

- The respiratory quotient during cellular respiration would depend on
  - the nature of enzymes involved
  - the nature of the substrate
  - the amount of carbon dioxide released
  - the amount of oxygen utilised
- Which of the following is not a green-house gas?
  - Water vapour
  - Carbon monoxide
  - Methane
  - Oxygen
- Both husband and wife have normal vision though their fathers were colourblind and mothers did not have any gene for colourblindness. The probability of their daughters becoming colourblind is
  - 50%
  - 75%
  - 0%
  - 25%
- An animal, which has both exoskeletal and endoskeletal structures is a
  - fresh-water mussel
  - tortoise
  - frog
  - jelly fish
- $2n = 16$  in a primary spermatocyte, which is in metaphase of first meiotic division. What shall be the total number of chromatids in each of the secondary spermatocyte?
  - 32
  - 8
  - 16
  - 24
- Identify the group, which includes animals all of which give birth to young ones directly?
  - Dolphin, kangaroo, bat, cat
  - Platypus, penguin, bat, hippopotamus
  - Shrew, bat, kiwi, cat
  - Lion, whale, ostrich, bat
- Compare the statements A and B.
 

**Statement A** Blood sugar level falls rapidly after hepatectomy.

**Statement B** The glycogen of the liver is the principal source of blood sugar.

Select the correct description.

  - Both the statements A and B are correct and B is the reason for A
  - Statement A is correct and B is wrong
  - Statement A is wrong and B is correct
  - Both the statements A and B are correct and B is not the reason for A
- What is/are true about heart wood?
  - It does not help in water conduction.
  - It is also called alburnum.
  - It is dark in colour but very soft.
  - It has tracheary elements which are filled with tannin, resin, etc.
  - B, C and D
  - A and D
  - B and D
  - A, B and C
- Compare the statements A and B.
 

**Statement A** Auxins promote apical dominance by suppressing the activity of lateral buds.

**Statement B** In moriculture, periodic pruning of shoot tips is done to make mulberry plants bushy.

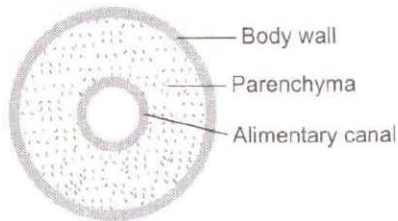
Select the correct description.

  - Both the statements A and B are correct and A is the reason for B
  - Statement A is correct and B is wrong
  - Statement A is wrong and B is correct
  - Both the statements A and B are correct and A is not the reason for B

