveolar-capillary barrier
 (B) A robust elastic network to maintain alveolar shape
 (C) Abundance of mucus-secreting cells
 (D) Thick epithelial lining to protect from pathogens
[RRB NTPC Graduate Level, 23/06/2025, Shift-3]
- RRB ALP**
320. What is the name of the point at which the chromatids are attached in a chromosome?
 (A) Centrosome (B) Centromere
 (C) Nucleosome (D) Gene
[RRB ALP CBT1, 13/08/2018, Shift 3]
321. What are the receptors for detecting taste called?
 (A) Sensory receptors
 (B) Chemical receptors
 (C) Olfactory receptors
 (D) Gustatory receptors
[RRB ALP CBT1, 09/08/2018, Shift 3]
322. forms a common passage for both urine and sperms in human males.
 (A) Oviduct (B) Ureter
 (C) Urethra (D) Vas deferens
[RRB ALP CBT1, 09/08/2018, Shift 3]
323. Tooth decay starts when the pH of the mouth is lower than:
 (A) 5.7 (B) 5.5
 (C) 5.6 (D) 5.4
[RRB ALP CBT1, 09/08/2018, Shift 3]
324. Which of the following is the main thinking part of the human brain ?
 (A) Hind-brain (B) Cerebellum
 (C) Mid-brain (D) Fore-brain
[RRB ALP CBT1, 10/08/2018, Shift 2]
325. is not an endocrine gland in humans.
 (A) The pituitary gland
 (B) The pineal gland
 (C) The adrenal gland
 (D) The liver
[RRB ALP CBT1, 10/08/2018, Shift 3]
326. The embryo gets nutrition from the mother's blood with the help of a special tissue called :
 (A) Uterus (B) Placenta
 (C) Cervix (D) Fallopian tube
[RRB ALP CBT1, 14/08/2018, Shift 1]
327. The human body works within the pH range of:
 (A) 6.0 to 7.0 (B) 6.0 to 6.8
 (C) 7.0 to 8.6 (D) 7.0 to 7.8
[RRB ALP CBT1, 20/08/2018, Shift 1]
328. The has abundant white fibres.
 (A) cartilage (B) ligament
 (C) tendon (D) bone
[RRB ALP CBT1, 20/08/2018, Shift 1]
329., found in blood, is responsible for oxygen transportation.
 (A) WBC (B) Plasma
 (C) Platelets (D) RBC
[RRB ALP CBT1, 21/08/2018, Shift 2]
330. Complete digestion of carbohydrates, proteins and fats takes place in the:
 (A) Oesophagus (B) Stomach
 (C) Small intestine (D) Large intestine
[RRB ALP CBT1, 29/08/2018, Shift 1]
331. Which of the following enzymes is secreted by the pancreas?
 (A) Maltase (B) Trypsin
 (C) Sucrase (D) Lactase
[RRB ALP CBT1, 29/08/2018, Shift 3]
332. In human beings, the respiratory pigment is:
 (A) Chlorophyll (B) Melanin
 (C) Rhodopsin (D) Haemoglobin
[RRB ALP CBT1, 30/08/2018, Shift 1]
333. Which part of the brain regulates breathing?
 (A) Cerebellum (B) Medulla
 (C) Fore-brain (D) Mid-brain
[RRB ALP CBT1, 31/08/2018, Shift 1]
334. When large quantities of are consumed, it tends to slow metabolic processes and to depress the central nervous system.
 (A) Butanol (B) Propanol
 (C) Methanol (D) Ethanol
[RRB ALP CBT1, 31/08/2018, Shift 2]
335. What is the process of production of ovum in the females called?
 (A) Adolescence (B) Menarche
 (C) Oogenesis (D) Menstruation
[RRB ALP CBT1, 31/08/2018, Shift 2]

336. A tendon is made up of:
 (A) inelastic connective tissue fibres
 (B) inelastic and elastic connective tissue fibres
 (C) only collagen fibres
 (D) elastic connective tissue fibres
[RRB ALP CBT1, 31/08/2018, Shift 2]
337. What marks the onset of puberty in females?
 (A) Menopause (B) Adolescence
 (C) Menstruation (D) Menarche
[RRB ALP CBT1, 31/08/2018, Shift 3]

Hormones and Enzymes

RRB Technician

338. What is the function of growth hormones?
 (A) It regulates blood sugar level.
 (B) It stimulates development of female sex organs.
 (C) It stimulates growth in all organs.
 (D) It regulates metabolism for body growth.
[RRB Technician Grade-III 20/12/2024 Shift -2]
339. The splitting of the two cells during division can take place in any plane. Such patterns of fission have been observed in which protozoan?
 (A) Leishmania (B) Hydra
 (C) Amoeba (D) Plasmodium
[RRB Technician Grade-III 20/12/2024 Shift -2]
340. When the level of growth hormone is low, which releases growth hormone releasing factor and stimulates the pituitary gland to release growth hormone?
 (A) Hypothalamus (B) Thyroid gland
 (C) Pancreas (D) Adrenal gland
[RRB Technician Grade-III 20/12/2024 Shift -2]
341. In the digestive system, which of the following releases hydrochloric acid, a protein digesting enzyme called pepsin, and mucus?
 (A) Pancreas (B) Gall bladder
 (C) Gastric glands (D) Salivary glands
[RRB Technician Grade-III 23/12/2024 Shift -1]
342. All of the following are signals that sexual maturation is taking place. EXCEPT:
 (A) different patterns of hair growth
 (B) girls begin to menstruate at around this time
 (C) increased size and shape of breast or penis
 (D) blue colour of eyes
[RRB Technician Grade-III 23/12/2024 Shift -1]
343. Which of the following endocrine glands secretes growth hormone?
 (A) Adrenal (B) Pancreas
 (C) Thyroid (D) Pituitary
[RRB Technician Grade-III 24/12/2024 Shift -1]
344. Select the INCORRECT pair related to digestive glands and their enzymes.
 (A) Pancreas - pancreatic juice
 (B) Liver-bile juice
 (C) Salivary gland - trypsin
 (D) Gastric gland - pepsin
[RRB Technician Grade-III 24/12/2024 Shift -1]
345. Which of the following is INCORRECT about plant hormones?
 (A) All plant hormones except cytokinins promote cell division.
 (B) Different plant hormones help to coordinate responses to the environment.
 (C) All plant hormones except abscisic acid help in promoting growth.
 (D) Different plant hormones help to coordinate growth and development.
[RRB Technician Grade-III 24/12/2024 Shift -3]
346. Select the correct option related to the function of auxin in plants.
 (A) Induce flowering
 (B) Make plants insect resistant
 (C) Increases stem width
 (D) Helps the cells to grow longer
[RRB Technician Grade-III 26/12/2024 Shift -2]
347. Which hormone regulates carbohydrate, protein and fat metabolism in the body and iodine is essential for the synthesis of it?
 (A) Adrenaline hormone
 (B) Insulin hormone
 (C) Thyroxin hormone
 (D) Testosterone hormone
[RRB Technician Grade-III 26/12/2024 Shift -2]
348. The body of a squirrel has to prepare for either fighting or running away by using which of the following hormones?
 (A) Adrenaline (B) Oestrogen
 (C) Testosterone (D) Thyroxin
[RRB Technician Grade-III 26/12/2024 Shift -2]
349. which of the following is/ are correct related to Adrenalin hormone?
 (i) Heart beats faster
 (ii) Breathing rate increases
 (iii) Decreases blood pressure
 (A) Only (i) and (iii)
 (B) Only (i) and (ii)
 (C) Only (ii) and (iii)
 (D) (i), (ii) and (iii)
[RRB Technician Grade-III 27/12/2024 Shift -1]
350. How does a plant move its leaves in response to touch?
 (A) By changing the amount of nucleic acid in them
 (B) By changing the amount of lipid in them
 (C) By changing the amount of protein in them
 (D) By changing the amount of water in them
[RRB Technician Grade-III 27/12/2024 Shift -1]
351. If your nose is blocked, the olfactory receptors are NOT able to detect:
 (A) Taste (B) Walking
 (C) Smell (D) Hearing
[RRB Technician Grade-III 27/12/2024 Shift -1]
352. Iodine is necessary for which gland to make the thyroxine hormone?
 (A) Pineal gland (B) Thyroid gland
 (C) Thymus (D) Pancreas
[RRB Technician Grade-III 28/12/2024 Shift -2]
353. Match the hormones with their respective functions.

Hormones	Functions
1. Thyroxin	a. Control body's growth and development
2. Growth hormone	b. Male sex organ development
3. Testosterone	c. Controls the level of blood sugar in the body
4. Insulin	d. Controls the body's metabolism of fat, protein and carbohydrates.

- (A) 1 - d, 2 - a, 3 - b, 4 - c
 (B) 1 - b, 2 - a, 3 - d, 4 - c
 (C) 1 - d, 2 - b, 3 - c, 4 - a
 (D) 1 - a, 2 - c, 3 - b, 4 - d

[RRB Technician Grade-III 28/12/2024 Shift -3]

354. Which of the following is NOT a sign of sexual maturity in girls?
 (A) Cracking of voice
 (B) Oily skin
 (C) Menstruation
 (D) Increase in breast size
[RRB Technician Grade-III 29/12/2024 Shift -1]
355. Complex substances are broken down into simpler ones with the use of bio-catalysts called:
 (A) Enzymes (B) Oil
 (C) Fat (D) Carbohydrates
[RRB Technician Grade-III 29/12/2024 Shift -2]
356. What is the function of the growth hormone secreted by the pituitary gland?
 (A) It regulates the blood sugar level.
 (B) It regulates the menstrual cycle.
 (C) It stimulates growth in all organs.
 (D) It regulates metabolism for body growth.
[RRB Technician Grade-III 29/12/2024 Shift -3]
357. Which of the following endocrine glands secretes growth hormones?
 (A) Adrenal gland
 (B) Testes
 (C) Thyroid gland
 (D) Pituitary gland
[RRB Technician Grade-III 29/12/2024 Shift -3]
358. The tube which grows out of pollen grain to reach the ovary, travels through the:
 (A) filament (B) anther
 (C) style (D) petal
[RRB Technician Grade-III 30/12/2024 Shift -1]
359. Which of the following is/are correct related to Adrenalin hormone?
 (i) Heart beats faster
 (ii) Breathing rate increases
 (iii) Decreases blood pressure
 (A) (i), (ii) and (iii)
 (B) Only (i) and (iii)
 (C) Only (ii) and (iii)
 (D) Only (i) and (ii)
[RRB Technician Grade-III 30/12/2024 Shift -1]
360. Select the INCORRECT pair related to digestive glands and their enzymes.
 (A) Salivary gland - trypsin
 (B) Liver - bile juice
 (C) Pancreas - pancreatic juice
 (D) Gastric gland - pepsin
[RRB Technician Grade-III 30/12/2024 Shift -2]
361. Which of the following is/are called biological catalysts?
 (A) Enzymes
 (B) Digestive juices
 (C) Hydrochloric acid
 (D) Mucus
[RRB Technician Grade-III 30/12/2024 Shift -3]
362. How do hormonal contraceptives prevent pregnancy?
 (A) By blocking the fallopian tubes
 (B) By creating a physical barrier
 (C) By changing the hormonal balance to prevent egg release
 (D) By increasing sperm production.
[RRB Technician Grade-III 17/12/2024 Shift -1]
363. In Amoeba, the splitting during fission can occur _____.
 (A) Only along a fixed plane
 (B) In a definite orientation related to a structure
 (C) Only in one specific plane
 (D) In any plane
[RRB Technician Grade-III 18/12/2024 Shift -2]
364. Which of the following modes of asexual reproduction is used by unicellular organisms exclusively?
 (A) Fragmentation (B) Binary fission
 (C) Sporulation (D) Regeneration
[RRB Technician Grade-III 18/12/2024 Shift -2]
365. Which among the following organisms reproduce by regeneration method?
 (A) Bryophyllum (B) Rhizopus
 (C) Yeast (D) Planaria
[RRB Technician Grade-III 18/12/2024 Shift -2]
366. Why is asexual reproduction advantageous for single-celled organisms?
 (A) It requires a mate.
 (B) It allows rapid reproduction in favourable conditions.
 (C) It prevents overcrowding.
 (D) It increases genetic variability.
[RRB Technician Grade-III 18/12/2024 Shift -2]
367. Which of the following is an example of regeneration in plants?
 (A) Binary fission in bacteria
 (B) Budding in hydra
 (C) Reproduction in humans
 (D) Growth of a new plant from a cutting
[RRB Technician Grade-III 18/12/2024 Shift -2]
368. Which of the following is NOT true about fragmentation?
 (A) Each fragment can grow into a complete individual.
 (B) It involves breaking of the organism into parts.
 (C) It is a form of sexual reproduction.
 (D) It requires the organism to be multicellular.
[RRB Technician Grade-III 18/12/2024 Shift -3]
369. Nita is pregnant, but loves to eat junk food. Her doctor advised her to eat salads and fruits. The reason for this advice is:
 (A) The nutrients in the mother's blood nourishes the growing baby
 (B) Junk food is costly in comparison to salad and fruits
 (C) The mother's blood has no role in the growth of a baby
 (D) Junk food is tasty, but leads to obesity
[RRB Technician Grade-III 18/12/2024 Shift -3]

RRB GROUP D

370. Which hormone helps the body to adjust to stress when one is very angry, embarrassed or worried?
 (A) Thyroxine (B) Adrenaline
 (C) Testosterone (D) Estrogen
[RRB GROUP-D 28/09/2022 Shift-III]
371. _____ reduce (s) the size of large fat globules, allowing enzymes to work more effectively.
 (A) Bile salts
 (B) Succus entericus
 (C) Hydrochloric acid
 (D) Pancreatic juice
[RRB GROUP-D 25-08-2022 Shift-I]
372. Which of the following is a protein-splitting enzyme?
 (A) Lipase (B) Amylase
 (C) Ptyalin (D) Pepsin
[RRB GROUP-D 23-08-2022 Shift-I]
373. Which of the following statements is FALSE?
 (A) Oxygen is not necessary for the fermentation process
 (B) Pyruvic acid is produced in the first stage of respiration
 (C) In the first stage of respiration, breakdown of glucose takes place.
 (D) In the mitochondria, acetic acid is broken down utilising oxygen.
[RRB GROUP-D 17-08-2022 Shift-III]

RRB NTPC

374. Diabetes mellitus is caused by the inadequate secretion of which hormone ?

- (A) Estrogen (B) Insulin
(C) Adrenaline (D) Thyroxine

[RRB NTPC Under Graduate CBT I, 29/08/2025, Shift-III]

375. Which enzyme, secreted by the chief cells of the stomach, is crucial for initiating the digestion of proteins ?

- (A) Pepsinogen (converted to pepsin)
(B) Gastric lipase
(C) Trypsinogen (converted to trypsin)
(D) Amylase

[RRB NTPC Graduate Level, 17/06/2025, Shift-2]

376. Among the islet cells of the pancreas, which cell type secretes the hormone that primarily raises blood glucose levels ?

- (A) Delta cells (B) Alpha cells
(C) PP cells (D) Beta cells

[RRB NTPC Graduate Level, 17/06/2025, Shift-3]

377. According to the induced-fit model of enzyme action, substrate binding _____.

- (A) Inhibits the enzyme by permanently altering its structure
(B) Lead to immediately release of the substrate without transformation-
(C) Occurs without altering the enzyme's active site
(D) Induces a conformational change that optimizes the active site for catalysis

[RRB NTPC Graduate Level, 10/06/2025, Shift-3]

378. The Michaelis-Menten constant (K_m) of an enzyme is defined as :

- (A) The maximum reaction rate (V_{max})
(B) The inhibitor concentration that reduces enzyme activity by 50%
(C) The enzyme concentration required for half maximal catalysis
(D) The Substrate concentration at which the reaction rate is half of V_{max}

[RRB NTPC Graduate Level, 12/06/2025, Shift-1]

379. Enzyme cofactors such as NAD^+ function mainly by :

- (A) As a permanent structural component of the enzyme
(B) By stabilizing the transition state and lowering the activation energy
(C) By increasing the concentration of the enzyme

(D) providing a binding sites for competitive inhibitors

[RRB NTPC Graduate Level, 14/06/2025, Shift-2]

380. Which of the following is termed as a hunger hormone as it stimulates appetite, increases food intake and promotes fat storage ?

- (A) Ghrelin (B) Resistin
(C) Insulin (D) Leptin

[RRB NTPC CBT-2 12-06-2022 Shift-II]

381. Which of the following enzymes is used in the stabilisation of rice bran oil ?

- (A) Catalase (B) Cellulase
(C) Lipase (D) Hydrolase

[RRB NTPC CBT-2 09-05-2022 Shift-I]

RRB ALP

382. Which of the following is essential for the synthesis of thyroxine?

- (A) Potassium (B) Calcium
(C) Iodine (D) Sodium

[RRB ALP CBT1, 09/08/2018, Shift 2]

383. Which hormone is released from the testes?

- (A) Insulin (B) Testosterone
(C) Thyroxin (D) Estrogen

[RRB ALP CBT1, 14/08/2018, Shift 3]

384. Growth hormones function:

- (A) sometimes as growth promoters and sometimes as growth inhibitors
(B) always as growth inhibitors
(C) rarely as growth promoters
(D) always as growth promoters

[RRB ALP CBT1, 17/08/2018, Shift 1]

385. Which of the following is not a hormone found in animals?

- (A) Insulin (B) Auxins
(C) Thyroxin (D) Adrenaline

[RRB ALP CBT1, 21/08/2018, Shift 3]

386. Which element is mostly provided by grains, nuts and chocolates in our diet?

- (A) Iodine (B) Zinc
(C) Chloride (D) Copper

[RRB ALP CBT2, 23/01/2019, Elech. Shift 2]

387. is the fibre remaining after the extraction of the sugar-bearing juice from sugarcane.

- (A) Bagasse (B) Compost
(C) Cullet (D) Forage

[RRB ALP CBT2, 21/01/2019, Shift 2]

388. Which vitamin is needed for proper clotting of blood?

- (A) Vitamin D (B) Vitamin E
(C) Vitamin A (D) Vitamin K

[RRB ALP CBT1, 21/08/2018, Shift 2]

Nutrition and their Efficiency Diseases**RRB Technician**

389. What is the simple form of protein?

- (A) Glucose (B) Fatty acid
(C) Glycerol (D) Amino acid

[RRB Technician Grade-III 30/12/2024 Shift -2]

RRB GROUP D

390. Which of the following is a symptom of Beriberi ?

- (A) Weak teeth and bleeding gums
(B) Poor skin health and swollen belly
(C) Weak muscles and low energy
(D) Poor vision or partial blindness

[RRB GROUP-D 28-09-2022 Shift-I]

391. Which of the following foods is high in iron ?

- (A) Rice (B) Butter
(C) Jaggery (D) Milk

[RRB GROUP-D 22-08-2022 Shift-II]

392. Geomorphology the branch of Physical Geography is devoted to the study of which of the following fields ?

- (A) Study of water
(B) Study of landforms
(C) Study of atmosphere
(D) Study of soil

[RRB GROUP-D 22-08-2022 Shift-II]

393. Which of the following vitamins helps in the normal process of blood clotting in humans?

- (A) vitamin K (B) vitamin D
(C) vitamin A (D) vitamin C

[RRB 03-10-2018 Shift 2]

394. Which vitamin increases the absorption of calcium in the body?

- (A) B (B) B_6
(C) D (D) A

[RRB 26-11-2018 Shift-I]

RRB NTPC

395. Which mineral helps in the formation of insulin granules, digestion, metabolism and functioning of the male prostate ?

- (A) Zinc (B) Iron
(C) Phosphorus (D) Nickel

[RRB NTPC Under Graduate CBT I, 04/09/2025, Shift-I]

396. What is the main function of carbohydrates in the body ?
 (A) It is crucial for growth.
 (B) It regulates hormones.
 (C) It provides energy.
 (D) It insulates to the body.

[RRB NTPC Under Graduate CBT I, 04/09/2025, Shift-I]

397. Proteins are mainly responsible for which of the following ?
 (A) Providing instant energy
 (B) Tissue growth and repair
 (C) Improving digestion
 (D) Increasing endurance

[RRB NTPC Under Graduate CBT I, 28/08/2025, Shift-I]

398. Which of the following elements is NOT generally found in proteins ?
 (A) Phosphorus (B) Hydrogen
 (C) Carbon (D) Nitrogen

[RRB NTPC Under Graduate CBT I, 21/08/2025, Shift-I]

399. Consider the following vitamin.
 1. Vitamin D 2. Vitamin B12
 3. Vitamin K 4. Vitamin C
 Which of these vitamins are water-soluble ?
 (A) Only 1 and 2 (B) Only 2 and 4
 (C) Only 2 and 3 (D) Only 1, 2, and 3

[RRB NTPC Under Graduate CBT I, 21/08/2025, Shift-II]

400. Which of the following foods is a source of animal protein ?
 (A) Pulses (B) Beans
 (C) Eggs (D) Pomegranates

[RRB NTPC Under Graduate CBT I, 21/08/2025, Shift-II]

401. Which of the following foods is a rich source of dietary fibre for human beings ?
 (A) Oats (B) Fish
 (C) Cheese (D) Chicken

[RRB NTPC Under Graduate CBT I, 20/08/2025, Shift-II]

402. What happens to excess carbohydrates in the body ?
 (A) They are turn into proteins.
 (B) They are converted into amino acids and stored.
 (C) They are converted into fat and stored.
 (D) They are immediately excreted.

[RRB NTPC Under Graduate CBT I, 19/08/2025, Shift-II]

403. Consider the following vitamins.
 1. Vitamin A 2. Vitamin B6
 3. Vitamin C 4. Vitamin D
 Which of them is/are fat-soluble ?
 (A) Only 1 and 2 (B) Only 1 and 4
 (C) Only 1, 2 and 3 (D) Only 2 and 3

[RRB NTPC Under Graduate CBT I, 18/08/2025, Shift-I]

404. Which of the following correctly represents the function of dietary fibre in the human diet ?
 (A) Provides energy
 (B) Aids digestion
 (C) Increases cholesterol
 (D) Helps build muscle

[RRB NTPC Under Graduate CBT I, 14/08/2025, Shift-II]

405. In holozoic nutrition, the first essential step for complex organisms is ____ :
 (A) Absorption (B) Ingestion
 (C) Assimilation (D) Egestion

[RRB NTPC Graduate Level, 05/06/2025, Shift-2]

406. Which vitamin deficiency is most likely in a person with a blocked bile duct ?
 (A) Vitamin B12 (B) Vitamin A
 (C) Vitamin B1 (D) Vitamin C

[RRB NTPC Graduate Level, 12/06/2025, Shift-3]

407. What is the primary reason that roughage is included in a balanced human diet ?
 (A) It increases sugar absorption.
 (B) It helps with fat storage.
 (C) It aids digestion and prevents constipation.
 (D) It builds muscle.

[RRB NTPC Graduate Level, 13/06/2025, Shift-2]

408. Deficiency of which vitamin in the diet is most commonly linked to poor vision in dim light (night blindness) ?
 (A) Vitamin C (B) Vitamin B12
 (C) Vitamin A (D) Vitamin D

[RRB NTPC Graduate Level, 17/06/2025, Shift-1]

409. Deficiency of which nutrient is most directly linked to reduced oxygen-carrying capacity of blood ?
 (A) Iodine (B) Iron
 (C) Vitamin A (D) Calcium

[RRB NTPC Graduate Level, 19/06/2025, Shift-2]

410. In lipid biochemistry, why do unsaturated fatty acids tend to be liquid at room temperature ?

- (A) They form ionic bonds that prevent solidification.
 (B) They have lower molecular weights than saturated fatty acids.
 (C) The cis-double bonds introduce kinks, reducing van der Waals interactions.
 (D) Their double bonds increase molecular symmetry, leading to less crystal packing.

[RRB NTPC Graduate Level, 19/06/2025, Shift-3]

411. Which statement is true regarding a balanced diet ?

- (A) It consists minly of carbohydrates for energy.
 (B) It includes only fruits and vegetables.
 (C) It contains all nutrients in appropriate proportions.
 (D) It must exclude fats to prevent diseases.

[RRB NTPC Graduate Level, 24/06/2025, Shift-1]

412. Cyanocobalamin is a man-made form of vitamin.

- (A) B6 (B) B1
 (C) B12 (D) B2

[RRB NTPC CBT-2 16-06-2022 Shift-II]

413. Which of the following is a monosaccharide sugar?
 (A) Galactose (B) Glucose
 (C) Fructose (D) Maltose

[RRB (NTPC) CBT-2 17.01.2017 Shift-I]

RRB ALP

414. Which one of the following is the largest source of natural energy to humans?
 (A) Plants (B) Earth
 (C) Animals (D) Sun

[RRB ALP CBT1, 17/08/2018, Shift 3]

RRB JE

415. Scurvy is caused due to the deficiency of
 (A) vitamin A (B) vitamin C
 (C) vitamin B₁ (D) vitamin B₂

[RRB JE CBT - 1 Exam 26/06/2019 S- 15.30 -17.00]

416. Which disease is treated by insulin?
 (A) Anemia (B) Tuberculosis
 (C) Cancer (D) Diabetes

[RRB JE CBT - 1 Exam 02/06/2019 S- 16.00 -17.30]

417. What causes beriberi?
 (A) Excess of vitamin B₁
 (B) Excess of vitamin B
 (C) Deficiency of vitamin B
 (D) Deficiency of vitamin B₁

[RRB JE CBT - 1 Exam 23/05/2019
 S- 16.00 -17.30]

418. Which of the following hormones regulates the amount of sugar in human blood?
 (A) Estrogen (B) Testosterone
 (C) Insulin (D) Parathormone

[RRB JE CBT - 1 Exam 24/05/2019
 S- 16.00 -17.30]

419. Niacin is a form of.....
 (A) vitamin B₃ (B) vitamin B₁
 (C) vitamin B₂ (D) vitamin B₄

[RRB JE CBT - 1 Exam 27/05/2019
 S- 12.30 -14.00]

420. Which of the following nutrients is present in abundance in bananas?
 (A) Potassium (B) Protein
 (C) Niacin (D) Riboflavin

[RRB JE CBT - 1 Exam 28/06/2019
 S- 15.30 -17.00]

421. Which of the following is the most abundant source of Iron ?
 (A) Green vegetables
 (B) Milk
 (C) Eggs
 (D) Beans

[RRB JE CBT - 1 Exam 28/06/2019
 S- 09.00 -10.30]

422. Pellagra is caused due to deficiency of.....
 (A) Niacin (B) Riboflavin
 (C) Ascorbic acid (D) Folic acid

[RRB JE CBT - 1 Exam 28/05/2019
 S- 09.00 -10.30]

423. Match List-I (Diseases) with List-II (Types of diseases) and choose the correct option :

List-I	List-II
a. Hemophilia	1. Diseases caused by vitamin K deficiency
b. Diabetes	2. Genetic Diseases
c. Rickets	3. Hormonal Imbalance
d. Ringworm	4. Cock Diseases
	a b c d
(A) 2 3 4 1	
(B) 2 3 1 4	
(C) 3 2 1 4	
(D) 3 2 4 1	

[RRB JE Exam 30.08.2015 Shift 3]

Microbes and Their Diseases

RRB Technician

424. Select the INCORRECT statement.
 (A) Many diseases can be sexually transmitted.
 (B) Warts are a protozoan disease.
 (C) AIDS is caused by the HIV virus.
 (D) Gonorrhoea is a bacterial disease.

[RRB Technician Grade-III 26/12/2024
 Shift -3]

425. Which of the following are bacterial infections that occur due to sexual contact?

- a. Gonorrhoea
 b. AIDS
 c. Syphilis
 (A) Both a and b (B) a, b and c
 (C) Both a and c (D) Both b and c

[RRB Technician Grade-III 28/12/2024
 Shift -1]

426. Which of the following diseases is/are a viral infection(s) transmitted through sexual contact?

- a. HIV b. Warts
 c. Gonorrhoea d. Syphilis
 (A) Only c (B) Only c and d
 (C) Only a (D) Only a and b

[RRB Technician Grade-III 30/12/2024
 Shift -2]

427. What is the thread-like structure in Rhizopus?

- (A) Sporangia (B) Hyphae
 (C) Blobs (D) Spores

[RRB Technician Grade-III 16/12/2024
 Shift -3]

428. Which of the following is true regarding the bud development process in Hydra?

- (A) Splitting of cytoplasm
 (B) Splitting of nucleus
 (C) Cell divisions at one site
 (D) Formation of spore

[RRB Technician Grade-III 16/12/2024
 Shift -3]

RPF SI

429. Intestinal hookworm disease in humans is caused by which species of Aschelminthes ?

- (A) Ancylostoma duodenale
 (B) Trichuris trichiura
 (C) Strongyloides stercoralis
 (D) Ascaris humbicoides

[RPF SI 12/12/2024 Shift 2]

RRB NTPC

430. Which of the following is the most abundant protein in the biosphere ?
 (A) GLUT-4 (B) Collagen
 (C) RuBisCO (D) Myosin

[RRB NTPC Under Graduate CBT I,
 20/08/2025, Shift-I]

431. Which of the following diseases is caused by a virus ?

- (A) Measles (B) Malaria
 (C) Cholera (D) Tuberculosis

[RRB NTPC Under Graduate CBT I,
 20/08/2025, Shift-III]

432. Which of the following diseases is caused by protozoa ?

- (A) Malaria (B) Polio
 (C) Typhoid (D) Chickenpox

[RRB NTPC Under Graduate CBT I,
 07/08/2025, Shift-I]

433. Which Indian institute's scientists unlocked the mystery of a cellular 'messenger' that may help treat Alzheimer's and diabetes ?

- (A) IIT Delhi
 (B) AIIMS New Delhi
 (C) IIT Kharagpur
 (D) IISc Bengaluru

[RRB NTPC Under Graduate CBT I,
 14/08/2025, Shift-I]

434. In which chronic disease do the inner walls of the lungs' air sacs, called alveoli, become damaged, causing them to eventually burst ?

- (A) Emphysema (B) Dyspepsia
 (C) Cystic fibrosis (D) Arrhythmias

[RRB NTPC Under Graduate CBT I,
 08/08/2025, Shift-III]

435. A new mutation allows Plasmodium falciparum to exit the liver without maturing into merozoites. What would be the immediate consequence ?

- (A) Absence of RBC rupture and reduced clinical symptoms
 (B) Increased severity of disease
 (C) Immediate immune response and clearance
 (D) Direct infection of alveoli

[RRB NTPC Graduate Level,
 09/06/2025, Shift-I]

436. Which unique property of Plasmodium makes malaria a cyclical disease with periodic fever ?

- (A) Continual entry via mosquito bites
 (B) Constant reinfection from environment

- (C) Infection of liver cells only
(D) RBC rupture and toxin release every few days

[RRB NTPC Graduate Level,
11/06/2025, Shift-3]

437. Which bacterial disease is specifically confirmed by a serological method?
(A) Typhoid (B) Pneumonia
(C) Diphtheria (D) Plague

[RRB NTPC Graduate Level,
12/06/2025, Shift-2]

438. Why is the common cold rarely considered a lower respiratory tract infection?
(A) It requires a vector for lower tract transmission.
(B) Rhinovirus only infects the upper respiratory tract.
(C) Antibodies prevent it from entering the lungs.
(D) The virus is destroyed in the alveoli.

[RRB NTPC Graduate Level,
21/06/2025, Shift-3]

439. Hepatitis A is an inflammation of the that can cause mild to severe illness.

- (A) Liver (B) Heart
(C) Brain (D) Kidney

[RRB NTPC CBT-2 09-05-2022 Shift-III]

440. What is Epidemiology?
(A) Study of the incidence and spread of disease in large populations.
(B) Study of malnutrition in large populations.
(C) Study of health care provisions for large populations.
(D) Study of diagnosis and symptoms of cholera.

[RRB (NTPC) 05.04.2016 Shift-II]

RRB JE

441. ELISA Which of the following is it?
(A) The virus that causes IPC
(B) The centre where IPC was first detected
(C) A test to detect IPC
(D) The first person who died of IPC

[RRB JE CBT - 1 Exam 26/05/ 2019
S- 15.30 -17.00]

442. Which disease is caused by dog bite?
(A) Influenza (B) Scurvy
(C) Rabies (D) Cancer

[RRB JE CBT - 1 Exam 23/05/2019
S- 16.00 -17.30]

443. Which disease is prevented with the help of Salk vaccine?

- (A) Chickenpox (B) Measles
(C) Chickenpox (D) Polio

[RRB JE CBT - 1 Exam 25/05/2019
S- 16.00 -17.30]

444. What is hydrophobia caused by?
(A) Varroa virus (B) Rabies virus
(C) Acute viral (D) Bacteria

[RRB JE CBT - 1 Exam 26/05/ 2019
S- 9.00 -10.30]

445. Which vaccine is used to prevent tuberculosis?
(A) CSD (B) ABC
(C) AMG (D) BCG

[RRB JE CBT - 1 Exam 27/05/2019
S- 09.30 -10.30]

446. What causes 'mad cow' disease in cattle?
(A) Protozoa
(B) Food containing flesh and bones
(C) Bacteria
(D) Virus

[RRB JE CBT-1 Exam 28/06/2019 S-III]

Other Diseases Related to Human Body

RRB Technician

447. Which of the following is a viral infection that can be transmitted through sexual contact?
(A) Gonorrhoea (B) Tuberculosis
(C) Syphilis (D) HIV-AIDS
448. Which of the following diseases can be prevented by using a mechanical barrier contraceptive method?
(A) Malaria (B) Typhoid
(C) AIDS (D) TB

[RRB Technician Grade-III 16/12/2024
Shift -1]

449. Which of the following statements about AIDS is FALSE?
(A) AIDS can be prevented by practising safe sex.
(B) AIDS affects the immune system of the body.
(C) AIDS can be transmitted through mosquito bites.
(D) AIDS is caused by the HIV virus.

[RRB Technician Grade-III 17/12/2024
Shift -2]

450. Besides being a barrier method of contraception, condoms also serve which of the following purposes?

- (A) Prevent diseases that spread through skin-to-skin contact
(B) Decrease sexual desire
(C) Help in transmission of STDs such as gonorrhoea
(D) Prevent transmission of STDs such as gonorrhoea

[RRB Technician Grade-III 17/12/2024
Shift -2]

451. Which of the following bacterial infections is considered a sexually transmitted disease (STD)?
(A) Typhoid (B) Tuberculosis
(C) Gonorrhoea (D) Pneumonia

[RRB Technician Grade-III 18/12/2024
Shift -3]

RPF SI

452. Name the viral infection that is also known as 'Shingles' and causes painful rashes or blisters on the skin.
(A) Herpes Zoster
(B) Herpes Simplex
(C) Herpes Cytomegalo
(D) Herpes Epstein-Barr

[RPF SI 03/12/2024 Shift 2]

RRB GROUP D

453. At what pH level does tooth decay start?
(B) pH7 (C) pH below 6
(C) pH6 (D) pH below 5.5

[RRB GROUP-D 28-09-2022 Shift-I]

454. What are the small blood vessels under our skin called?
(A) cell (B) vein
(C) capillary (D) nerve

[RRB 01-11-2018 Shift-III]

455. Which part of the human brain controls actions like swallowing and vomiting?
(A) Cerebellum
(B) Cerebrum
(C) Medulla oblongata
(D) Pons

[RRB 22-10-2018 Shift-III]

RRB NTPC

456. A patient lacking bile production would suffer from deficiency in absorption of _____.
(A) water
(B) fat-soluble vitamins
(C) glucose
(D) amino acids

[RRB NTPC Graduate Level,
06/06/2025, Shift-1]

457. Standard base pairing in DNA occurs due to which type of bonding ?
 (A) Covalent bonding
 (B) Van der Waals interaction
 (C) Ionic bonding
 (D) Hydrogen bonding

[RRB NTPC Graduate Level, 10/06/2025, Shift-2]

458. The average weight of the heart of an adult human is about %
 (A) 255 gm (B) 300 gm
 (C) 390 gm (D) 240 gm

[RRB NTPC 03-03-2021 Shift-I]

459. Which type of mirror do dentists use to see magnified images of patients' teeth?
 (A) Convex mirror
 (B) Concave mirror
 (C) Spherical mirror
 (D) Spherical and convex mirror

[RRB NTPC 03-02-2021 Shift-III]

460. The human hypothalamus gland is
 (A) Just below the abdomen
 (B) In the lower part of the neck
 (C) Present in the brain
 (D) Connected to the windpipe

[RRB NTPC CBT-2 18.01.2017 Shift-I]

461. Human blood platelets release which helps in blood clotting.
 (A) Prothrombin (B) Fibrin
 (C) Fructose (D) Sucrose

[RRB(NTPC) 27.04.2016 Shift-III]

462. Which part of the human brain is the center of intelligence, memory and emotions?
 (A) Hypothalamus
 (B) Cerebrum
 (C) Corpus callosum
 (D) Mid brain

[RRB (NTPC) 27.04.2016 Shift-III]

463. The gland in the human body that secretes both enzymes and hormones
 (A) ydd
 (B) Pancreas/digestive gland
 (C) Salivary gland
 (D) Pituitary gland

[RRB(NTPC) 22.04.2016 Shift 2]

464. Cirrhosis (degeneration) disease affects which part of the body?
 (A) brain (B) liver
 (C) heart (D) anus

[RRB NTPC 18.04.2016 Shift 2]

465. Which of the following is the most common compound that forms kidney stones?

- (A) Calcium oxalate
 (B) Magnesium oxide
 (C) Sodium bicarbonate
 (D) Magnesium citrate

[RRB NTPC 02.04.2016 Shift 2]

RRB ALP

466. Involuntary actions in human beings such as blood pressure, salivation and vomiting are controlled by the:
 (A) Spinal cord (B) Hypothalamus
 (C) Pons (D) Medulla

[RRB ALP CBT1, 20/08/2018, Shift 1]

467. Name the scientist who discovered bacteria.
 (A) Robert Koch
 (B) Eugen Goldstein
 (C) A.V. Leeuwenhoek
 (D) James Chadwick

[RRB ALP CBT2, 23/01/2019, Shift 3]

RRB JE

468. Male and female sex cells fuse to form
 (A) Zygote (B) Blastula
 (C) Gametes (D) Gastrola

[RRB JE CBT - 1 Exam 02/06/2019 S- 16.00 -17.30]

469. What is the largest internal organ of the human body?
 (A) livera (B) kidney
 (C) Pancreas (D) heart

[RRB JE CBT - 1 Exam 23/05/2019 S- 12.30 -14.00]

470. Which is the longest muscle in the body?
 (A) Gracilis (B) Sartorius
 (C) Soleus (D) Trapezius

[RRB JE CBT - 1 Exam 25/05/2019 S- 16.00 -17.30]

471. Which organ of the human body controls the amount of sugar in the blood?
 (A) stomach (B) liver
 (C) gall bladder (D) pancreas

[RRB JE CBT - 1 Exam 25/05/2019 S- 16.00 -17.30]