10. Bryophytes resemble algae in the following aspects  
 (a) Filamentous body, presence of vascular tissues and autotrophic nutrition  
 (b) Differentiation of plant body into root, stem and leaves and autotrophic nutrition  
 (c) Thallus like plant body, presence of roots and autotrophic nutrition  
 (d) Thallus like plant body, lack of vascular tissues and autotrophic nutrition
11. Compare the statements A and B.  
**Statement A** A monocistronic mRNA can produce several types of polypeptide chains.  
**Statement B** The terminator codon is present on the mRNA.  
 Select the correct description.  
 (a) Both the statements A and B are wrong  
 (b) Statement A is correct and B is wrong  
 (c) Statement A is wrong and B is correct  
 (d) Both the statements A and B are correct
12. Stoma opens, when  
 (a) guard cells swell due to an increase in their water potential  
 (b) guard cells swell by endosmosis due to influx of hydrogen ions (protons)  
 (c) guard cells swell by endosmosis due to efflux of potassium ions  
 (d) guard cells swell due to a decrease in their water potential
13. Which of the following is properly matched?  
 (a) Platyhelminthes—Trematoda—*Planaria*  
 (b) Echinodermata—Asterozoa—Star fish  
 (c) Arthropoda—Insecta—Spider  
 (d) Mollusca—Cephalopoda—*Unio*
14. A man is admitted to a hospital. He is suffering from an abnormally low body temperature, loss of appetite and extreme thirst. His brain scan would probably show a tumour in  
 (a) medulla oblongata (b) pons  
 (c) cerebellum (d) hypothalamus
15. Identify the incorrect statement with respect to Calvin cycle  
 (a) The carboxylation of RuBP is catalysed by rubisco  
 (b) The first stable intermediate compound formed is phosphoglycerate  
 (c) 18 molecules of ATP are synthesized during carbon fixation  
 (d)  $\text{NADPH} + \text{H}^+$  produced in light reaction is used to reduce diphosphoglycerate
16. The agents, which are known to cause CJD are  
 (a) protein particles (b) a class of bacteria  
 (c) a class of viruses (d) fungi
17. In crop improvement programmes, virus-free clones can be obtained through  
 (a) grafting (b) hybridization  
 (c) embryo culture (d) shoot apex culture
18. A person is suffering from frequent episodes of nasal discharge, nasal congestion, reddening of eyes and watery eyes. These are the symptoms of  
 (a) cyanosis (b) bronchitis  
 (c) rhinitis (d) bronchial carcinoma
19. Some important events in the human female reproductive cycle are given below. Arrange the events in a proper sequence.  
 A : Secretion of FSH  
 B : Growth of corpus luteum  
 C : Growth of the follicle and oogenesis  
 D : Ovulation  
 E : Sudden increase in the levels of LH  
 (a)  $C \rightarrow A \rightarrow D \rightarrow B \rightarrow E$   
 (b)  $A \rightarrow C \rightarrow E \rightarrow D \rightarrow B$   
 (c)  $A \rightarrow D \rightarrow C \rightarrow E \rightarrow B$   
 (d)  $B \rightarrow A \rightarrow C \rightarrow D \rightarrow E$
20. Compare the statements A and B.  
**Statement A** Ranikhet disease is the disease of poultry.  
**Statement B** It is caused by a virus.  
 Select the correct description.  
 (a) Both the statements A and B are correct  
 (b) Statement A is correct and B is wrong  
 (c) Statement A is wrong and B is correct  
 (d) Both the statements A and B are wrong
21. The offspring produced from a marriage have only O or A blood groups. Of the genotypes given below, the possible genotypes of the parents would be  
 (a)  $I^A I^A$  and  $I^A I^O$  (b)  $I^O I^O$  and  $I^O I^O$   
 (c)  $I^A I^A$  and  $I^O I^O$  (d)  $I^A I^O$  and  $I^O I^O$
22. A dorsal horn is present on the ..... of mulberry silk worm (caterpillar).  
 (a) head  
 (b) 8<sup>th</sup> abdominal segment  
 (c) 5<sup>th</sup> abdominal segment  
 (d) 2<sup>nd</sup> thoracic segment
23. A plant has an androecium with monadelphous stamens, monothealous and reniform anthers. The corolla exhibits contorted aestivation. The plant could be  
 (a) *Rauwolfia* (b) *Vinca*  
 (c) *Nerium* (d) *Hibiscus*



24. Transpiration facilitates  
 (a) electrolyte balance  
 (b) opening of stomata  
 (c) absorption of water by roots  
 (d) excretion of minerals
25. The cross-section of the body of an invertebrate is given below. Identify the animal, which has this body plan.



- (a) Cockroach                      (b) Roundworm  
 (c) *Planaria*                        (d) Earthworm
26. In an experiment demonstrating the evolution of oxygen in *Hydrilla*, sodium bicarbonate is added to water in the experimental set-up. What would happen if all other conditions are favourable?  
 (a) Amount of oxygen evolved decreases as carbon dioxide in water is absorbed by sodium bicarbonate  
 (b) Amount of oxygen evolved increases as the availability of carbon dioxide increases  
 (c) Amount of oxygen evolved decreases as the availability of carbon dioxide increases  
 (d) Amount of oxygen evolved increases as carbon dioxide in water is absorbed by sodium bicarbonate
27. Which substance is in higher concentration in blood than in glomerular filtrate?  
 (a) Water                              (b) Glucose  
 (c) Urea                                (d) Plasma proteins
28. All the following are included under *in situ* conservation except  
 (a) botanical garden    (b) biosphere reserve  
 (c) national park        (d) sanctuary
29. Match the compounds given in Column I with the number of carbon atoms present in them which are listed under Column II. Choose the answer which gives the correct combination of alphabets of the two columns.

	Column I		Column II
A.	Oxaloacetate	(p)	6-C compound
B.	Phosphoglycer-aldehyde	(q)	5-C compound
C.	Isocitrate	(r)	4-C compound