472. What does insulin regulate?
 (A) heart rate
 (B) physical growth
 (C) reproduction
 (D) blood sugar level

[RRB JE CBT - 1 Exam 26/05/2019 S- 9.00 -10.30]

473. Which of the following is an essential mineral for blood clotting?
 (A) Potassium (B) Chlorine
 (C) Sodium (D) Calcium

[RRB JE CBT - 1 Exam 27/05/2019 S- 09.30 -10.30]

474. Which of the following diseases affects the blood cells in the human body?
 (A) meningitis (B) polio
 (C) chicken pox (D) leukemia

[RRB JE CBT - 1 Exam 24/05/2019 S- 12.30 -02.00]

475. What are the names of the three bones present in the middle ear?
 (A) Radius, ulna, hammer
 (B) Femur, hammer, tibia
 (C) Hammer, anvil, stirrups
 (D) Humerus, clavicle, stirrups

[RRB JE CBT - 1 Exam 27/05/2019 S- 12.30 -14.00]

476. Leucoderma is a disease of.....
 (A) eyes (B) skin
 (C) throat (D) heart

[RRB JE CBT - 1 Exam 28/05/2019 S- 09.00 -10.30]

477. The enzyme ptyalin is found in

- (A) Saliva
 (B) Gastric juice
 (C) Intestinal juice
 (D) Pancreatic juice

[RRB JE CBT - 1 Exam 28/05/2019 S- 09.00 -10.30]

478. Which hormone is secreted during an emergency?
 (A) Adrenaline (B) Norepinephrine
 (C) Corticotropin (D) Cortisol

[RRB JE CBT - 1 Exam 28/05/2019 S- 09.00 -10.30]

479. Thrombosis is a disease of.....
 (A) lungs (B) thyroid gland
 (C) blood (D) vein rupture

[RRB JE CBT - 1 Exam 28/05 /2019 S- 12.30 -14.00]

480. Islets of Langerhans are found in.....
 (A) Pituitary (B) Pancreas
 (C) Spleen (D) Kidney

[RRB JE CBT - 1 Exam 28/05/2019 S- 16.00 -17.30]

481. Which of the following glands enables an animal to fight?
 (A) Thyroid (B) Pancreas
 (C) Adrenal (D) Pineal

[RRB JE CBT - 1 Exam 29/05/2019 S- 16.00 -17.30]

482. It is the main structural substance of hair.
 (A) Biotin (B) Thiamin
 (C) Keratin (D) Vitamin

[RRB JE CBT - 1 Exam 30/05/2019 S-12.30 -14.00]

483. Which of the following glands controls the rate of energy release inside the body?
 (A) Parathyroid (B) Thyroid
 (C) Pineal (D) Pancreas

[RRB JE CBT - 1 Exam 31/05/2019
 S- 16.00 -17.30]

Genetics and Biological Evolution

RRB Technician

484. Which of the following were found as dominant traits by Mendel in his experiment with pea plants?
 (A) Short plant and wrinkled seed
 (B) Short plant and round seed
 (C) Tall plant and wrinkled seed
 (D) Tall plant and round seed

[RRB Technician Grade-III 23/12/2024
 Shift -1]

485. Which of the following is a dominant trait in the experiments done by Mendel on garden pea?
 (A) Short plants (B) Round seeds
 (C) Wrinkled seeds (D) Green seeds

[RRB Technician Grade-III 24/12/2024
 Shift -1]

486. _____ plays a crucial role in the long-term survival of species.
 (A) Variation
 (B) Growth and development
 (C) Fragmentation
 (D) Reproduction

[RRB Technician Grade-III 24/12/2024
 Shift -2]

487. In case of a drastic change in niches of organisms, which of the following can save the population of an organism from getting completely wiped out?
 (A) Variation (B) Evolution
 (C) Nutrition (D) Isolation

[RRB Technician Grade-III 24/12/2024
 Shift -3]

488. Honey is produced by the honeybee. So, the honeybee is a _____.
 (A) primary consumer
 (B) Decomposer
 (C) secondary consumer
 (D) producer

[RRB Technician Grade-III 29/12/2024
 Shift -1]

489. Mendel used a number of contrasting visible characters of garden peas. Match the last of the following with which one of the following options appropriately fills the below blank space?
 a. Round / Wrinkled seeds

- b. Tall / Short plants
 c. White / flowers
 (A) Yellow (B) Violet
 (C) Green (D) Pink

[RRB Technician Grade-III 30/12/2024
 Shift -1]

490. What are regenerative cells used by Hydra for?
 (A) Hydra uses regenerative cells for reproduction by fragmentation.
 (B) Hydra uses regenerative cells for reproduction by spore formation.
 (C) Hydra uses regenerative cells for reproduction by sexual reproduction.
 (D) Hydra uses regenerative cells for reproduction by budding.

[RRB Technician Grade-III 16/12/2024
 Shift -1]

491. If a child inherits an Y chromosome from the father, what will be the sex of the child?
 (A) Female
 (B) Male
 (C) Hermaphrodite
 (D) Cannot be determined

[RRB Technician Grade-III 16/12/2024
 Shift -1]

492. What determines the sex of a child in humans?
 (A) The fate of the embryo
 (B) Environmental cues
 (C) The temperature at which fertilised eggs are placed
 (D) Genetic constitution

[RRB Technician Grade-III 16/12/2024
 Shift -1]

493. After fertilisation, the zygote divides multiple times to form which structure within the ovule?
 (A) Fruit (B) Style
 (C) Embryo (D) Seed

[RRB Technician Grade-III 16/12/2024
 Shift -3]

494. Which of the following helps a developing embryo to expel waste products in case of humans?
 (A) Oviduct (B) Cervix
 (C) Ovary (D) Placenta

[RRB Technician Grade-III 16/12/2024
 Shift -3]

495. The first fundamental factor for evolution is:
 (A) Competition among individuals
 (B) Cell division for growth

- (C) Healthy offsprings
 (D) Genetic variation

[RRB Technician Grade-III 17/12/2024
 Shift -1]

496. What are the two versions of a gene controlling a trait called?
 (A) Chromosomes (B) Mutations
 (C) Alleles (D) Proteins

[RRB Technician Grade-III 17/12/2024
 Shift -1]

497. Mendel had selected garden pea for certain favourable reasons. Which of the following is NOT a reason for his choice required for his experiments?
 (A) They produce many offsprings.
 (B) They have a long generation time.
 (C) They have easily observable traits.
 (D) They can be self-pollinated and cross-pollinated.

[RRB Technician Grade-III 17/12/2024
 Shift -1]

498. Suppose a gardener wants to plant pea which should be of the dwarf varieties- What do you suggest for the choice of the parent plant seeds by the gardener?
 (A) All seeds should be of tall varieties.
 (B) All seeds should be of mixed varieties.
 (C) Any kind of seed can be used.
 (D) All seeds should be of dwarf varieties.

[RRB Technician Grade-III 17/12/2024
 Shift -1]

499. Which of the following is a primary reason why all multi-cellular organisms do not reproduce by fragmentation?
 (A) Their cells are loosely organised.
 (B) They have a random arrangement of cells.
 (C) They are unicellular.
 (D) They have specialised cells organised into tissues and organs.

[RRB Technician Grade-III 17/12/2024
 Shift -2]

500. Mendel studied traits such as flower colour and seed shape in pea plants. These traits are called as :
 (A) visible characters
 (B) dominant characteristics
 (C) genetic codes
 (D) progeny units

[RRB Technician Grade-III 17/12/2024
 Shift -2]

501. Which of the following factors is primarily responsible for survival of species ?

- (A) Variations (B) Niche
(C) Mutation (D) Temperature

[RRB Technician Grade-III 17/12/2024 Shift -3]

502. Why is variation in plants important for their survival and evolution?

- (A) It helps plants to grow taller and stronger.
(B) It reduces competition among plants.
(C) It ensures that all plants produce identical offspring.
(D) It allows plants to adapt to changing environmental conditions.

[RRB Technician Grade-III 18/12/2024 Shift -2]

503. What are the units of inheritance, which Mendel referred to as 'factors', now called?

- (A) Genes (B) Traits
(C) DNA (D) Chromosomes

[RRB Technician Grade-III 18/12/2024 Shift -2]

504. According to Mendel, which trait appeared in F₁ progeny on crossing tall pea plants with short pea plants?

- (A) Dwarf (B) Short
(C) Medium (D) Tall

[RRB Technician Grade-III 18/12/2024 Shift -2]

505. The genetic constitution of a child getting an X bearing sperm from the father will be:

- (A) 46+XY (B) 46+XX
(C) 44+XY (D) 44+XX

[RRB Technician Grade-III 18/12/2024 Shift -3]

RPF SI

506. Which of the following statements is INCORRECT about aneuploids?

- (A) Unequal distribution of chromosomes to opposite poles
(B) Usually results from irregular meiotic division
(C) One or more chromosomes of a chromosome set either missing or having more copies
(D) Organisms having more than two sets of chromosomes in each cell

[RPF SI 13/12/2024 Shift 2]

507. The approximate number of protein coding genes present on 23 pairs of chromosomes (human) is _____.

- (A) 40,000 to 45,000
(B) 10,000 to 15,000

- (C) 20,000 to 25,000
(D) 30,000 to 35,000

[RPF SI 13/12/2024 Shift 3]

RRB GROUP D

508. Who among the following was the first to blend his knowledge of science and mathematics to keep count of individuals exhibiting a particular trait in each generation ?

- (A) Charles Robert Darwin
(B) J.B.S. Haldane
(C) Stanley L. Miller
(D) Gregor Johann Mendel

[RRB GROUP- D 07/10/2022 Shift-II]

509. Given below are some conclusions of Mendel's experiment on pea plants. All of them are correct except one. Select the INCORRECT conclusion.

- (A) Segregation of genes takes place during formation of gametes.
(B) Each gamete has two copies of the same gene.
(C) Genes are inherited as distinct units.
(D) Genes come in pairs.

[RRB GROUP-D 23-08-2022 Shift-I]

RRB NTPC

510. Which of the following terms describe a change in the DNA sequence resulting in changes in the genotype and the phenotype of an organism ?

- (A) Dominance (B) Mutation
(C) Segregation (D) Transcription

[RRB NTPC Under Graduate CBT I, 02/09/2025, Shift-II]

511. The first human gene therapy experiment, which began in September 1990, used a retroviral vector against which deficiency ?

- (A) Mitochondrial encephalopathy
(B) X- Linked adrenoleukodystrophy
(C) Adenosine deaminase
(D) 3-Methylglutaconic aciduria

[RRB NTPC Under Graduate CBT I, 28/08/2025, Shift-II]

512. The process by which traits are passed from parent to offspring is known as _____.

- (A) Mutation (B) Inheritance
(C) Hybridization (D) Relationship

[RRB NTPC Under Graduate CBT I, 28/08/2025, Shift-III]

513. Which of the following options best represents the predictions of a Punnett square ?

- (A) Genetic mutations across generations
(B) Genotype and phenotypic possibilities

- (C) DNA sequences in parents
(D) Genetic linkage relationships among siblings

[RRB NTPC Under Graduate CBT I, 21/08/2025, Shift-III]

514. Researchers of which university produced India's first gene-edited sheep ?

- (A) IIT Madras
(B) IIT Kanpur
(C) Chandigarh University
(D) Sher-e-Kashmir University

[RRB NTPC Under Graduate CBT I, 19/08/2025, Shift-II]

515. What is the study of heredity and variation called ?

- (A) Evolution (B) Mutation
(C) Genetics (D) Biology

[RRB NTPC Under Graduate CBT I, 18/08/2025, Shift-III]

516. The Human Genome Project, launched in 1990, had the goal of determining the sequence of how many billion base pairs that make up human DNA ?

- (A) 5.2 billion (B) 3.0 billion
(C) 2.1 billion (D) 4.3 billion

[RRB NTPC Under Graduate CBT I, 14/08/2025, Shift-I]

517. When did the Hershey-Chase experiment provide solid evidence that DNA, not protein is the genetic material ?

- (A) 1950 (B) 1952
(C) 1957 (D) 1946

[RRB NTPC Under Graduate CBT I, 08/08/2025, Shift-III]

518. DNA polymerase catalyses the addition of nucleotides during DNA replication. Its main role is to :

- (A) Remove RNA primers from the lagging strand
(B) Synthesise new DNA strand complementary to the template
(C) Ligate Okazaki fragments together
(D) Unwind the DNA double helix

[RRB NTPC Graduate Level, 09/06/2025, Shift-3]

519. Which of the following best describes the impact of human genome sequencing ?

- (A) It marks a milestone toward transcriptional regulation.
(B) It eliminates the need for classical genetics.
(C) It initiated a new scientific domain.
(D) It clarifies all RNA-related functions.

[RRB NTPC Graduate Level, 16/06/2025, Shift-3]

520. What makes DNA the most abundant genetic material ?

- (A) Its high mutation rate
- (B) Its stable double-helical structure
- (C) Its interactions with proteins
- (D) Its enzymatic roles

[RRB NTPC Graduate Level,
20/06/2025, Shift-2]

521. The complete sequencing of the human genome has marked the beginning of :

- (A) Immunology
- (B) Cytogenetics
- (C) Genomics
- (D) Structural biology

[RRB NTPC Graduate Level,
20/06/2025, Shift-3]

522. Which of the following best explains the functional diversity of RNA molecules in cells.

- (A) Their ability to form double-stranded helix structures
- (B) Their capability to act as adaptor, structural and catalytic molecules
- (C) Their permanent role as genetic material
- (D) Their linear sequence of deoxyribonucleotides

[RRB NTPC Graduate Level,
21/06/2025, Shift-2]

523. Which of the following organisms has the smallest DNA length listed ?

- (A) Escherichia coli
- (B) ϕ X174 phage
- (C) Human haploid cell
- (D) Bacteriophage λ

[RRB NTPC Graduate Level,
23/06/2025, Shift-1]

524. Which of the following statements about DNA and RNA is true ?

- (A) DNA is not present in viruses
- (B) RNA has multiple roles including catalytic functions.
- (C) DNA acts only as a messenger molecule.
- (D) RNA acts solely as genetic material in all living organisms.

[RRB NTPC Graduate Level,
23/06/2025, Shift-2]

525. Who is known as the father of genetics ?

- (A) Gregor Mendel
- (B) EP Odum
- (C) Charles Darwin
- (D) Robert Hook

[RRB NTPC CBT-2 10-05-2022 Shift-II]

RRB ALP

526. A sexual reproduction differs from sexual reproduction in that in asexual reproduction,

- (A) the new organisms are genetically identical to the parent
- (B) the gametes are produced in reproduction
- (C) the nuclei of gametes fuse
- (D) the offspring shows variations

[RRB ALP CBT1, 09/08/2018, Shift 1]

527. Identify a type of asexual reproduction which involves reproduction through parts of a plant such as roots, stem and leaves?

- (A) Budding
- (B) Vegetative propagation
- (C) Fragmentation
- (D) Fission

[RRB ALP CBT1, 09/08/2018, Shift 3]

528. In sexual reproduction a parent contributes :

- (A) Half of their genes
- (B) Three-fourth of their genes
- (C) All the genes
- (D) One-fourth of their genes

[RRB ALP CBT1, 10/08/2018, Shift 2]

529. are the carriers of heredity material.

- (A) Genetics
- (B) Genes
- (C) Gametes
- (D) Germ cells

[RRB ALP CBT1, 20/08/2018, Shift 1]

530. Which of the following statements is/are true or false?

Statements:

1. Pea plant was chosen by Mendel to work upon.
 2. Chromosomes are the carrier of factor.
 3. Forelimb of human the organ analogous of the wings of birds.
- (A) Only statement 2 is true, 3 and 1 are false.
 - (B) Only statement 1 and 2 are true, 3 is false.
 - (C) Only statement 3 is true, 2 and 1 are false.
 - (D) Only statement 1 is true, 2 and 3 are false.

[RRB ALP CBT1, 29/08/2018, Shift 3]

531. A girl child has which of the following combinations of chromosomes in her cells?

- (A) 44 autosomes +XX
- (B) 22 autosomes + XX
- (C) 44 autosomes +XY
- (D) 22 autosomes +XY

[RRB ALP CBT1, 30/08/2018, Shift 1]

532. A section of DNA that provides information for one protein is called the

- (A) lysosome
- (B) gene
- (C) chromosome
- (D) nucleus

[RRB ALP CBT1, 31/08/2018, Shift 1]

533. The study of human evolution indicates that all of us belong to a single species that evolved in:

- (A) West Asia
- (B) Central Asia
- (C) Africa
- (D) America

[RRB ALP CBT1, 31/08/2018, Shift 2]

534. A is defined as something that can directly cause cancer. This can be a chemical substance, a virus, or radiation.

- (A) Carcinogen
- (B) Cardiogen
- (C) Detritus
- (D) Cankerous

[RRB ALP CBT2, 08/02/2019, Shift 1,
PartA]

535. Raising the head to straighten the neck is called.

- (A) finger fan
- (B) wrist stretch
- (C) chin tuck
- (D) pectoral stretch

[RRB ALP CBT2, 22/01/2019, Shift 2]

536. Breathing in about 900 parts of in a million parts of air for a short time causes fatigue, dizziness and headache.

- (A) chloroform
- (B) pesticides
- (C) asbestos particles
- (D) arsenic

[RRB ALP CBT2, 23/01/2019, Elech. Shift 2]

537. are a subset of air pollution that refers to the tiny particles suspended everywhere in our atmosphere.

- (A) Genomes
- (B) Loam
- (C) Humus
- (D) Aerosols

[RRB ALP CBT2, 23/01/2019, Elech. Shift 2]

538. Firstaid for strains, sprains and contusions is packaged in the abbreviation RICE, which stands for Rest, icing, Compression and :

- (A) Expert
- (B) Expand
- (C) Elevation
- (D) Explain

[RRB ALP CBT2, 21/01/2019, Shift 1]

RRB JE

539. Who is the father of genetics?

- (A) Punnett
- (B) Mendel
- (C) Cassel
- (D) Morgan

[RRB JE CBT - 1 Exam 02/06/2019
S- 16.00 -17.30]

540. Mule is a hybrid species produced by crossing of _____.

- (A) Donkey and zebra
- (B) Female donkey and male horse
- (C) Horse and zebra
- (D) Male donkey and female horse

[RRB JE CBT - 1 Exam 30/05/2019
S-09.00 -10.30]

Prominent Inventions and their Inventors

RRB NTPC

541. Which biochemist was awarded the Nobel Prize in 1958 for his work on the structure of proteins, especially insulin ?
- (A) Carl Neuberg
(B) Frederick Sanger
(C) Rosalind Franklin
(D) Eduard Buchner

[RRB NTPC Under Graduate CBT I, 09/09/2025, Shift-I]

542. Why is the discovery of penicillin considered revolutionary in medicine ?
- (A) It was used only on animals.
(B) It began in the antibiotic era.
(C) It was used for coloring bacteria.
(D) It treated pain rather than infection.

[RRB NTPC Graduate Level, 12/06/2025, Shift-1]

543. The inability to isolate intact DNA for structural studies prior to the 1950s was primarily due to which molecular feature?
- (A) DNA's high melting point
(B) DNA's susceptibility to UV degradation
(C) DNA's interaction with histone proteins
(D) DNA's large polymeric nature and fragility

[RRB NTPC Graduate Level, 14/06/2025, Shift-1]

544. Which of the following medicines discovered by Paul Ehrlich became the first successful treatment for syphilis ?

- (A) Penicillin (B) Salvarsan
(C) Erythromycin (D) Prontosil

[RRB NTPC Graduate Level, 17/06/2025, Shift-2]

545. Who discovered the antibacterial properties of a Penicillium fungus in 1929 ?

- (A) Alexander Fleming
(B) Antonie van Leeuwenhoek
(C) Marie Curie
(D) Paul Ehrlich

[RRB NTPC Graduate Level, 20/06/2025, Shift-2]

RRB JE

546. ECG senses the electrical forces produced by _____
- (A) Stomach (B) heart
(C) kidney (D) brain

[RRB JE CBT - 1 Exam 27/05/2019 S- 12.30 -14.00]

Miscellaneous

RRB Technician

547. Which organism uses regenerative cells for reproduction in the process of budding?

- (A) Amoeba (B) Yeast
(C) Leishmania (D) Hydra

[RRB Technician Grade-III 20/12/2024 Shift -3]

548. Which of the following non-biodegradable substances may be inert and simply persist in the environment for a long time or may harm the various members of the eco-system?

- (A) Plastic made material
(B) Plant leaves made material
(C) Clay made material
(D) Paper made material

[RRB Technician Grade-III 20/12/2024 Shift -3]

549. Which of the following statements is/are correct related to eco-system?

- (i) UV radiation is not damaging to organisms.
(ii) Ozone at the higher levels of the atmosphere is a product of UV radiation acting on oxygen molecule.
(iii) The amount of ozone in the atmosphere began to drop sharply in 1980.

- (A) Only (i) and (iii)
(B) (i), (ii) and (iii)
(C) Only (i)
(D) Only (i) and (ii)

[RRB Technician Grade-III 23/12/2024 Shift -1]

550. Which of the following would help a few variants of bacteria in a population living in temperate waters to survive and grow further, if the water temperature were to be increased by global warming?

- (A) Resistant to heat
(B) Resistant to cold waves
(C) Resistant to wind pressure
(D) Resistant to water

[RRB Technician Grade-III 23/12/2024 Shift -3]

[RRB Technician Grade-III 29/12/2024 Shift -3]

551. Which of the following statements is true with respect to regeneration?

- (A) Regeneration and reproduction are the same process with different names in all organisms.
(B) Regeneration gives rise to a totally new organism.

- (C) Regeneration is not the same as reproduction.
(D) No organism on earth has the ability to regenerate.

[RRB Technician Grade-III 24/12/2024 Shift -2]

552. Animals like hydra and planaria can be cut into any number of pieces and each piece grows into a complete organism. This is known as:

- (A) Binary fission (B) Regeneration
(C) Budding (D) Fragmentation

[RRB Technician Grade-III 24/12/2024 Shift -3]

553. Use of regenerative cells in the process of budding is present in:

- (A) Planaria (B) Hydra
(C) Spirogyra (D) Amoeba

[RRB Technician Grade-III 24/12/2024 Shift -3]

554. Which of the following is the tiny blob-on-a-stick structures in fungi that are involved in reproduction?

- (A) Sporangia (B) Sporophyte
(C) Spermatogonia (D) Gametophyte

[RRB Technician Grade-III 24/12/2024 Shift -3]

555. Which of the given substances is NOT biodegradable in nature?

- a. Vegetable peels
b. Plastic bottles
c. Spoilt food
(A) a, b and c (B) Both a and b
(C) Only a (D) Only b

[RRB Technician Grade-III 24/12/2024 Shift -3]

556. Which plant species does NOT reproduce through vegetative propagation?

- (A) Sugarcane (B) Banana
(C) Rose (D) Papaya

[RRB Technician Grade-III 24/12/2024 Shift -3]

557. When Planaria is cut into many pieces each piece grows into a complete organism. What is this known as?

- (A) Fragmentation
(B) Multiple fission
(C) Binary fission
(D) Regeneration

[RRB Technician Grade-III 26/12/2024 Shift -1]

558. Which modes of reproduction is used by unicellular organisms?

- (A) Budding, regeneration and fission
(B) Only regeneration
(C) Only budding
(D) Only fission

[RRB Technician Grade-III 26/12/2024 Shift -1]

559. Which of the following pairs is INCORRECTLY matched according to mode of reproduction?
 (A) Hydra-Budding
 (B) Spirogyra - Fragmentation
 (C) Amoeba-Binary fission
 (D) Bryophyllum - Spore formation
[RRB Technician Grade-III 26/12/2024 Shift -1]
560. Which single-celled organism divides into many daughter cells simultaneously by multiple fission?
 (A) Leishmania (B) Yeast
 (C) Plasmodium (D) Amoeba
[RRB Technician Grade-III 26/12/2024 Shift -1]
561. In which of the following organisms is spore formation seen?
 (A) Amoeba (B) Rhizopus
 (C) Paramecium (D) Plasmodium
[RRB Technician Grade-III 26/12/2024 Shift -1]
562. A single cell may constitute a whole organism in all of the following, EXCEPT:
 (A) Bacteria
 (B) Rhizopus
 (C) Chlamydomonas
 (D) Amoeba
[RRB Technician Grade-III 26/12/2024 Shift -1]
563. Sporangia blobs contain cells or spores that can eventually develop into new Rhizopus individuals. Such asexual reproduction is known as :
 (A) regeneration
 (B) budding
 (C) vegetative propagation
 (D) spore formation
[RRB Technician Grade-III 26/12/2024 Shift -2]
564. Name the mode of reproduction in Spirogyra.
 (A) Fragmentation
 (B) Binary fission
 (C) Multiple fission
 (D) Budding
[RRB Technician Grade-III 26/12/2024 Shift -2]
565. Spirogyra a multi-cellular organism simply breaks up into smaller pieces upon maturation and these pieces or fragments grow into new individuals. Such a mode of reproduction is known as:
 (A) Fragmentation (B) Budding
 (C) Regeneration (D) Binary fission
[RRB Technician Grade-III 26/12/2024 Shift -2]
566. Which of the following statements is/are correct related to the eco-system?
 (i) Ozone is a molecule formed by three atoms of oxygen.
 (ii) Oxygen (O₂) is essential for all aerobic forms of life.
 (iii) Ozone is non-poisonous.
 (A) Only (i) and (iii)
 (B) (i), (ii) and (iii)
 (C) Only (i)
 (D) Only (i) and (ii)
[RRB Technician Grade-III 26/12/2024 Shift -3]
567. Which of the following does NOT belong to the category of asexual reproduction?
 (A) Vegetative propagation
 (B) Fertilisation
 (C) Regeneration
 (D) Spore formation
[RRB Technician Grade-III 26/12/2024 Shift -3]
568. In which of the following modes of asexual reproduction if an individual is cut or broken into many pieces, many of these pieces grow into separate individuals?
 (A) Budding
 (B) Fission
 (C) Spore formation
 (D) Regeneration
[RRB Technician Grade-III 26/12/2024 Shift -3]
569. Which of the following is correctly matched?
 (A) Bisexual flower - Watermelon
 (B) Bisexual flower - Papaya
 (C) Unisexual flower - Mustard
 (D) Unisexual flower - Watermelon
[RRB Technician Grade-III 27/12/2024 Shift -1]
570. If multiple fission :: many cells, then binary fission :: _____ -
 (A) Two cells (B) Three cells
 (C) Four cells (D) One cell
[RRB Technician Grade-III 27/12/2024 Shift -1]
571. Use of regenerative cells in the process of budding is present in :
 (A) Amoeba (B) Hydra
 (C) Spirogyra (D) Planaria
[RRB Technician Grade-III 27/12/2024 Shift -3]
572. Which of the following reproduces by budding?
 (A) Liver fluke (B) Hydra
 (C) Algae (D) Mosquito
[RRB Technician Grade-III 28/12/2024 Shift -1]
573. Which of the following organisms show a parasitic nutritive strategy?
 (A) Cuscuta (B) Orchids
 (C) Mosses (D) Acacia
[RRB Technician Grade-III 28/12/2024 Shift -1]
574. Given below is a statement followed by two possible reasons numbered I and II- Read the statement carefully and decide which of the two explain(s) the event/ observation/information given in the Statement.
 Even though sugar is added in most of the food items cooked, it is not good for health.
Reasons:
 I. Sugar adds more taste into any food being cooked.
 II. Sugar is the most consumed material in the country
 (A) Neither I nor II is a possible reason.
 (B) Only II is a possible reason.
 (C) Only I is a possible reason.
 (D) Both I and II are possible reasons.
[RRB Technician Grade-III 28/12/2024 Shift -1]
575. Which of the following statements is/are correct related to eco-system ?
 (i) Non-biodegradable substance harms the various members of eco-system-
 (ii) Non-biodegradable substances break-down by biological processes-
 (iii) Non-biodegradable substances never persist in the environment.
 (A) (i), (ii) and (iii)
 (B) Only (i) and (iii)
 (C) Only (i) and (ii)
 (D) Only (i)
[RRB Technician Grade-III 28/12/2024 Shift -2]
576. Asexual reproduction does NOT involve the formation of _____.
 (A) zygotes (B) spores
 (C) leaves (D) buds
[RRB Technician Grade-III 28/12/2024 Shift -3]
577. In an ecosystem, physical factors like temperature, rainfall, wind, soil and minerals are:
 (A) Living components
 (B) Biotic components
 (C) Decomposers
 (D) Abiotic components
[RRB Technician Grade-III 29/12/2024 Shift -1]

578. Given below is a statement followed by two possible reasons numbered I and II. Read the statement carefully and decide which of the two explain(s) the event/ observation/information given in the statement.

Statement :

Noise pollution is an invisible danger. It cannot be seen, but it is present nonetheless, both on land and under the sea. Noise pollution is considered to be any unwanted or disturbing sound that affects the health and wellbeing of humans and other organisms.

Reasons:

- I. Some of its major causes are vehicles, aircraft, industrial machines, loudspeakers, crackers, etc.
 - II. When used at high volume, some other appliances also contribute to noise pollution, like television, transistor, radio, etc.
- (A) Both I and II are possible reasons.
 (B) Neither I nor II is a possible reason.
 (C) Only I is a possible reason.
 (D) Only II is a possible reason.

[RRB Technician Grade-III 29/12/2024 Shift -2]

579. Which of the following is a biodegradable substance?

- (A) Dead plant (B) Glass
 (C) Plastic bag (D) Electric wire

[RRB Technician Grade-III 29/12/2024 Shift -2]

580. Select the INCORRECT pair-

- (A) Pyruvate -3 carbon molecules
 (B) Ethanol-2 carbon molecules
 (C) Glucose -6 carbon molecules
 (D) Lactic acid - 4 carbon molecules

[RRB Technician Grade-III 29/12/2024 Shift -3]

581. Which of the following is NOT a suitable method to deal with non-biodegradable substances?

- (A) Recycle them
 (B) Reduce their production
 (C) Reuse them
 (D) Throw them openly

[RRB Technician Grade-III 29/12/2024 Shift -3]

582. Which of the following is NOT an abiotic component of the ecosystem?

- (A) Rainfall (B) Soil
 (C) Wind (D) Grass

[RRB Technician Grade-III 30/12/2024 Shift -3]

RRB GROUP D

583. How will you diagnose if a person is infected with HIV a year ago ?

- (A) By low blood cell count
 (B) By loss of weight and fatigue
 (C) Persistent fever (over a month)
 (D) By anti-HIV antibodies in the blood

[RRB GROUP- D 07/10/2022 Shift-I]

584. Which of the following organisms break down food material outside the body and then absorb the digested food ?

- (A) Deer (B) Lice
 (C) Mushroom (D) Amoeba

[RRB GROUP- D 07/10/2022 Shift-I]

585. Which method of contraception can prevent the transmission of HIV ?

- (A) Copper T
 (B) Barrier methods only
 (C) Copper T and condoms
 (D) Oral contraceptives

[RRB GROUP- D 07/10/2022 Shift-II]

586. Which of the following is not an animal produced nitrogenous waste product ?

- (A) Ammonia (B) Urea
 (C) Lactic acid (D) Uric acid

[RRB GROUP- D 30/09/2022 Shift-III]

587. How does a loop acts as a contraceptive ?

- (A) It blocks access to the fallopian tubes.
 (B) It inhibits release of ovum.
 (C) It blocks the release of sperm.
 (D) It inhibits implanation of the embryo.

[RRB GROUP- D 30/09/2022 Shift-II]

588. What will be the colour of pH paper when it is dipped in gastric juice ?

- (A) Blue (B) Red
 (C) Yellow (D) Greenish-yellow

[RRB GROUP- D 28/09/2022 Shift-II]

589. Anaerobic respiration of glucose in the muscles produces

- (A) citric acid
 (B) pyruvic acid
 (C) acetoacetic acid
 (D) lactic acid

[RRB GROUP- D 28/09/2022 Shift-II]

590. Which of the following statement is correct ?

- (A) For every protein, there is a specific gene.
 (B) For every hormone, there is a specific chromosome.
 (C) For every protein, there is a specific RNA.
 (D) For every hormone, there is a specific protein.

[RRB GROUP-D 09-09-2022 Shift-II]

591. A normal adult human being produces _____ mL per day of urine daily.

- (A) 10000-20000 (B) 10-20
 (C) 100-200 (D) 1000-2000

[RRB GROUP-D 28-09-2022 Shift-I]

592. The process by which an organism begins life as a female and then transforms into a male is known as :

- (A) Protogyny (B) Protandry
 (C) Heterozygous (D) Homozygous

[RRB GROUP-D 12-09-2022 Shift-III]

593. The sex of a person is determined by _____ .

- (A) The chromosomes present in both sperm and ovum
 (B) The chromosomes present in sperm
 (C) The chromosomes present in both sperm and ovum and dietary habits of parents
 (D) The chromosomes present in ovum

[RRB GROUP-D 25-08-2022 Shift-II]

594. Which leaves are used to make beedis?

- (A) Mulberry leaves
 (B) Tamarind leaves
 (C) Coconut leaves
 (D) Tendu leaves

595. Which flower of Himalaya has antiseptic properties and hence can help in the healing of bruises ?

- (A) Ricinus
 (B) Parthenium
 (C) Brahma Kamal
 (D) Datura

[RRB GROUP-D 22-08-2022 Shift-II]

RRB NTPC

596. Which of the following is not a component of essential maternal care ?

- (A) Education on breastfeeding practices
 (B) Tetanus immunisation
 (C) Intrauterine insemination
 (D) Supplementation of iron and folic acid

[RRB NTPC Graduate Level II, 13/10/2025, Shift-I]

597. In August 2025, researchers demonstrated that genetically engineered Escherichia coli (E-coli) bacteria can function as which of the following] directly interface with electronics ?

- (A) Biofueled medical implants
 (B) Self&powered chemical sensors
 (C) Wireless energy storage units
 (D) Microbial fuel cells for power generation

[RRB NTPC Graduate Level II, 13/10/2025, Shift-II]

598. In which year was the first cases of the disease now known as acquired immuno-deficiency syndrome (AIDS) identified ?
 (A) 1981 (B) 1977
 (C) 1992 (D) 1988
[RRB NTPC Under Graduate CBT I, 03/09/2025, Shift-I]
599. In May 2024, the World Health Organization (WHO) prequalified the QDENGGA vaccine developed by Takeda Pharmaceuticals. This vaccine is designed to protect against which disease ?
 (A) Malaria (B) Zika
 (C) Dengue (D) Chikungunya
[RRB NTPC Under Graduate CBT I, 04/09/2025, Shift-II]
600. What is the name of the medical instrument used to listen to internal body sounds, especially from the heart and lungs ?
 (A) Barometer (B) Endoscope
 (C) Stethoscope (D) Colonoscope
[RRB NTPC Under Graduate CBT I, 13/08/2025, Shift-III]
601. For which discovery was Paul Ehrlich awarded the Nobel Prize in Medicine in 1908 ?
 (A) Penicillin for treating infections
 (B) Antibacterial effect of sulphur drugs
 (C) Use of azo dyes in textiles
 (D) Theoretical basis for immunology
[RRB NTPC Graduate Level, 21/06/2025, Shift-3]
602. What was the major impact of penicillin's discovery ?
 (A) First effective antibiotic against bacterial infections
 (B) First drug for Rabies prevent and cure
 (C) First vaccine prevention of smallpox
 (D) First antiviral drug for Human immunodeficiency virus (HIV)
[RRB NTPC Graduate Level, 05/06/2025, Shift-2]
603. Which of following is used to treat bacterial infection inside the human body ?
 (A) Antiseptic (B) Antibiotic
 (C) Anaesthetic (D) Antipyretic
[RRB NTPC CBT-2 16-06-2022 Shift-III]
604. Who introduced binomial nomenclature?
 (A) Carolus Linnaeus
 (B) Claude Louis Berthollet
 (C) Dmitri Mendeleev
 (D) John Dalton
[RRB NTPC CBT-2 15-06-2022 Shift-II]
605. Which of following plants do not fix atmospheric nitrogen due to mutualistic symbiotic relationship with rhizobia bacteria found in their root nodules ?
 (A) Lentils (B) Chickpeas
 (C) Peanuts (D) Ficus
[RRB NTPC CBT-2 09-05-2022 Shift-III]
- RRB ALP**
606. What is the first step in providing first aid for a minor burn ?
 (A) Run cool water over the burn
 (B) Cover the burn with a thick cloth
 (C) Pop any blisters that form
 (D) Apply butter to the burn
[RRB ALP CBT-2 02/05/2025, Shift-2]
607. Which one of the following derives nutrition from plants as a parasite?
 (A) Malaria Parasite
 (B) Lice
 (C) Bryophyllum
 (D) Cuscuta
[RRB ALP CBT1, 10/08/2018, Shift 1]
608. reproduces by multiple fission.
 (A) Plasmodium (B) Rhizopus
 (C) Yeast (D) Planaria
[RRB ALP CBT1, 10/08/2018, Shift 1]
609. Which of the following organisms can reproduce by regeneration and budding ?
 (A) Yeast (B) Plasmodium
 (C) Hydra (D) Planaria
[RRB ALP CBT1, 10/08/2018, Shift 2]
610. Which of the following type of medicine is used to treat indigestion?
 (A) Sulpha drug (B) Antihistamine
 (C) Antibiotic (D) Antacid
[RRB ALP CBT1, 13/08/2018, Shift 1]
611. Which of the following reproduce both, sexually as well as asexually?
 (A) Hydra (B) Amoeba
 (C) Algae (D) Fungi
[RRB ALP CBT1, 17/08/2018, Shift 2]
612. Which type of reproduction allows for greater variation to be generated?
 (A) Sexual reproduction
 (B) Asexual reproduction
 (C) Binary fission
 (D) Multiple fission
[RRB ALP CBT1, 21/08/2018, Shift 1]
613. Which of the following can reproduce by fragmentation?
 (A) Spirogyra (B) Hydra
 (C) Planaria (D) Yeast
[RRB ALP CBT1, 29/08/2018, Shift 3]
614. Fertilisation results in the formation of a/an:
 (A) Ovary (B) Zygote
 (C) Gamete (D) Germ cell
[RRB ALP CBT1, 30/08/2018, Shift 3]
615. Which of the following statements is true?
 (A) In grasshoppers and some insects, the male has only four sex chromosomes.
 (B) A male individual contains one X and two Y chromosomes.
 (C) In human beings, there are 46 chromosomes, of which 42 (21 pairs) are autosomes.
 (D) In diploid organisms having separate sexes, a specific pair of chromosomes in each diploid cell determines the sex of the individual; they are called sex chromosomes.
[RRB ALP CBT1, 31/08/2018, Shift 3]
616. is a penicillin antibiotic that fights bacteria.
 (A) Ibuprofen (B) Clonazepam
 (C) Atorvastatin (D) Amoxicillin
[RRB ALP CBT2, 08/02/2019, Part A Shift-1]