D.	$\alpha$ -ketoglutarate	(s)	3-C compound
		(t)	2-C compound

- |     |   |   |   |   |
|-----|---|---|---|---|
|     | A | B | C | D |
| (a) | s | t | q | r |
| (b) | r | s | p | q |
| (c) | r | t | p | q |
| (d) | q | s | p | t |
30. Identify the correctly matched pair/pairs of the germ layers and their derivatives.  
 (A) Ectoderm — Epidermis  
 (B) Endoderm — Dermis  
 (C) Mesoderm — Muscles  
 (D) Mesoderm — Notochord  
 (E) Endoderm — Enamel of teeth  
 (a) A, C and D only    (b) A, B, C and E only  
 (c) A and D only        (d) A and B only
31. Identify the correct statement.  
 (a) Because of marked climatic variations, plants growing near the sea shore do not produce annual rings.  
 (b) The age of the plant can be determined by its height.  
 (c) Healing of damaged tissue is because of the activity of sclerenchyma cells.  
 (d) Grafting is difficult in monocot plants as they have scattered vascular bundles.
32. Blood stains are found at the site of a murder. If DNA profiling technique is to be used for identifying the criminal, which of the following is ideal for use?  
 (a) Serum                              (b) Erythrocytes  
 (c) Leucocytes                        (d) Platelets
33. During endocytosis,  
 (a) the cell divides its cytoplasm during mitosis  
 (b) the cell digests itself  
 (c) the cell engulfs and internalises materials using its membrane  
 (d) the cell enables the extracellular digestion of large molecules
34. Match the names of the economically important plants (or their products) listed in Column I with the families to which they belong given in Column II. Choose the answer which gives the correct combination of alphabets of the two columns.

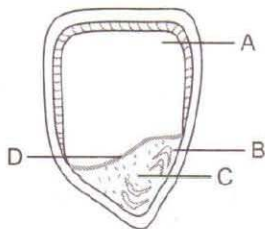
	Column I		Column II
A.	Sunflower	(p)	Acanthaceae
B.	Tulsi	(q)	Compositae

C.	Coffee	(r)	Labiatae
D.	Vasaka	(s)	Rubiaceae
		(t)	Euphorbiaceae

- |  |       |   |   |   |
|--|-------|---|---|---|
|  | A     | B | C | D |
|  | (a) r | t | s | q |
|  | (b) q | r | s | p |
|  | (c) q | s | p | t |
|  | (d) s | r | p | q |
35. Which of the following hormones does not naturally occur in plants?  
 (a) 2,4-D (b) IAA  
 (c) GA (d) ABA
36. A large quantity of fluid is filtered every day by the nephrons in the kidneys. Only about 1% of it is excreted as urine. The remaining 99% of the filtrate  
 (a) gets collected in the renal pelvis  
 (b) is lost as sweat  
 (c) is stored in the urinary bladder  
 (d) is reabsorbed into the blood
37. When DNA replication starts  
 (a) the leading strand produces Okazaki fragments  
 (b) the hydrogen bonds between the nucleotides of two strands break  
 (c) the phosphodiester bonds between the adjacent nucleotides break  
 (d) the bonds between the nitrogen base and deoxyribose sugar break
38. Fleshy fruits with stony endocarp are called  
 (a) capsules (b) berries  
 (c) pomes (d) drupes
39. Which statement about photosynthesis is false?  
 (a) The electron carriers involved in photophosphorylation are located on the thylakoid membranes.  
 (b) Photosynthesis is a redox process, in which water is oxidised and carbon dioxide is reduced.  
 (c) The enzymes required for carbon fixation are located only in the grana of chloroplasts.  
 (d) In green plants, both PS-I and PS-II are required for the formation of  $\text{NADPH} + \text{H}^+$ .
40. Darwinism explains all the following except  
 (a) within each species, there are variations  
 (b) organisms tend to produce more number of offspring that can survive  
 (c) offspring with better traits that overcome competition are best suited for the environment  
 (d) variations are inherited from parents to offspring through genes
41. Pollen grains of a plant whose  $2n = 28$  are cultured to get callus by tissue culture method. What would be the number of chromosomes in the cells of the callus?  
 (a) 28 (b) 21  
 (c) 14 (d) 56
42. A true breeding plant producing red flowers is crossed with a pure plant producing white flowers. Allele for red colour of flower is dominant. After selfing the plants of first filial generation, the proportion of plants producing white flowers in the progeny would be  
 (a)  $\frac{3}{4}$  (b)  $\frac{1}{4}$   
 (c)  $\frac{1}{3}$  (d)  $\frac{1}{2}$
43. Which of the following prevents the conversion of prothrombin to thrombin in an undamaged blood vessel?  
 (a) Heparin (b) Calcium ions  
 (c) Thromboplastin (d) Fibrinogen
44. The characteristic that is shared by urea, uric acid and ammonia is/are  
 (A) They are nitrogenous wastes.  
 (B) They all need very large amount of water for excretion.  
 (C) They are all equally toxic.  
 (D) They are produced in the kidneys.  
 (a) A and C (b) A and D  
 (c) A, C and D (d) A only
45. RBC and a plant cell (with thick cell wall) are placed in distilled water. The solute concentration is the same in both the cells. What changes would be observed in them?  
 (a) Both plant cell and RBC would not undergo any change.  
 (b) The RBC would increase in size and burst while the plant cell would remain about the same size.  
 (c) The plant cell would increase in size and burst while the RBC would remain about the same size.  
 (d) Both plant cell and RBC would decrease in size and collapse.
46. Which of the following hormones does not contain a polypeptide?  
 (a) Prostaglandin  
 (b) Oxytocin  
 (c) Insulin  
 (d) Antidiuretic hormone