□□

Chapter 12

Biology

- 1.(D) 2.(B) 3.(C) 4.(D) 5.(C)
6.(C) 7.(B) 8.(B) 9.(C) 10.(D)
11.(D) 12.(D) 13.(C) 14.(A) 15.(D)
16. (D) In animals belonging to the class mammals, birds and reptiles, blood passes through the heart twice during each cycle. Because all of them have four chambered hearts.
- Mammals have a four-chambered heart.
 - Birds also have a four-chambered heart.
 - Reptiles have a four chambered heart.
17. (D) Salamanders are creatures with a three-chambered heart. Amphibians have a heart with three chambers.
- The heart of mammals and birds is four-chambered.
 - Amphibians and reptiles have a three chambered heart. The heart of amphibians has two atriums and one ventricle.
 - Whereas, the heart of reptiles has two atriums and a partially divided ventricle; in the heart of reptiles there is a mixing of oxygenated and deoxygenated blood.
18. (C) The cell theory given by Schleiden and Schwann does not apply to viruses. They propounded the cell theory.
- In biology, the cell theory is the most widely accepted scientific theory that states that all organisms are composed of cells.
 - This theory postulates three principles: (i) Every organism is composed of one or more cells. (ii) The cell is the basic structural and organizational unit of every organism. (iii) Cells arise from pre-existing cells.
- The credit for the discovery of cells goes to Robert Hooke.
19. (B) 20. (D)
21. (D) The third stage of the butterfly's life cycle (after the larva) is called the pupa. In the first stage, the butterfly lays eggs which develop into larvae called caterpillars.
22. (C) Magnolia phyta are flowering plants, also known as angiosperms.
- They are also called angiosperms in Hindi. These are flowering and seed producing plants.
 - There are 64 orders, 416 total genera, approximately 13,500 known species, and approximately 3 lakh species.
 - Their seeds develop in the ovary of the flower and are surrounded by a protective fruit.
23. (C) Ginkgo biloba is an example of a living fossil tree.
- Ginkgo is a type of tree that is considered to be one of the oldest living trees.
 - This tree is dioecious, meaning it has male and female trees. It has fan-shaped leaves.
 - This is a medicinal plant, this plant is cultivated mostly in China.
24. (C) Among the given options, snake is not included in invertebrates because snakes are reptiles. Invertebrates are those animals which do not have a backbone and neither the backbone is developed at any stage.
- By definition, it includes all animals except vertebrates. Some major examples of invertebrates are insects, crabs, shrimps, snails, octopus, starfish, etc.
 - Vertebrates or Vertebrates or Vertebrates are the largest sub-
- community of the Chordata community of the animal kingdom. Its members have backbones or vertebrae. At present, about 58,000 species are described in this community.
- Vertebrates or Vertebrates or Vertebrates are the largest sub-community of the Chordata community of the animal kingdom. Its members have backbones or vertebrae. At present, about 58,000 species are described in this community.
25. (D) Snakes, lizards and crocodiles are included in the reptile group. So among all the four options, reptiles are different.
26. (B) The earliest hominoids to be classified as Homo sapiens were Cro Magnon. Homo sapiens is modern humans. Proconsul was a tailless ape called Dryopithecus.
27. (C) Frog does not belong to the reptile class. Frog is a member of the amphibian class while the other creatures in question, crocodile, snake and tortoise belong to the reptile class.
28. (C) Fibrous roots in plants are not a characteristic of dicotyledonous plants. In dicotyledonous plants, flowers are found above the seeds, these are flowering plants such as gram, pea, beans etc.
29. (D)
- Rabbits have a relatively long intestine compared to the other animals listed.
 - Rabbits are herbivores and need a long digestive tract to extract nutrients from their fibrous diet.
 - Their intestines are about 10 times the length of their bodies, which allows them to break down tough plant material and extract nutrients more effectively.

- In contrast, carnivores such as foxes, tigers and dogs have smaller intestines because they are able to digest and absorb nutrients from their high-protein diets more efficiently.
30. (A) • Bryophytes include various mosses and liverworts. These are non-vascular embryos, characterized by the presence of an independent gametophyte and a parasitic sporophyte.
- Bryophytes usually grow in moist, shaded areas in hills.
 - They are called amphibians of the plant kingdom because they can live in soil but depend on water for sexual reproduction.
31. (A) • The basic unit of classification in taxonomy is the species.
- Taxonomy is the science of naming, describing, and classifying organisms based on their characteristics and relationships.
 - Taxonomists use a hierarchical system of classification, with the species being the most basic and fundamental unit of classification.
 - A species is defined as a group of individuals that are capable of reproducing and producing fertile offspring.
 - Each species is given a unique scientific name consisting of two parts, genus and species, which together form a binomial name.
 - For example, the scientific name for humans is *Homo sapiens*, where *Homo* is the genus and *sapiens* is the species.
32. (B) • The animals in question are snails that can change their sex. Snails are commonly called snails. Snails are obligate hermaphrodites. They have both male and female reproductive organs.
- Terrestrial snail is an invertebrate animal found in moist grasslands and gardens. It is a nocturnal herbivorous animal by nature.
 - Planaria are carnivores, feeding on a variety of small invertebrates such as shrimp and water fleas or other small insects in aquatic habitats.
 - *Ascaris* is a long cylindrical earthworm-like organism, a member of the phylum Aschelminthes. *Ascaris* is an endoparasitic organism found in the intestines of humans and pigs.
33. (B) • Leeches and Nereis belong to the Phylum Annelida because they have metamerically segmented body, that is, the body is divided internally into several segments by septa.
- All organisms in the Echinodermata phylum are exclusively marine and free-living organisms.
 - These animals have an exoskeleton of bones and hence the name Echinodermata.
 - Echinoderms or 'echinoderms' are completely marine animals. This large group of the animal kingdom includes starfish, ophiuroids and holothurians etc. The English word Echinodermata means 'animals with spiny skin'.
 - Arthropods are the largest phylum in the animal kingdom. There are about two thirds of the species of arthropods on earth, insects are also included in this. Their body is divided into head, thorax and abdomen. A shell-like structure is found around the body.
 - Mollusca means soft, that is, the body is soft but covered with a hard shell of calcium carbonate. Their body is without segments.
 - Nematoda Also known as roundworms, Nematoda is one of the most abundant phylum on Earth.
34. (C) • Arthropoda is the largest group of animals.
- They are invertebrate animals that make up the phylum Arthropoda, which includes insects, arachnids, geriapods, and crustaceans. All the insects on Earth are invertebrates. Over half of the named species are Arthropoda
 - Porifera means organisms with holes.
 - Mollusca is the second largest phylum after Arthropoda. It includes soft bodied organisms.
 - Nematoda occur as parasites in animals and plants or as free-living organisms.
35. (A) • Cyanobacteria or blue-green algae were the first photosynthetic oxygen-yielding organisms.
- Cyanobacteria belong to the Kingdom Monera. They are prokaryotic and do not have a nuclear membrane.
 - Bacteria are ubiquitous, free-living organisms (FLAs) and are often composed of a single biological cell (or organelle).
 - Bryophyta is a large class of the plant kingdom. It includes all those plants which do not have true vascular tissue, such as mosses, hornworts, etc.
36. (A) Cutaneous respiration occurs in earthworms. They breathe through a moist surface. In fishes, respiration occurs through gills and in humans, through lungs. Remember that earthworms are called friends of farmers.
37. (D) In biology, sponge is an animal. Sponge is an invertebrate, marine creature of Perifera phylum (pore-bearing organisms). These animals cannot move and just stick to their shape. They are of many colors like red, green etc.
- 38.(A) 39.(B) 40.(C) 41.(B) 42.(A)
 43.(A) 44.(B) 45.(D) 46.(D) 47.(B)
 48.(A) 49.(D) 50.(A) 51.(A) 52.(A)
 53.(C) 54.(C) 55.(A) 56.(B) 57.(A)
 58.(D) 59.(B) 60.(A) 61.(D) 62.(D)
 63.(A) 64.(A) 65.(C) 66.(B) 67.(B)
 68.(C) 69.(D) 70.(C) 71.(B) 72.(A)
 73.(C) 74.(A) 75.(C) 76.(D) 77.(D)
 78.(B) 79.(C) 80.(C) 81.(A) 82.(B)
 83.(B) 84.(C) 85.(C) 86.(B) 87.(B)
 88.(B) 89.(A) 90.(A) 91.(C) 92.(D)
 93.(C) 94.(C) 95.(D) 96.(B) 97.(D)
 98.(B) 99.(C) 100.(D) 101.(C) 102.(A)
 103.(D) 104.(D) 105.(B) 106.(D) 107.(A)
 108.(C) 109.(A) 110.(A) 111.(D) 112.(B)
 113.(B) 114.(C)
115. (C) The breakdown of pyruvate occurs in the mitochondria with the help of oxygen. The first step in respiration is the breakdown of the six-carbon molecule glucose into a three-carbon molecule called pyruvate. This process takes place in the cytoplasm.

Pyruvate can be converted into ethanol and carbon dioxide.

- Sometimes when there is a lack of oxygen in muscle cells, another route is adopted for the breakdown of pyruvate.
 - Here pyruvate is converted into lactic acid which is also a three carbon molecule. The build-up of lactic acid in our muscles is the cause of cramps during sudden activities like exercise.
116. (B) Anaerobic respiration in the human body occurs in the cytoplasm of cells. It is a process in which glucose is converted into energy, but oxygen is not used.
- Anaerobic respiration can occur at the following places in the human body:
 - In the cytoplasm of cells: This is the primary site of anaerobic respiration.
 - In Mitochondria: Anaerobic respiration can also occur in mitochondria, but it is less efficient.
 - In striated muscle cells: Anaerobic respiration occurs in striated muscle cells when the supply of oxygen is low.
117. (C) The difference between striated and unlined muscle cells is that unlined muscles do not have voluntary contraction whereas voluntary muscles can contract voluntarily.
- **Striated Muscles : Location :** These are usually attached to arms, legs and bones.
 - **Unlined Muscles : Location:** These are found in eye lids, ureters, bronchi of lungs and heart.
118. (B) Old xylem is used to store waste products in plants. Substances like resin and gum are stored in it.
- Guard cells are kidney shaped. The main function of guard cells is to open and close the stomata.
119. (D) Guard cells are kidney shaped. The main function of guard cells is to open and close the stomata.
- Hyaline cartilage is present in the human nose, cartilage is also present in the outer part of the ear (called the larynx) and the Eustachian tube. It is a non-transparent and non-porous type of tissue found in the human body and other animals. It is usually covered by a tough and fibrous membrane called the perichondrium.
120. (A) In addition to the cell's nucleus, the plastids and mitochondria are organelles that have their own DNA and ribosomes, the cell's genetic material, which are present within the cell's nucleus and mitochondria.
- A cell is the smallest functional and structural unit of an organism.
121. (A) Endoplasmic reticulum organelles eliminate the toxic effects of toxins and drugs.
- Endoplasmic Reticulum (ER) is a membrane-bound organelle found in eukaryotic cells.
 - Inside this cell, there is a huge system of membrane-bound tubes and sheets. These look like long tubes or round or rectangular bags (vesicles). Their structure is also like that of the plasma membrane.
122. (B) Aerenchyma cells are found in the hydrothermal pore. When the intercellular spaces between the parenchyma cells are relatively larger in size, those spaces are filled with air.
- These tissues present around airy spaces are called aerenchyma.
 - Their main function is to ensure gaseous exchange and to keep the plant organ in which they are present in a floating state.
123. (B) The tissue that makes the coconut shell hard and rigid is sclerenchyma.
- Sclerenchyma is a mechanical tissue that provides support and rigidity to plants. It is composed of dead cells that have thick, lignified walls.
 - Parenchyma is a living tissue that performs various functions in plants, such as storing food, photosynthesis, and exchanging gases.
 - Guard cells are found in the epidermis of plant leaves and are responsible for controlling transpiration.
124. (C) Human cells have the ability to change their shape.
- The cell was discovered by Robert Hooke in 1665. He studied the cell in a thin section of Corval.
- WBC are white blood cells that are part of the immune system of the human body.
 - These cells help the body fight infections and other diseases.
125. (C) The largest organelle present in a cell is the nucleus and the smallest organelle is the ribosome, which is produced by the nucleolus. It is known that the nucleus was discovered by Robert Brown in 1830.
126. (B) 127. (A) 128. (A) 129. (C) 130. (A)
131. (A) 132. (C) 133. (B) 134. (B) 135. (A)
136. (B) ATP (adenosine triphosphate) is called the energy currency of the cell. Adenosine 5'-triphosphate, or ATP, is the main molecule for storing and transferring energy in cells.
- It is often referred to as the 'energy currency' of the cell and can be compared to depositing money in a bank.
 - Deoxyribonucleic acid (DNA) is a molecule composed of two polynucleotide chains coiled around each other to form a double helix that provides genetic instructions for all life forms, development, functioning, growth, and reproduction.
137. (B) Iron is part of the heme of human blood. Hemoglobin is a molecule inside the red blood cells of human blood.
- It has two parts: heme and globin. Heme contains iron and transports oxygen from the lungs to the tissues and also carries carbon dioxide from the tissues to the lungs.
 - Hemoglobin and myoglobin are proteins that have oxygen directly bound to the iron (Fe²⁺) atom of the heme prosthetic group.
138. (A) Lysosomes are organelles of eukaryotic cells that are also known as suicide enzymes.
- Chloroplast is known as chloroplast, it is a type of cell organelle.
 - Chloroplasts convert light energy into chemical energy through photosynthesis.

- Mitochondria are known as mitochondria, they are the site of aerobic respiration, in which cellular energy is produced in the form of H_2O .
139. (D) Fat is not a type of stem cell. Stem cells are primarily undifferentiated cells that can differentiate into other specialized cell types. Stem cells are helpful in creating new cells. A stem cell can originate either from adult tissue or from the division of a zygote, depending on which structure it is formed. The number of embryonic stem cells grows much more than that of an adult stem cell.
140. (C) The cell wall of fungi is made of chiton. Fungi are microscopic dead parasites which usually obtain nutrition from dead organisms. Remember that cell walls are found in animals and cell walls are found only in plants.
141. (D) Tissues are cells that are basically similar in appearance and function. Tissues are usually of three types.
- (1) Simple tissue
 - (2) Complex tissue
 - (3) Meristematic tissue etc.
- Xylem and phloem are examples of complex tissue.
142. (A) The motile germ cell is called the male gamete.
- Male Gametes :** Male gametes are called sperm. Sperm is the smallest cell in the human body. Sperm are small single-celled structures with a head, middle piece and tail. Sperm are produced in the testicles.
143. (C)
- Sclerenchyma consists of dead and fibrous cells.
 - Parenchyma consists of living cells with thin cell walls and intercellular spaces.
 - Collenchyma consists of long living cells.
144. (B)
- Ribosomes are called the protein factories of the cell because they are the main sites of protein synthesis.
 - Ribosomes are tiny particles of ribonucleoprotein found in the cell, hence called r-particles.
 - Mitochondria are a part of eukaryotic cells. The main function of mitochondria is to perform cellular respiration. This means that it takes in nutrients from the cell, breaks it down, and turns it into energy. This energy is then used by the cell to carry out various functions.
 - Lysosomes – a sac-like compartment inside the cell that contains enzymes that can break down cellular components that need to be destroyed.
 - Chloroplasts are a type of organelle found in eukaryotic plant cells and in algae cells. Chloroplasts convert light energy into chemical energy through photosynthesis.
145. (A)
- Cytokinin is related to cell division.
 - Cytokinin is a hormone which is responsible for accelerating cell division. It is mainly found in the growing and dividing parts of the plant like roots, shoots and buds etc.
 - Gibberellin hormone helps in breaking down the sap of the plant and it also controls the germination of seeds.
 - Auxin hormone controls the growth of plants.
 - Elemental hydrazide is a herbicide and is widely used to control plant growth.
146. (A)
- The breakdown of glucose to pyruvate during energy production occurs in the cytoplasm. This process is called glycolysis.
 - Cytoplasm – It is the fluid content inside the plasma membrane. The cytoplasm contains many specialized organelles that perform special functions.
 - Nucleus – It plays an important role in reproduction, by determining how the cell will develop, it is found in both animal and plant cells.
 - Nucleus – It is also known as the control center of the cell.
 - Mitochondria – It is also known as the powerhouse of the cell. The chemical energy produced by mitochondria is stored in a small molecule called adenosine triphosphate (ATP).
 - The endoplasmic reticulum (ERR) is a continuous membrane system that forms a series of flattened sacs within the cytoplasm of eukaryotic cells and performs many functions, especially important in the synthesis, folding, modification, and transport of proteins.
147. (B)
- Xylem is not a simple permanent tissue.
 - Xylem is one of the two vascular tissues found in plants. Xylem is a complex permanent tissue found inside the vascular bundle. Xylem plays a major role in the transport of water. The process of ascent of sap takes place within the xylem.
 - Simple permanent tissues are those that perform similar functions and are of similar size. They can be classified into three types- parenchyma, collenchyma and sclerenchyma.
 - Collenchyma tissue is composed of elongated living cells with uneven primary thick walls, containing hemicellulose, cellulose and pectin content.
 - Parenchyma cells are living cells that perform various functions ranging from storage and support to photosynthesis and phloem loading.
 - Sclerenchymatous tissue makes the plant hard and strong. We have seen the fibrous shell of coconut. It is made up of sclerenchymatous tissue. The cells of this tissue are dead.
148. (C) Among the given options, cellulose is an insoluble dietary fiber. It is found in cereals, fruits and vegetables. Examples of soluble dietary fiber: Psyllium (Chlorine), Inulin, Pectin, Carrageen, Raffinate etc.
- Examples of insoluble dietary fiber: Hemicellulose - in cereals, bran, wood Chitin - in fungi, insects Lignin - in fruits, vegetables Hence, option (C) is correct.
- 149.(D) 150.(B) 151.(C) 152.(C) 153.(C)
 154.(B) 155.(D) 156.(A) 157.(A) 158.(C)
 159.(B) 160.(B) 161.(B) 162.(D) 163.(C)
 164.(A) 165.(A) 166.(C) 167.(B) 168.(A)
 169.(A) 170.(C) 171.(A) 172.(A) 173.(A)
 174.(C) 175.(D) 176.(C) 177.(D) 178.(B)
 179.(B) 180.(A) 181.(B) 182.(C) 183.(A)
 184.(D) 185.(C) 186.(C) 187.(C) 188.(C)
 189.(D) 190.(C)

191. (D) In plant cells, the process of respiration, in which they take in oxygen and release energy and carbon dioxide from food, takes place in mitochondria.
- mitochondria are a type of cell organelle located within a cell. Bacteria and animals produce energy from food by oxidation with the help of mitochondrial enzymes present in mitochondria. These respiratory enzymes produce energy in cells, so mitochondria are called the powerhouse of the cell.
192. (D) Lignin makes the xylem vessels waterproof. A xylem vessel is a long tube made up of dead capillaries connected at the ends. Xylem vessels do not contain cytoplasm or nucleus and the vessel walls are made up of cytoplasm or lignin. Apart from transporting water and minerals, xylem vessels also provide strength to the stem and help keep it upright.
193. (C) The main waste products excreted by plants are CO_2 , O_2 and water vapour. During the process of photosynthesis, plants use carbon dioxide and water to form carbohydrates. Oxygen is formed as a by-product. This oxygen is an excretory product for plants. Carbon dioxide is a waste product of aerobic respiration in plant cells. Plants get rid of excess water by transpiration.
194. (A) During photosynthesis, the synthesized carbohydrates are stored as starch.
- Photosynthesis is a process in which green plants make food (carbohydrates) using sunlight, water and carbon dioxide.
 - During photosynthesis, plants absorb sunlight (energy) using chlorophyll. This energy is used to break down water into hydrogen and oxygen.
- (i) Transpiration is the most important of the options that help in temperature regulation in plants.
- Transpiration is a process in which plants evaporate water through their leaves which helps in cooling the plants, as evaporation is a heat-absorbing process. Apart from this, xerophyte plants also conserve water in themselves for a long time due to low evaporation rate.
195. (A) Among the options that help in temperature regulation in plants, transpiration is the most important.
- Transpiration is a process in which plants evaporate water through their leaves, which helps in cooling the plants, as evaporation is a heat-absorbing process. In addition, through low transpiration, xerophyte plants also conserve water in themselves for a long time.
196. (B) Plants do not have a special excretory system like mammals, as plants excrete through their vegetative organs. They excrete their wastes through various methods, which include :
- **Transpiration** : Plants excrete urea and other wastes through the evaporation of water through leaves.
 - **Through roots** : Some plants excrete nitrates and other wastes through roots into the soil.
 - **Through leaves** : Some plants excrete calcium oxalate crystals and other wastes through leaves.
 - **Through fruits** : Some plants excrete wastes through fruits along with seeds.
197. (C) Regarding vegetative propagation in plants, the statement that the resulting plants are genetically different from the parent plants is NOT true. Plant propagation (PPG), also known as vegetative propagation, is a method by which plants can give rise to new plants.
198. (A) Resin (Excretory products) are collected in the old xylem of plants. Various types of biochemical reactions keep happening inside living cells. During these reactions, some useless and toxic substances are produced, which are not useful for the cells or the body. These substances are called excretory substances.
199. (B) Gaseous exchange in leaves during respiration occurs mainly through stomata. Stomata are small pores on the surface of leaves that are surrounded by epidermal cells. These cells are responsible for opening and closing the stomatal opening.
- Thylakoids are membranous sacs found in chloroplasts that play an important role in photosynthesis.
200. (A) The amount of water present in plant cells changes the structure of the cells to facilitate movement.
- The cell is the basic unit of all life, plants, like humans and animals, are made up of cells.
 - The plant cell is surrounded by a cell wall which gives shape to the plant cell.
 - Plant cells are eucellular cells that have a true nuclear wall as well as specialized structures called organelles.
201. (A) Colourless plastids are called leucoplasts and are such organelles found in plant cells.
- Due to the lack of photosynthetic pigments, leucoplasts are located in non-photosynthetic tissues of plants, such as roots, bulbs and seeds.
 - These are one type of plastids which are cellular organelles found exclusively in plant cells.
202. (B) If the rate of respiration is more than the rate of photosynthesis, the effect on the plant will be that more food will be oxidized than produced, due to which the plant will dry up due to lack of nutrition.
- In the process of respiration in plants, the carbohydrates produced are burnt in the presence of oxygen and energy is released, oxygen is required in this process.
 - Respiration is the process by which organic matter is disintegrated with the help of enzymes to provide energy to the cells of an organism.
 - This is the basic process of release of energy.
203. (D) Red cabbage leaf- natural acid base indicator, Methyl orange- acid base indicator, Onion- clove-olfactory indicator are the matched. A substance whose odor changes when it is mixed with an acidic or alkaline solution is known as an olfactory sensitizer. Such olfactory substances are used to test whether a substance is acidic or alkaline. Clove is an olfactory sensitizer because it loses its odor when put in an alkaline solution while it retains its odor in an acidic solution.
204. (D) Papaya flowers are bisexual. Two types of bisexuality are found in plants. Most plants have both male and female organs in the same flower. Another type of bisexuality is that male and female reproductive organs are present in

different flowers, but both types of flowers are found on the same plant. Plants that have bisexual flowers often adopt the trick of not maturing the male and female reproductive organs at the same time to avoid self-fertilization. In some species of flowers, the male reproductive organs mature first (precocity), so that even if the pollen of this flower reaches the female organs of the same flower, fertilization will not take place because the female organs have not matured. These pollen grains can only fertilize the female organs of another flower, which have matured. In prepubertalism, the opposite happens, that is, the female reproductive organs mature first, so that their fertilization can take place only with pollen coming from another flower.

205. (C) Theophrastus is considered to be the first botanist. He was a famous philosopher and naturalist of Greece. He has written two essays on botany. The first is History of Plants and the second is Originator of Plants. Plato was a philosopher who was from Greece. Pliny was a prominent Roman geographer. Archimedes was a Greek mathematician, physicist, inventor and astronomer.
206. (B) 207. (B) 208. (D) 209. (D) 210. (B)
211. (B) 212. (D) 213. (D) 214. (D) 215. (B)
216. (C) 217. (B) 218. (A)
219. (C) The female reproductive part of a flower is called the carpel while the male reproductive part of a flower is called the stamen.
220. (A) The carpel is present in the center of the flower, the carpel forms the female reproductive part of the flower. That is, it is its part, the carpel is surrounded by stamens and petals.
221. (A) The products formed during photosynthesis are glucose, water and oxygen. The process of photosynthesis is also called photosynthesis. In this process, plants prepare their food in the presence of light.
222. (B) Due to the flow of auxin hormone in plants, they bend towards light. Due to the deficiency of this hormone, the growth of axillary buds in plants stops. This hormone was discovered by Charles Darwin.
223. (A) ● The organs necessary for reproduction in a flower are the stamen and pistil.
- The stamen is the male reproductive organ of a flower and consists of two main parts—the anther and the filament. The anther produces and releases pollen grains, which contain the male gametes (sperm cells) that fertilize the female gametes (egg cells) in the pistil.
 - The pistil, also known as the carpel, is the female reproductive organ of a flower and consists of three main parts—the stigma, the style, and the ovary.
 - The stigma is the receptive surface where pollen grains land and germinate to form a pollen tube. The style is a long, thin structure that supports the stigma and connects it to the ovary. The ovary contains one or more ovules, which contain female gametes (egg cells) that are fertilized by sperm cells from pollen.
224. (A) Treatment of dwarfism in plants can be controlled by Gibberellic Acid. Gibberellic Acid – It is a natural compound. It works to increase the photosynthesis in plants. It increases the immunity of plants to fight diseases, which increases the ability of plants to fight harmful insects and diseases.
225. (D) The reproductive parts of a flower are the stamens and carpels. The male reproductive organ of a flower is called the stamen. It helps in the formation of the male gametes of the plant and is found in the pollen grains.
226. (B) Parthenocarpy is defined as the development of fruits without fertilization.
- Plants produce fruits and seeds through pollination and fertilization.
 - Parthenocarpic fruits are seedless fruits.
 - Examples of parthenocarpic fruits are bananas, grapes, etc.
227. (A) ● Stamen is the male reproductive organ of the plant.
- Ovary, style and stigma are the parts of female reproductive system in a plant.
- Male reproductive system of a plant is known as anther and stamen.
228. (B) ● Mustard is an example of bisexual or bisexual flower.
- A flower is defined as bisexual when it has both the female and male reproductive organs of the plant.
 - It has both stamens (male reproductive parts) and pistils (female reproductive parts).
 - The scientific name of mustard is Brassica nigra.
229. (C) ● Pollen grains are found in the floral part, the anther.
- Pollen grains represent male gametophytes.
 - Pollination is the transfer of pollen grains from the male part (anther) of a plant to the female part (stigma) of a plant.
 - Female reproductive cells are produced and stored in the ovule.
230. (A) ● Primary growth in plants occurs by more meristems (intercalary meristem) and apical meristem (apical meristem).
- Most primary growth occurs at the tips or apexes of stems and roots. Primary growth is the result of rapidly dividing cells in the apical meristem at the shoot tip and root tip.
 - Intercalary meristems are present at the nodes or base of the leaf. Their main function is to elongate and provide growth to the part of the plant where they are present.
 - Lateral meristems increase the girth of the stem and roots. They are present on both sides of the stem and roots.
231. (A) ● Pinus are gymnosperms.
- Gymnosperms are plants in which the ovules are not surrounded by any ovary wall and remain exposed. The seeds that develop after fertilization are not covered, i.e. naked.
 - The term gymnosperm means naked seed and the seeds are not enclosed inside the fruit but instead are exposed or on the scales of the cone like a pine cone. Pinus trees are coniferous plants.
 - Lemons are rich in vitamin B.

- Carrots are rich in beta-carotene, a compound that your body converts into vitamin A, which helps keep your eyes healthy.
 - Wheat is one of the oldest and most important cereal crops. Of the thousands of varieties known, the most important is common wheat (*Triticum aestivum*), used to make bread.
232. (D) • Ibuprofen is a nonsteroidal anti-inflammatory drug (NSAID) class C drug used to treat pain, fever, and inflammation.
- Ibuprofen was discovered in 1961 by Stewart Adams and initially marketed as Buprofen.
 - Ibuprofen is practically insoluble in water, but is highly soluble in most organic solvents such as ethanol, methanol, and acetone.
233. (B) Banana flowers and bears fruit only once in its lifetime.
234. (D) The flowering plant called jasmine is actually a creeper. It has about 200 species. From India, this plant reached North Africa, Spain and France through the Moors from Arabia. About 90 species and 100 varieties of this species are naturally available in India.
235. (B) Pitcher plant, Sundew and Venus flytrap, all three are carnivorous plants. Like insectivorous animals, some plants are also insectivorous and are called carnivorous plants. These plants grow in places where they are unable to use nitrogen. For nitrogen, these plants eat the insects coming near them, some such plants are as follows:
1. Bladderwort
 2. Spider web
236. (A) Onion and garlic are examples of tubers. They grow underground. Tubers are structurally composed of soft leaves and leaf margins. The stem also functions as a food storage medium like a tuber.
- 237.(B) 238.(C) 239.(B) 240.(A) 241.(B)
 242.(A) 243.(A) 244.(A) 245.(C) 246.(D)
 247.(C) 248.(A) 249.(C) 250.(A) 251.(D)
 252.(C) 253.(D) 254.(C) 255.(C) 256.(B)
 257.(D) 258.(B) 259.(D) 260.(A) 261.(B)
 262.(C) 263.(C) 264.(D) 265.(A) 266.(D)
 267.(C) 268.(D) 269.(C) 270.(C) 271.(D)
 272.(A) 273.(C) 274.(B) 275.(C) 276.(B)
 277.(B) 278.(A) 279.(D) 280.(B) 281.(D)
 282.(A) 283.(D) 284.(C) 285.(B) 286.(C)
 287.(D) 288.(A) 289.(B) 290.(B) 291.(C)
 292.(D) 293.(C) 294.(D) 295.(A) 296.(B)
297. (C) The reason for having alveoli in the lungs is to increase the surface area. Alveoli are tiny air sacs that serve as the basic respiratory units.
- A typical pair of human lungs contains about 480 million alveoli.
 - Bronchioles are small branches of the trachea that lead to the alveoli.
 - The cell alveolar wall contains blood vessels that transport oxygen and carbon dioxide.
298. (A) In the human heart, the pulmonary vein is connected to the left atrium.
- Pulmonary veins are those veins which carry oxidized blood from the lungs and transport it to the heart.
 - Pulmonary veins are two veins which emerge from each lung and carry blood to the left atrium of the heart. Pulmonary veins are a part of the pulmonary circulation.
299. (C) An adult human urine contains 95% water, 2.5% urea and 2.5% other waste materials.
- Human urine normally contains water, urea and sodium chloride. A 24-hour diet of a human contains 96% water and 4% solids (of which urea is 2.5% and other substances are 2.5%). The normal amount of urea is considered to be 30 mg in 100 ml of blood. About 1.5 to 2 grams of uric acid is excreted through urine every day. The yellow colour of urine is due to the urochrome pigment present in it.
300. (C) Bile juice converts acidic food into alkaline in the food pipe. Since bile juice is alkaline in nature, it is a thick yellow coloured liquid. Its pH value is 7.7.
301. (B) Osmosis is the process by which wastes are removed from the body by the kidneys. A series of tubes made of semipermeable membranes are placed in the dialysis solution to remove the wastes and the clean blood is pumped back into the body.
302. (B) In the human body, villi are present in the small intestine.
- The small intestine is an important part of the digestive system. It is responsible for digesting food and absorbing nutrients.
 - Villi are clusters of lymphoid tissue found in the wall of the small intestine. They are part of the immune system and help protect the body from infection.
 - Villi are usually found in the last part of the small intestine, called the ileum.
303. (A) Dental caries result in the loss of soft tooth enamel, Dental caries is a disease in which bacterial processes damage the hard structure of the tooth.
- Dental caries is caused by two types of bacteria, including *Streptococcus mutans* (*Streptococcus mutans*) and *Lactobacillus* (*Scombe*). Dental caries is caused by a specific type of acid-producing bacteria that damage teeth in the presence of fermentable carbohydrates, such as sucrose, fructose, and glucose.
304. (B) Pyruvate (chlorophyllous) is a common product produced in the first stages of both oxic and anaerobic respiration.
- In both types of respiration, glucose is broken down in a process called glycolysis. In glycolysis, glucose is converted to pyruvate. c In aerobic respiration, pyruvate is further broken down and energy (IAP) is produced. $\text{Glucose} + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O} + \text{Energy (IAP)}$
 - In anaerobic respiration, pyruvate is converted to lactic acid. $\text{Glucose} \rightarrow 2 \text{Lactic acid} + \text{Energy (ATP)}$.
305. (B) Because of the peculiarities of the human circulatory system, high blood pressure is not caused by congestion in the veins. It is caused by an abnormal increase in blood pressure in the arteries.
- This abnormal increase in blood pressure in the arteries puts pressure on the walls of the arteries and can lead to heart disease, stroke, and other health problems.
306. (B) The small intestine of humans does not function as an excretory organ.
- The small intestine is also called the small gut which is a part of the digestive system.

- Vitamins and minerals are digested in the small intestine through digestion.
 - The duodenum is the first part of the small intestine which is connected to the stomach.
307. (D) Bile salts help in the emulsification of fats.
- Bile salts are sodium and potassium salts of bile acids. They are a type of chenodeoxycholic acid and cholic acid
 - These acids break down large lipid globules into small lipid globules and this process is called emulsification.
308. (C) In human kidney, glucose, water, salts and amino acids are selectively reabsorbed from the initial filtrate by the tubular portion of the nephron.
- Kidney is one of the main organs of excretory system in human organs. The function of kidney is to filter blood and remove waste (toxic) products.
 - Waste products and excess fluid are removed through urine.
 - If the kidney of a human gets damaged then he has to undergo dialysis.
309. (D) 310. (C) 311. (C) 312. (A) 313. (A)
314. (D) 315. (A) 316. (A) 317. (D) 318. (D)
319. (A)
320. (B) The point where the chromatids are attached in the chromosome is called the centromere. The chromosomes of any organism are genetic components which are transferred from one generation to the other. A total of 23 pairs i.e. 46 chromosomes are found in humans.
321. (D) The receptors for detecting taste are called gustatory receptors. Gustatory receptors are found in the salivary glands of the mouth. The edges of the tongue are sensitive to pungent taste, the middle part of the tongue is sensitive to bitter and salty taste, and the back part of the tongue is sensitive to sweet taste.
322. (C) Human males have a single anus for the flow of urine and semen, called the urethra. The urethra is a part of the urinary system whose function is to remove waste materials from the body.
323. (B) Tooth decay starts when the pH value of the mouth falls below 5.5. The pH value of normal and healthy human saliva is between 6.5 to 7, but if this happens, the salinity of the mouth increases. This causes not only tooth decay but also various types of mouth related disorders.
324. (D) The forebrain is the part of the human brain that stores ideas. Generally, the function of the brain is to give out information while the function of the hindbrain is to collect information.
325. (D) Yaddhat is not an endocrine gland in humans. It is an exocrine gland. It is also called the largest gland of the human body. It performs the function of blood purification in the body.
326. (B) The fetus receives nutrition from the mother's blood through a special tissue called the umbilical cord. A mother not only stays attached to the baby during the early fetal stage but also nourishes it.
327. (D) The pH level of the human body is 7.0 to 7.8. The full form of pH is Chumbak Vibhakti. Hydrogen molecules determine the acidic or alkaline nature of a substance. If the pH value of a liquid is less than 7, then that liquid is acidic, if the pH value is more than 7, then it is alkaline and if the pH value is clearly 7, then that liquid will be neutral.
328. (C) Veins contain abundant white fibers. Tendons connect muscles to bones while ligaments connect bones to bones. Veins carry pure blood from other parts of the human body to the heart. Their outer layer is thick and smooth on the inside.
329. (D)
- RBC (red blood cells) are responsible for transporting oxygen in the body.
 - They are also called erythrocytes. Their lifespan is 120 days. Hemoglobin is a protein found in red blood cells that carries oxygen from the lungs to the cells of the body.
 - White blood cells are called leukocytes. They are colorless. Lifespan 10-15 days They are responsible for fighting infection-causing organisms inside the body.
 - Plasma helps in the transport of blood clotting proteins.
 - Platelets are called thrombocytes. They help in the clotting of blood.
330. (C)
- Complete digestion of carbohydrates, proteins and fats in the human body takes place in the small intestine.
 - In the small intestine, they are broken down into their basic units by various digestive enzymes.
 - Absorption of water and electrolytes takes place in the large intestine.
 - The esophagus is a common passage for food, air and water from the nasal cavity and oral cavity. Send feedback.
331. (B)
- Trypsin is an enzyme secreted by the pancreas.
 - Trypsin helps in the digestion of proteins.
 - Maltase is secreted by the intestines, it converts maltose into glucose.
 - Lactase is also produced by the intestines, it breaks down lactose into glucose and galactose.
 - Sucrase is an enzyme secreted by the intestines that converts sucrose into fructose and glucose.
332. (D)
- The respiratory pigment found in humans is haemoglobin.
 - Haemoglobin molecules pick up oxygen molecules in the lungs with the help of external chemical factors and then transport them to various tissues of our body.
 - Oxygen is the biggest regulator of oxygen affinity in hemoglobin.
 - Chlorophyll is the reason for the green colour of leaves.
 - Melanin gives skin, hair and eyes their color.
 - Rhodopsin is a protein found in the outer segment discs of the rod cells of the eyes.
333. (B)
- The medulla controls respiration. It is called the medulla.
 - The brain has many parts such as the cerebrum (forebrain), midbrain, medulla oblongata (stem-like structure in the hindbrain), pons (horseshoe-shaped structure in the hindbrain that connects the medulla to the cerebellum) and cerebellum (dorsal projection in the hindbrain).
 - The cerebellum is mainly responsible for maintaining the balance of the body during walking, running, riding, swimming and precise control of voluntary movements.
 - **Forebrain** : The largest part of the brain. Parts of the forebrain include

the cerebellum, hypothalamus and thalamus.

- **Midbrain** : The smallest and central part of the brain, the midbrain includes the following: tectum, tegmentum.

334. (D) • When ethanol is consumed in large amounts, it slows down metabolic processes and depresses the central nervous system.
- Ethanol is an alcohol and has the molecular formula C_2H_5OH . Ethanol consumption causes several cancers including liver, breast, esophagus, pancreas, mouth, larynx, and pharynx.

Name	Chemical Formula
Ethanol	C_2H_5OH
Methanol	CH_3OH
Butanol	$C_4H_{10}O$
Propanol	C_3H_8O

335. (C) • The process of egg production in females is called oogenesis.
- It is the process by which the female gamete *i.e.* ovum or egg is formed. It starts with the process of development of oogonia through the transformation of primary follicles into primary oocytes.
 - **Adolescence** – Humans whose age is between 13 years to 18 years.
 - **Menarche** – First menstrual period in females.
 - **Menstruation** – It is the periodic discharge of blood and mucosal tissue of the inner lining of the uterus through the vagina.
336. (C) • Tendons are dense fibrous connective tissue fibers composed primarily of collagenous fibers.
- Primary collagenous fibers, which are composed of bundles of collagen fibers.
 - Collagen fibers are the basic units of a tendon.
 - Tendons are at the end of skeletal muscles that connect them firmly to bones.
 - It is a modification of white fibrous tissue. Tendons are also called ligaments.
337. (D) • Puberty in females begins with menarche.