47. Ribose sugar is present in  
 (a) RNA polymerase, RNA and ATP  
 (b) RNA only  
 (c) RNA polymerase and ATP  
 (d) RNA and ATP
48. Most of the endangered species are the victims of  
 (a) competition with introduced species  
 (b) habitat destruction  
 (c) over-hunting  
 (d) acid-rain
49. Damage to thymus in a child may lead to  
 (a) loss of cell-mediated immunity  
 (b) a reduction in the haemoglobin content in blood  
 (c) a reduction in the amount of plasma proteins  
 (d) loss of antibody-mediated immunity
50. The diagram of the section of a maize grain is given below. Identify the parts labelled A, B, C and D.



- |               |             |           |                |
|---------------|-------------|-----------|----------------|
| A             | B           | C         | D              |
| (a) Endosperm | Coleoptile  | Scutellum | Aleurone layer |
| (b) Cotyledon | Coleoptile  | Scutellum | Epithelium     |
| (c) Endosperm | Coleoptile  | Scutellum | Epithelium     |
| (d) Endosperm | Coleorrhiza | Scutellum | Epithelium     |

51. Examples for lateral meristems are  
 (a) phellogen and procambium  
 (b) fascicular cambium and procambium  
 (c) procambium and dermatogen  
 (d) fascicular cambium and cork cambium
52. Vitellogenesis occurs during the formation of  
 (a) primary oocyte in the Graafian follicle  
 (b) oogonial cell in the Graafian follicle  
 (c) ootid in the fallopian tube  
 (d) secondary oocyte in the fallopian tube
53. A bacterium is capable of withstanding extreme heat, dryness and toxic chemicals. This indicates that it is probably able to form  
 (a) a thick peptidoglycan wall  
 (b) endospores  
 (c) endotoxins  
 (d) endogenous buds

54. In the absence of enterokinase, the digestion of ..... would be affected in our intestine.  
 (a) maltose (b) amino acid  
 (c) albumin (d) starch
55. The greatest threat to genetic diversity in agricultural crops is  
 (a) extensive use of insecticides and pesticides  
 (b) extensive mixed cropping  
 (c) introduction of high yielding varieties  
 (d) extensive use of fertilisers
56. *Nosema bombycis*, which causes pebrine in silk worms is a  
 (a) fungus (b) virus  
 (c) bacterium (d) protozoan
57. Palaeontologists unearthed a human skull during excavation. A small fragment of the scalp tissue was still attached to it. Only little DNA could be extracted from it. If the genes of the ancient man need to be analysed, the best way of getting sufficient amount of DNA from this extract is  
 (a) hybridising the DNA with a DNA probe  
 (b) subjecting the DNA to polymerase chain reaction  
 (c) subjecting the DNA to gel electrophoresis  
 (d) treating the DNA with restriction endonucleases
58. Which of the following would be insignificant amount in xylem sap?  
 (a) Sugar (b) Nitrates -  
 (c) Phosphates (d) Water
59. If the person shows the production of interferons in his body, chances are that he is suffering from  
 (a) anthrax (b) malaria  
 (c) measles (d) tetanus

60. The RER in the cell synthesised a protein which would be later used in building the plasma membrane. But it is observed that the protein in the membrane is slightly different from the protein made in the RER. The protein was probably modified in another cell organelle. Identify that organelle in the given diagram.
- 
- |       |       |
|-------|-------|
| (a) D | (b) A |
| (c) B | (d) C |

## Answer – Key

1. b	2. d	3. c	4. b	5. c	6. a	7. a	8. b	9. a	10. d
11. c	12. d	13. b	14. d	15. c	16. a	17. d	18. c	19. b	20. a
21. d	22. b	23. d	24. c	25. c	26. b	27. d	28. a	29. b	30. a
31. d	32. c	33. c	34. b	35. a	36. d	37. b	38. d	39. c	40. d
41. c	42. b	43. a	44. d	45. b	46. a	47. d	48. b	49. a	50. a
51. d	52. a	53. b	54. c	55. c	56. d	57. b	58. a	59. c	60. a