- In women, menarche is the first menstrual period. The timing of menarche is influenced by female biology as well as genetic, nutritional, and environmental factors. It is a sign of fertility in women.

- **Menopause** – the time at which a woman's fertility is over.

- **Adolescence** – humans between the ages of 13 and 18.

- **Menstruation** – the periodic discharge of blood and mucous tissue from the inner lining of the uterus through the vagina.

338. (C) 339. (C) 340. (A) 341. (C) 342. (D)

343. (D) 344. (C) 345. (A) 346. (D) 347. (C)

348. (A) 349. (B) 350. (D) 351. (C) 352. (B)

353. (A) 354. (A) 355. (A) 356. (C) 357. (D)

358. (C) 359. (D) 360. (A) 361. (A) 362. (C)

363. (D) 364. (B) 365. (D) 366. (B) 367. (D)

368. (C) 369. (A)

370. (B) When someone is very angry, embarrassed or anxious, the adrenalin hormone helps the body to adjust to the stress, this hormone is also called the fight or flight hormone.

371. (A) Bile salts reduce the size of large fat globules, which allows enzymes to work more efficiently and food is digested properly.

- It is the main site of intestinal metabolism.

- Hydrochloric acid found in the human stomach is a major inorganic acid.

- The fluid secreted by the pancreas is called pancreatic juice.

372. (D) Pepsin is an enzyme that breaks down proteins. It is found in the stomach and helps digest food.

- Pepsin works in an acidic environment.

- Lipase breaks down fats, amylase breaks down carbohydrates, and ptyalin is found in saliva and breaks down starch.

373. (D) In mitochondria, acetic acid is broken down with the help of oxygen.

- Mitochondria is called the powerhouse of the cell, mostly found in uveolar organisms. It is a double membrane-bound organelle.

- It is found inside the cytoplasm and acts as the digestive system of the cell.

- It plays a major role in breaking down nutrients and producing energy-rich molecules for the cell.

374. (B) 375. (A) 376. (B) 377. (D) 378. (D)

379. (B)

380. (A) Ghrelin is called the hunger hormone because it stimulates appetite, increases food intake and increases fat storage.

381. (C) Lipase enzyme is used in the stabilization of rice bran oil.

- Rice bran oil is known as wonder oil and is the most important vegetable edible oil of Asia.

- Rice bran oil is extracted from the husk which is the outer hard layer of rice.

- It is an emerging category in edible oil with lots of nutritional properties and health benefits.

382. (C) Iodine is necessary for the synthesis of thyroxine. Thyroxine is a hormone which is secreted by the thyroid gland. If it is not synthesized, goiter or thyroid disease occurs. This is why it is advisable to eat iodised salt.

383. (B) • The testes primarily release the hormone testosterone, which is a steroid hormone and the main male sex hormone.

- Testosterone is produced by Leydig cells located in the testes and is responsible for the development of male sexual characteristics, such as a deep voice, growth of facial and body hair, and muscle development.

- Testosterone also plays an important role in regulating sex drive, sperm production, bone density, and red blood cell production. It is also important for maintaining overall physical and mental health in men.

384. (A) • Growth hormones can act as both growth promoters and growth inhibitors depending on the concentration and balance of the different hormones present in the organism as well as the stage of development of the organism.

385. (B) • Auxin is not a hormone found in animals.

- Auxin is a hormone found in plants, not in animals.
 - It prevents leaves from separating, destroys straws, prevents crops from falling and controls the growth of plants.
 - Insulin hormone controls the metabolism of glucose in the body.
 - Adrenaline helps in any emergency of the body.
 - Thyroxine plays a major role in the metabolism, growth and development of the body.
386. (D) Cereals, nuts and chocolates in our diet provide most of the copper element.
- Parthezian grass is the main source of iodine which is found in the sea. Its deficiency causes goiter in the body.
 - Peanuts are the best source of zinc.
387. (A) • Bagasse is the fibre left after sugar-rich juice is extracted from sugarcane.
- Fodder is plant material used for animal feed.
 - The process of converting decomposed organic matter into manure is called composting.
 - Bagasse is used as a biofuel for the production of heat, energy and electricity and in the manufacture of pulp and building materials.
388. (D) Vitamin K is required for proper coagulation of blood.
- The chemical name of vitamin K is phylloquinone. Its deficiency causes blood clotting in the body. Its sources are green leafy vegetables.
 - The chemical name of vitamin D is calci-ferol. Its deficiency causes rickets. Its best sources are sun rays, fish etc.
 - The chemical name of vitamin E is tocopherol. Its deficiency weakens the nervous system and muscles in the body. Its sources are green leafy vegetables, millet, egg and sprouted seeds.
 - The chemical name of vitamin A is Retinoic its deficiency causes night blindness. Its sources are carrots, green leafy vegetables etc.
389. (D)
390. (C) Weak muscles and low energy are symptoms of beriberi, also known as polyneuritis indemica, hydrops asthmatics, cocke, barbarians etc. Beriberi is a malnutrition disease caused by deficiency of vitamin B₁.
- The chemical name of vitamin B₁ is thiamine and it is found in green leafy vegetables.
391. (C) Jaggery is high in iron. Jaggery makes from sugarcane juice. It is called as a healthy food.
392. (B) Geomorphology, a branch of physical geography, is devoted to the study of the land features in question. Physical geography is a branch of geography that studies the physical features of the earth. It explains and studies the distribution of physical phenomena found at different places on the surface. Physical geography includes meteorology and climatology, oceanography, geology, soil science, botany and geophysics.
393. (A) Vitamin K is helpful in forming blood clots. Vitamin K is most needed to form blood clots in the body. Vitamin C is important for healing wounds.
394. (C) Vitamin D increases the absorption of calcium in the body. Vitamin D is fat soluble. The main sources of vitamin D are egg yolk, fish oil, vitamin D-rich milk and butter. Apart from this, the main source is sunbathing.
395. (A) 396. (C) 397. (B) 398. (A) 399. (B)
400. (C) 401. (A) 402. (C) 403. (A) 404. (B)
405. (B) 406. (A) 407. (C) 408. (C) 409. (B)
410. (C) 411. (C)
412. (C) Cyanocobalamin (Cyanocobalamin) is a man-made form of vitamin B₁₂. B₁₂ is an important vitamin, the deficiency of which causes anemia. This vitamin is necessary for the balance of the nervous system, for this one should consume milk, curd, buttermilk etc.
413. (B) Glucose is a monosaccharide among the options given in the question. Carbohydrates are organic substances which contain carbon, hydrogen and oxygen. They are of three types:
- (i) **Monosaccharides** : These are simple carbohydrates. Their hydrolysis is not possible. They are soluble in water. For example: pentose, hexose (glucose), etc.
- (ii) **Oligosaccharides** : These are formed by the combination of 2 to 10 monosaccharides. For example: sucrose, maltose, lactose, etc.
- (iii) **Polysaccharides** : These are formed by the combination of 10 to 1000 or more monosaccharides. They are insoluble in water. For example: starch, cellulose, glycogen, chitin, etc.
414. (D) Sun is the biggest source of natural energy for humans. Sun is the biggest body in our solar system. It is a huge sphere of hydrogen and helium gases. It takes 8 minutes and 16.6 seconds for sunlight to reach the earth. Like the earth, the sun also rotates on its axis. The sun is tilted 7.25 degrees on its axis.
415. (B) Scurvy is caused due to the deficiency of vitamin C. Night blindness is caused due to the deficiency of vitamin A. Beriberi disease occurs due to deficiency of Vitamin B₁. Cracking of skin, cracking of tongue, redness of eyes due to deficiency of Vitamin B₂. Rickets disease due to deficiency of Vitamin D. Clotting of blood due to deficiency of Vitamin K. Impotence due to deficiency of Vitamin E.
416. (D) Diabetes is treated with insulin. Pancreas is a mixed gland whose β cells secrete the hormone insulin. Diabetes is caused by a deficiency of insulin. In diabetes, there is an excess of glucose (sugar) in the person's blood, for which we take insulin from outside as a medicine.
417. (D) Beriberi is a malnutrition disease caused by deficiency of vitamin B₁. It is also known by the names polyneuritis indemica, hydrops asthmatics, coke, barbarians etc. Beriberi means 'cannot walk'. This disease is especially found in those areas of the world where rice is the main diet.
418. (C) The hormone insulin controls the amount of sugar in human blood. It is a peptide hormone produced by the beta cells of the islets of the pancreas. The digestive system converts carbohydrates present in food into glucose. It absorbs glucose and regulates carbohydrate and fat metabolism.

419. (A) Niacin is a form of vitamin B₃. Niacin is also known as nicotinic acid. Its molecular formula is C₆H₅NO₂ and it is soluble in water.
420. (A) The nutrient found in abundance in bananas is potassium. Potassium is a mineral that, among other things, helps muscles contract, helps regulate fluid and mineral balance in and out of the body's cells, and helps maintain normal blood pressure by limiting the effects of sodium.
421. (A) Green vegetables are a rich source of iron. Iron deficiency causes a disease called anemia, the main component of which is hemoglobin. Green vegetables like spinach contain about 4 mg of iron per 100 grams.
422. (A) Pellagra is caused by a deficiency of niacin. Niacin is vitamin B₃. Symptoms include inflamed skin, diarrhea, dementia, and mouth ulcers.
423. (B) Hemophilia μ Genetic disease (inability to clot blood) Diabetes μ Hormonal disorder (lack of insulin) Rickets Disease caused by deficiency of vitamin D Ringworm Disease caused by fungal infection.
- 424.(B) 425.(C) 426.(D) 427.(B) 428.(C)
- 429.(A) 430. (C) 431. (A) 432. (A) 433. (D)
434. (A) 435. (A) 436. (D) 437. (A) 438. (B)
439. (A) Hepatitis A is an inflammation of the liver that can cause mild to severe illness. It is spread by drinking contaminated water.
- Hepatitis A is a viral disease that infects liver cells and can cause inflammation.
 - Eating fish from contaminated drain water.
 - Having sex with someone who already has the virus.
440. (B) The spread of disease in a large population and its study is called epidemiology. When the outbreak of a disease is much more than some time ago, it is called an epidemic or pandemic disease.
441. (B) ELISA (Enzyme Linked Immunosorbent Assay) is the test that detects if a person is infected with HIV.
442. (C) Rabies is a viral disease that is usually caused by dog bites and causes swelling of the brain, paralysis of certain body parts, fear of water, uncontrollable excitement, loss of consciousness, etc. in humans and other mammals. It always results in death.
443. (D) Polio is prevented by the Salk vaccine, developed by American physician Jonas Salk in the early 1950s. It is known as the inactivated poliovirus vaccine (IPV).
444. (B) Hydrophobia is a viral disease. It is usually caused by the rabies virus. It is found in animals. Dogs are its main infectious organisms. In hydrophobia, a person is afraid of water.
445. (D) (i) TB vaccine is a vaccine for tuberculosis (TB). It is named after its inventors Albert Calmette and Camille Guerin. In countries where TB is common, a single dose is recommended for healthy infants soon after birth.
(ii) Tuberculosis vaccine is given in case of cat bite or nail scratch.
446. (B) Mad cow disease in cattle is caused by eating meat or food infected with the disease. Bovine spongiform encephalopathy, commonly known as mad cow disease, is a neurodegenerative disease of cattle. Symptoms include abnormal behaviour, difficulty walking and weight loss. Later in the course of the disease, the cattle become immobile. This is due to the consumption of food containing bones and meat.
- 447.(D) 448.(C) 449.(C) 450.(D) 451.(C)
- 452.(A)
453. (D) Tooth decay starts at pH less than 5.5. Normally the human mouth is alkaline but due to bacterial infection acid is produced and pH value decreases. If the pH of a substance is 7 then it is neutral. If it is less than 7 then it is acidic and if it is more than 7 then it is alkaline.
454. (C) The small blood vessels under our skin are called capillaries. Capillaries are the thinnest and smallest blood vessels in our body. They are part of the microcirculation. Their thickness is 5 to 10 micrometers.
455. (C) In the human brain, the medulla oblongata is the part that controls actions like swallowing and vomiting. The medulla oblongata is a cylindrical structure, which is found at the back in the form of the spinal cord. Various reflexive actions like coughing, sneezing, secretion of digestive juices, etc. are controlled by the medulla oblongata.
456. (B) 457. (D)
458. (B) The heart of an adult human has a mass of 250-350 g. The heart is often described as the size of a fist. It is 12 cm in length, 8 cm wide and 6 cm in thickness.
- The heart is a muscular organ in most animals, which pumps blood through the blood vessels of the circulatory system. The pumped blood delivers oxygen and nutrients to the body, while carrying metabolic wastes such as carbon dioxide to the lungs.
 - In humans, other mammals, and birds, the heart is divided into four chambers: the upper left and right atrium and the lower left and right ventricles.
459. (B) Dental mirrors used by dentists are also concave. Concave mirrors are used in headlights and torches. Shaving mirrors are also concave in nature as these mirrors can produce enlarged clear images. Doctors use concave mirrors to see eyes, nose and ears clearly.
- A concave mirror is a spherical mirror with a reflective surface that is inclined inwards. Concave mirrors reflect and focus the incoming light rays (parallel) to a point called the focal point. Different types of images are formed depending on the distance of an object from the reflective surface. Concave mirrors are also called converging mirrors as the light rays converge after reflecting on the concave mirror.
460. (B) The human hypothalamus gland is located in the lower part of the neck. The hypothalamus is a major gland present in the brain, which connects the nervous system with the endocrine system through the pituitary gland. It controls body temperature, food, water balance etc. related to bowel activities and other bodily activities.
461. (A) Prothrombin and fibrinogen are helpful in clotting of blood. Apart from these, there are hormones, sugar, vitamins, amino acids, fatty acids, antibodies, uric acid etc. On the basis of structure, human blood has been divided into two parts.

- **Plasma** : About 55 to 60% parts on the basis of volume.
 - Blood corpuscles or hematopoiesis: About 40 to 45% parts.
Plasma : Plasma is a light yellow coloured, slightly alkaline, clear, transparent and basic (matrix) fluid of the blood. It makes up about 55 to 60% of the blood. It contains 90 to 92% water and the remaining 8 to 10% parts contain various types of organic and inorganic substances.
 - **Organic substances** : It contains the highest amount of plasma proteins, which are mainly made up of 'albumin', 'globulins' and 'prothrombin' and 'fibrinogen'. These determine the osmotic pressure of the blood.
 - **Globulis** : These act as antibodies and destroy toxic substances, viruses and bacteria.
 - **Inorganic substances**: These contain the highest amount of sodium bicarbonate and sodium chloride. Apart from these, phosphates, bicarbonates, sulphates, chlorides etc. of calcium, magnesium, potassium, iron etc. are also found in some quantity.
462. (B) In human brain, the cerebrum is the part which is the centre of intelligence, memory and emotions. The cerebrum is the largest part of the brain. It is divided into two parts called cerebral hemispheres. These cerebral hemispheres are divided into right and left. Their outer surface is highly convoluted due to the presence of bulges and grooves. Each cerebral hemisphere is internally hollow and their walls have inner and outer regions. The outer region is called cerebral cortex which contains cell bodies of nerve cells and grey matter. Due to this, it is called grey matter. The inner region is made up of white axons (Axons) fibres and is called white matter. If the sphere is cut in the transverse direction, then empty space or cavity will be found inside it. These cavities are called lateral ventricles. Both the cerebral hemispheres are connected to each other by the corpus callosum, which is a sheet of crisscrossing nerve fibres.
- The left side of the cerebrum controls the right side of the body and similarly the right side controls the left side.
 - The cerebral cortex has three functions :
 - It initiates and controls voluntary muscle contractions.
 - The cerebral cortex receives and processes information coming from sensory organs such as eyes, ears, nose etc.
 - It performs mental functions such as thinking, reasoning, planning, remembering etc.
463. (B) In humans, pancreas is a gland that secretes both enzymes and hormones. Pancreas is an essential part of the body of most animals. Pancreas is a mixed gland. Its endocrine part is the islets of Langerhans. These secrete insulin hormone which regulates the amount of sugar in the blood. Pancreatic juice is secreted by the exocrine part of pancreas. Which takes part in the digestion of food. Pancreas performs the following important functions.
- Creation of pancreatic juice.
 - Secretion of insulin, glucagon hormones.
 - P Secretion of pancreatic juice. The cells of the bodies of pancreas secrete pancreatic juice. It contains trypsin, amylase and lipase enzymes. Which help in the digestion of protein, carbohydrate and fat respectively. Secretion of hormones
- Insulin and glucagon hormones are secreted from the cells of the islets of Langerhans of the pancreas. These enzymes control and regulate carbohydrate metabolism. Pancreas is a large gland of the body which is situated behind the lower part of the stomach in the abdomen. Due to this, in its natural state it remains covered by stomach and fat (omentum). Its right large part, which is called head, remains within the bend of the duodenum. The other long part of this gland, which is called the sacrum, starts from the head and passes in front of the spine and goes from right to left. There it becomes thin and is called tail. On the left side it reaches the spleen and remains attached to it.
464. (B) Cirrhosis (Cirrhosis) disease affects the liver (Liver) of the body. Disease Affected Organ
- (i) Cholera μ Intestine
 - (ii) Tuberculosis μ Lung
 - (iii) Plague μ Lung and armpit
 - (iv) Leprosy μ Nervous system, skin
 - (v) Syphilis μ Penis
 - (vi) Gonorrhoea μ Urethra
 - (vii) Pneumonia μ Lung
 - (viii) Typhoid μ Intestine
465. (A) Calcium oxalate is the most common stone-forming compound. Kidney stones are solid deposits made of minerals and salt. They can range in size from as small as a grain of sand to as large as a golf ball. They can stay in your kidneys or pass out of your body through the urinary tract. The urinary tract consists of the kidneys, ureters, bladder, and urethra. Types of kidney stones There are four types of kidney stones :
- 1. Calcium stones** : Calcium stones are the most common type of kidney stone. They can be made of calcium oxalate (most common), phosphate, or meliolate. Eating foods low in oxalate can reduce your risk of developing this type of stone. Potato chips, peanuts, chocolate, beets, and spinach are high in oxalate.
 - 2. Uric acid stones (UTS)** : This type of kidney stone is more common in men than women. People suffering from gout or those undergoing chemotherapy are more likely to get it. This type of stone occurs when the amount of acid in the urine is very high. Diets rich in purines can increase urine acid levels. Purines are colourless substances found in animal proteins, such as fish, shellfish and meat.
 - 3. Struvite stones** : This type of stone is most common in women with urinary tract infections. These stones can grow large and cause urinary obstruction. These stones are caused by kidney infections. Treating the underlying infection can prevent the development of struvite stones.
 - 4. Cystine stones** : Cystine stones are rare. They occur in men and women who have the genetic disorder cystinuria, a genetic disorder in which stones made

- from the amino acid cystine form in the kidneys, ureters and bladder. In this type of stone, cystine, an acid that occurs naturally in the body, leaks out of the kidneys and into the urine. It happens in.
- 466. (D)** In humans, involuntary actions such as blood pressure, salivation and vomiting are controlled by the medulla oblongata.
- The medulla, also known as the medulla, is the lower part of the brain. It is a long stick-like structure.
- 467. (C)** The name of the scientist who discovered bacteria is A.V. Leeuwenhoek.
- Bacteria are microscopic parasitic organisms, which are usually unicellular.
 - Major diseases caused by bacteria are typhoid, cholera, whooping cough, tetanus, tuberculosis, plague, leprosy, pneumonia etc.
 - Robert Koch established the basic causative agents of tuberculosis, cholera as modern bacteriology. He also discovered the vaccine for tuberculosis.
 - James Chadwick discovered neutron.
 - Eugene Goldstein discovered canal rays, also known as anode rays.
- 468. (A)** The male's sex cell (sperm) and the female's sex cell (ovum) fuse to form a zygote. The male's sex cell (sperm) is produced in the testis and the female's sex cell (ovum) is produced in the ovary.
- 469. (A)** The largest internal organ of the human body is the 'Liver'. And the smallest organ of the human body is the pineal gland, which is near our brain and it produces the melatonin hormone.
- 470. (B)** The longus muscle is the longest muscle in the human body which is a long, thin, superficial muscle. This muscle is found in the human thigh.
- 471. (D)** In the human body, pancreas is the organ that controls the amount of sugar in the blood. Its beta cells of Langerhans' clusters produce a hormone called insulin which controls the amount of sugar in the blood. When there is more sugar than normal in the blood, insulin converts it into glycogen.
- 472. (D)** Insulin is a hormone produced in the pancreas that helps the body regulate blood sugar.
- 473. (D)** Calcium is a mineral that helps in blood clotting and strengthens bones in the human body.
- 474. (D)** Leukemia disease affects the blood cells in the human body. It is a blood forming tissue cancer. Its effects include weight loss, infection and easy bleeding.
- 475. (C)** The three bones found in the middle ear are the hammer, anvil and stirrups. Their function is to control the intensity of sound in the ear.
- 476. (B)** Leucoderma is a skin disease in which the skin discolors and can occur on any part of the body, such as the mouth, hair, eyes. It is more evident in people with darker skin.
- 477. (A)** The enzyme ptyalin is found in saliva. Its job is to break down starch into glucose and maltose. It aids in digestion.
- 478. (A)** Adrenaline hormone is released during an emergency. Adrenaline is normally produced by a small number of neurons in the adrenal glands and the medulla oblongata. It is also called the 'fight or flight' hormone.
- 479. (C)** Thrombosis is a condition related to the formation of a clot in the blood. When a blood clot forms in one or more deep veins of the body it is known as DVT or deep vein thrombosis. This condition usually develops in the legs.
- 480. (B)** Islets of Langerhans are found in the pancreas, which is located in the endocrine cells of the pancreas. It occupies 1 to 2% area of the pancreas.
- 481. (C)** It is the adrenal gland that makes animals capable of fighting. Adrenal gland is an endocrine gland found in vertebrates. It is located above the kidney. Its main function is to release hormones during stress. The right adrenal gland of humans is triangular in shape, while the left one is crescent-shaped.
- 482. (C)** The main chemical substance of hair is 'keratin'. Hair is made from a substance called keratin. Vitamin B-7 is also found in hair. Its deficiency causes hair fall. Thiamine is called vitamin B-1.
- 483. (D)** In the human body, pancreas is the gland that controls the rate of energy release. The yellow pancreas is located below the stomach and surrounds the duodenum. It controls the spleen in the abdominal cavity. Pancreatic juice contains 98.0% water, 1.5% different types of organic salts and 0.5% chemical salts.
- 484. (D) 485. (B) 486. (A) 487. (A) 488. (A) 489. (B) 490. (C) 491. (B) 492. (D) 493. (C) 494. (D) 495. (D) 496. (C) 497. (B) 498. (D) 499. (D) 500. (A) 501. (A) 502. (D) 503. (A) 504. (D) 505. (D) 506. (D) 507. (C)**
- 508. (D)** Gregor Mendel was the first person who combined his knowledge of science and mathematics to calculate the number of plants/organisms exhibiting a particular trait in each generation.
- The experiment of Gregor Mendel (Law of Inheritance) is considered as the beginning of genetics in biology in a detailed manner. He studied various plants, especially pea plants in the laboratory and analyzed their chromosomes. Mendel gave three laws based on the experiments done on pea plants which are as follows:
1. Law of Dominance
 2. Law of Segregation
 3. Law of Independent Assortment (Law of Independent Assortment)
- 509. (B) 510. (B) 511. (C) 512. (B) 513. (B) 514. (D) 515. (C) 516. (B) 517. (B) 518. (B) 519. (C) 520. (B) 521. (C) 522. (B) 523. (B) 524. (B)**
- 525. (A)** Gregor Mendel is called the father of genetics. He was a biologist, scientist, mathematician and priest of St. Thomas Eighty Church. Mendel conducted his experiment on pea seeds, he observed that a special feature of the pea plant is that its flower is either white or purple. To know why this happens, Mendel took two such plants, one of which always had white flowers and the other had purple flowers. When Mendel mated the white flowered plant with the white flowered plant, it was observed that the new plant that grew had white flowers. (i) Asexual reproduction is different

from sexual reproduction. In asexual reproduction, the new organisms are similar to the parents. Asexual reproduction is a type of reproduction in which the fusion of gametes (fertilization) does not change the number of chromosomes. Asexual reproduction is usually the reproduction process that takes place in single-celled organisms.

526. (A) Asexual reproduction differs from sexual reproduction in that in asexual reproduction the organism are genetically identical to the parent.
527. (B) Vegetative reproduction is a type of asexual reproduction that involves reproduction through parts of the root, stem and leaves. It is often observed that the stems of some plants independently develop into new plants.
528. (A) In sexual reproduction, the contribution of parents is half of their genes, that is, in the offspring produced in reproduction, half the traits are of the mother and half are of the father. Gene is the smallest functional unit of heredity.
529. (B) Genes are carriers of genetic material, a gene is a sequence of nucleotides that contain coding information which ultimately leads to the synthesis of a protein. It is the basic unit of heredity.
530. (B) • Gregor Mendel conducted experiments on pea plants for seven years (1856-1863). Hence statement 1 is correct.
- He conducted various experiments and concluded that chromosomes are the carriers of genes. Statement 2 is correct.
 - Human arms are not analogous to the wings of birds. Hence statement 3 is incorrect.
 - Analogous organs are those which perform similar functions but are structurally different.
 - **Example** : bat wings and bird wings.
531. (A) • The cells of a newborn girl have a combination of 44 chromosomes, called gamma-glucose.
- Humans have 22 chromosome pairs, called autosomes.
 - The sex chromosomes are called X and Y, and their combination determines a person's sex.

- Typically, women have two X chromosomes, while men have two XY chromosomes.
532. (B) • The segment of DNA that provides information to proteins is called a gene. DNA was discovered in 1869 by Frederick Miescher. Watson and Crick proposed the double helical structure of DNA with two strands connected by hydrogen bonds.
- Gene is the final unit of heredity through which parental traits are transferred to offspring. These are segments of DNA.
 - Lysosomes help in the removal of dead cells and cell division.
 - Chromosomes are filamentous bodies found in the cells of all plants and animals, which are known to determine and transmit genetic traits. Such as X and Y chromosomes.
 - Nucleus is an important organ of the cell which controls all metabolic activities of the cell. Genetic element DNA is found in it. The nucleus was discovered by Robert Brown.
533. (C) • Studies of human evolution suggest that we all descend from a single species that evolved in Africa.
- The scientific study of human evolution is known as paleoanthropology.
 - The oldest human fossils have been found in Africa. Studies of genetic diversity support the idea of Homo sapiens' origin in Africa.
 - Homo sapiens first appeared in Africa about 1.8 million years ago.
 - In the evolution of modern humans, Homo sapiens moved out of Africa to a limited extent.
534. (A) A carcinogen is something that can directly cause cancer. It could be a chemical, a virus, or radiation. Carcinogens are things that can cause cancer by affecting genes or damaging normal cells so that they turn into cancer cells.
535. (C) • One of the most important exercises for maintaining good posture is doing a chin tuck (squat pose) to keep the head level with the spine.
- Only the chin and upper neck are the focus of a chin tuck.

- It eliminates excess fat and tightens the skin.
536. (A) Breathing in the presence of approximately 900 chloroform particles in one million particles in air for a short time causes fatigue, dizziness and headache. This is because it is an anaesthetic.
- Smelling chloroform causes unconsciousness. It is used as a reagent in surgery and laboratory.
 - Asbestos is a fibrous mineral found naturally. It is used in cement and textile industries.
 - Arsenic is a metalloid discovered by Albertus Magrus.
 - Excessive arsenic causes a disease called black foot disease.
537. (D) Aerosols are a subset of air pollution that refers to tiny particles present everywhere in our atmosphere.
- Aerosols can be both natural and artificial.
 - Examples of natural aerosols are dust, fog, smoke, etc.
 - Genome refers to the genetic material present in an organism and genomes are mostly similar in all individuals.
 - Humus is a blackish brown substance formed by the decay of organic matter.
538. (C) • The acronym RICE includes first aid for sprains, strains and bruises.
- Full form of which is Rest, Icing, Compression and Elevation.
 - Rest - Avoid touching the injured area.
 - Icing - Applying ice to the injury rather than directly touching the skin.
 - **Compression** : Wrapping the injury with a bandage to provide support and reduce swelling.
 - **Elevation** : Raising the injured area to the level of the heart to reduce swelling.
539. (B) The father of genetics is Gregor John Mendel. He used garden pea plant in his experiment. His theory (theory of heredity) is based on sexual reproduction. The unit of heredity is gene. Genes are found in a linear order on chromosomes. The number of chromosomes in humans is 23 pairs (46). Hence option (b) is correct.

540. (D) A mule is a hybrid produced by crossing a male donkey and a female horse. A horse has 64 chromosomes, and a donkey has 62. A mule is either male or female with 63 chromosomes, but because of the odd number of chromosomes, they cannot breed.
541. (B) 542. (B) 543. (D) 544. (B) 545. (A)
546. (B) ECG (Electrocardiogram) The electrical forces produced by the heart are sensed. This is a test used to check the heart. For this, various sensors are stuck to the skin.
547. (D) 548. (A) 549. (A) 550. (A) 551. (C)
552. (B) 553. (B) 554. (A) 555. (D) 556. (D)
557. (D) 558. (D) 559. (D) 560. (C) 561. (B)
562. (B) 563. (D) 564. (A) 565. (A) 566. (D)
567. (B) 568. (D) 569. (D) 570. (A) 571. (B)
572. (B) 573. (A) 574. (C) 575. (D) 576. (A)
577. (B) 578. (A) 579. (A) 580. (D) 581. (D)
582. (D)
583. (D) Anti HIV antibodies in the blood can indicate if a person has been infected with HIV more than a year ago. This is because the human body produces antibodies against HIV, which protect the blood against infection. The presence of these antibodies can be tested and their status can determine how long ago the person was infected. This process is done through a special blood test called the HIV antibody test. In this test, the blood sample is tested in the lab to see if antibodies against HIV are present or not. If antibodies are found, it indicates that the person may be infected with HIV or is likely to develop it.
584. (C) Mushroom is an organism which breaks down the food outside the body and then absorbs the digested food. The nutrients required for the body are derived from dead and decaying debris by saprotrophic mode of diet. These are called saprotrophic organisms. Rhizopus, yeast and mushrooms are the examples of saprotrophic organisms.
585. (B) Only barrier methods of contraception can prevent the transmission of HIV.
- To prevent the transmission of HIV, there are many methods of contraception, such as the use of conventional contraceptive drugs, contraceptive injections and contraceptive uterine devices, etc.
- Some methods may be more effective when used correctly and with appropriate advice. However, there is no guarantee of completely preventing HIV infection, so it is very important to take precautions to prevent the infection.
586. (C) Lactic acid is not an animal nitrogenous waste product. It is an acid present in milk. There are three types of nitrogenous wastes :
- Ammonia** : More water is required for its excretion. Hence many fishes, amphibians and aquatic insects excrete ammonia and are called ammonotelic.
 - Urea** : Converts ammonia excreted by cells into urea, which is removed from the body through the kidneys. Mammals and marine fishes are called ureotelic.
 - Uric acid** : Birds, reptiles, insects etc. convert ammonia into uric acid and such animals are called uricotelic.
587. (A) The loop works by blocking the passageway to the fallopian tubes to prevent pregnancy. The loop is a type of intrauterine device (IUD) that is inserted into the uterus to prevent pregnancy.
- The loop works in the following ways to prevent pregnancy :
 - It blocks the passageway to the fallopian tubes, preventing sperm from reaching the egg.
 - It thickens the cervical mucus, making it difficult for sperm to reach the egg.
 - It thins the uterine lining, making it difficult for the embryo to implant.
588. (B) The colour of the litmus paper will turn red when dipped in gastric juice. This is because gastric juice is acidic and litmus paper turns red in acid.
- Litmus paper is a type of detector paper that changes colour in acids and alkalis.
 - Litmus paper changes colour in alkalis to blue.
 - Gastric juice contains hydrochloric acid, which makes it acidic.
589. (D) In muscles, glucose is broken down into lactic acid by anaerobic respiration. Anaerobic respiration is a biochemical process in which glucose is broken down in the absence of oxygen. This process takes place in muscles when they need energy urgently and oxygen supply is low.
- In this process, glucose is broken down into lactic acid.
590. (A) There is a specific gene for each protein. The statement is correct.
- DNA The functional units of heredity are known as genes. DNA, which is made up of many genes, makes up chromosomes. A specific set of instructions for a specific function or protein coding is found in each gene.
 - Protein is a natural substance present in all living organisms. It is composed of amino acids.
591. (D) A normal adult human produces 1000 – 2000 ml of urine per day. It is a part of human excretion process. Urine is formed in the kidney. The structural and functional unit of the kidney is called nephron. Millions of nephrons are involved in the process of urine formation. There are three stages of urine formation – filtration, reabsorption, secretion.
592. (A) Premonition by which an organism begins life as a female and later on becomes a male.
- In flowers, the maturation of male reproductive organs before the female reproductive organs is called premonition.
 - Homozygosity is the condition in which a particular gene develops in two similar forms.
 - Heterozygosity is the condition in which a particular gene develops in unequal forms.
593. (B) The sex of an individual is determined by the chromosomes present in the sperm. Humans have only one pair of sex determining chromosomes. Male sperms are haploid, humans have 23 pairs of chromosomes. A chromosome is a DNA molecule that contains part or all of the genetic material of an organism. Chromosomes are carriers of genetic traits.
594. (D) Tendu leaves are used to make bidis. Tendu (*Diospyros melanoxylon*) is a small tree found in India and Sri Lanka. Its leaves are large, shiny, and oval. These leaves are used to make bidis. Tendu leaves are a key component in the beedi-making process and are considered to be excellent wrappers.
595. (C) Himalayan vine Brahma Kamal flower has antiseptic properties and hence can help in healing scratches.

Brahma Kamal is known as Kaul Padma Vel in Uttarakhand. 24 species of Brahma Kamal are found in Uttarakhand and 210 species are found in the whole world. The blooming time of this flower is from July to September. This flower is found in abundance in the Pindari Glacier in Veldarnath in the valley of pools in Uttarakhand.

596. (C) 597. (B) 598. (A) 599. (C) 600. (C)

601. (D) 602. (A)

603. (B) Antibiotics are used to treat bacterial infections inside the human body. Antiseptics are antibacterial substances. Anesthetics are anesthetic substances. Antipyrics are antipyretic substances.

604. (A) Binomial nomenclature was introduced by Carolus Linnaeus. Carolus Linnaeus is known for scientific classification. He is also called the father of modern classification.

- Linnaeus created a new system of classification for all living things. He gave this naming system in his book 'Species Plantarum'. In this classification, the name of any organism is kept in two parts. For example, the mango fruit is called 'Mangifera indica'. Here the name 'Mangifera' indicates its genus while 'indica' indicates the script.

605. (D) The fig plant does not fix atmospheric nitrogen due to its symbiotic relationship with Rhizobia bacteria found in its root nodules. However, Rhizobium fixes nitrogen. The reduction of these organisms into ammonia is called biological nitrogen fixation.

The most prominent symbiotic relationship is with biological nitrogen fixing legume bacteria.

606. (A) The first step in providing first aid for minor burns is to pour cold water over the burned area. This reduces pain, swelling, and the effects of the burning sensation.

- First, calm and reassure the injured person.
- Hold the burned area under cold running water for at least 10-20 minutes, until the pain subsides.
- If clothing is not stuck to the burn, remove it.

607. (D) Cuscuta obtains nutrition from plants as a parasite, which is commonly

known as Amarbel. It can often be seen wrapped around trees like acacia, berry etc. Apart from this, it obtains nutrition as a parasite in agricultural plants.

608. (A) Plasmodium is produced by multiple fission. Plasmodium is a protozoan organism. It is also known as malaria parasite because it causes malaria disease after entering the human body through mosquitoes. It is transmitted rapidly due to its multiple fission.

609. (C) Hydra can reproduce through regeneration and budding. Hydra is an aquatic organism of the phylum Cnidaria. It cannot be seen with the naked eye; its reproduction process is completely asexual.

610. (D) Antacid type of medicine is used to treat indigestion. Antacids neutralise the acid produced in the body. Due to which incidents like heartburn and vomiting usually do not occur. Aluminium hydroxide, magnesium carbonate, magnesium trisilicate and calcium carbonate are usually used as antacids.

611. (A) • Hydra is a freshwater organism that can reproduce both sexually and asexually.

- Hydra can reproduce asexually by a process called budding, where a new organism grows and develops and separates from the body of the parent Hydra.
- Hydra can also reproduce sexually by producing eggs and sperm, which develop into new organisms after fertilization.

612. (A) • Sexual reproduction produces more diversity.

- It involves asexual division which means a cell doubling its DNA, changing its genes and then dividing the changed DNA between four cells.

613. (A) • Spirogyra can reproduce by fission.

- Fission is an asexual type of reproduction.
- Yeast reproduce through binary fission.
- Hydra reproduce through budding and regeneration.
- Planaria reproduce asexually through regeneration.

614. (B) • Fertilization results in the formation of a zygote.

- In animals, the female egg and the male sperm fuse together to form a new organism; this is called fertilization.
- The cell formed by the combination of two gamete cells in sexual reproduction is called a zygote or gamete or gamete or zygocyte.
- The male or female cell that combines with the cell of the opposite sex to form a baby is called a gamete cell.
- The reproductive cells are known as egg cells in females and sperm cells in males.

615. (D) • Diploid organisms which have separate sexes have a special pair of chromosomes in their diploid cells which determine the sex and these are called sex chromosomes. The statement is true.

- Chromosomes are fibrous structures which carry genetic information, they are made up of DNA.

• In human, there are 23 pairs of chromosomes, out of which 22 pairs are somatic chromosomes and the last i.e. 23rd pair is called 'allosome' chromosome (sex chromosome). It is known as the X-Y pair.

• In grasshoppers, males have only one X chromosome in addition to autosomes, while females have a pair of X chromosomes.

• Males have one X and one Y chromosome (XY), while females have two X chromosomes (XX).

• In humans, each cell contains 23 chromosomes out of a total of 46. Twenty-two of these pairs are called autosomes, which are the same in both men and women. Therefore, it can be concluded that all humans have 46 chromosomes.

616. (D) Amoxicillin is a penicillin antibiotic that fights bacteria. Amoxicillin is used to treat a variety of bacterial infections. It is a penicillin-type antibiotic. It works by stopping the growth of bacteria. Amoxicillin is used to treat bacterial infections such as tonsillitis, bronchitis, pneumonia, and infections of the nose, ear, throat, and skin.

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