

MODEL QUESTION PAPER
(Biological Sciences)

Category I: Questions carrying one mark each (questions 1 to 22)

1. Plant cells are totipotent because

- (A) they can survive under wide range of temperature
- (B) they can be preserved under suitable condition
- (C) they can be easily multiplied
- (D) they can be regenerated to a mature plant

Ans. (D)

2. The ultimate source of energy for the biological processes is

- (A) sunlight
- (B) chemical bonds
- (C) thermal radiation
- (D) ATP

Ans. (A)

3. The senescence in plants is associated with the synthesis of

- (A) IAA
- (B) NAA
- (c) ABA
- (D) GA

Ans. (C)

4. Hydrolytic enzymes are found in

- (A) Peroxisome
- (B) glyoxysome
- (C) Lysosome
- (D) ribosome

Ans. (C)

5. Which of the following metals is associated with nitrogenase

- (A) Zn
- (B) Cu
- (C) Mn
- (D) Mo

Ans. (D)

6. A C₄ plant is photosynthetically more efficient than a C₃ plant because of

- (A) low photorespiration
- (B) its ability to generate more ATP
- (C) thicker leaves
- (D) its ability to trap more sunlight

Ans. (A)

7. The protein molecule serves as an electron carrier is

- (A) NAD
- (B) FAD
- (C) Ferredoxin
- (D) NADP

Ans. (C)

8. Cu is an essential component of

- (A) cytochrome oxidase
- (B) carbonic anhydrase
- (c) peroxidase
- (D) alcohol dehydrogenase

Aans. (A)

9. When the pollen tube enters the ovule through the micropyle is called is

- (A) endogamy
- (B) porogamy
- (C) chalazogamy
- (D) mesogamy

Ans. (B)

10. Which one is the modified stem

- (A) potato
- (B) corn
- (C) spine of cactus
- (D) Raddish

Ans. (A)

11. Largest amount of phosphate bond energy is produced in the process of respiration during

- (A) Glycolysis
- (B) Krebs cycle
- (C) Fermentation
- (D) Anaerobic respiration

Ans . (B)

12. Mendel crossed pure breed red flowered plants with pure breed white flowered plants and obtained all red flowered offspring (F1 generation). The gene for red flowers must have been

- (A) Assorted
- (B) Sex linked
- (C) Dominant
- (D) Carried on the same chromosome as the gene for white flowers

Ans: C

13. The parasite causing malaria in man was first discovered by

- (A) Schwann
- (B) Ronald Ross
- (C) Landmarck
- (D) Laveran

Ans : (D)

14. Haemoglobin remains dissolved in the plasma of

- (A) Cockroach
- (B) Lizards
- (C) Porcupine
- (D) Earthworm

Ans: (D)

15. The layers, from which gametes are formed, is

- (A) Columnar epithelium
- (B) Germinal epithelium
- (C) Glandular epithelium
- (D) Follicular epithelium

Ans : (B)

16. The following glands secrete saliva except

- (A) Lachrymal gland
- (B) Parotid gland
- (C) Submaxillary gland
- (D) Sublingual gland

Ans. (A)

17. Peritoneum in vertebrates is a membrane which invests

- (A) Heart
- (B) Blood platelets
- (C) Alimentary canal and other visceral organ
- (D) Lungs

Ans : (C)

18. The arterial pulse is due to

- (A) Passage of ejected blood
- (B) Quality of blood flowing in arteries
- (C) The intermittent discharge of blood into the aorta
- (D) The intermittent discharge of blood into the aorta and to the elasticity of the arteries.

Ans : (D)

19. The main function of the white blood corpuseles in the body is

- (A) To protect the body against diseases

- (B) To carry oxygen to each parts of body
- (C) To carry food to each parts of body
- (D) To help in the formation of clot.

Ans: (A)

20. 'Grasserie' disease of silkworm is caused by

- (A) Bacteria
- (B) Fungus
- (C) Protozoa
- (D) Virus

Ans: (D)

21. Regulation of body temperature in a homeotherm, when the environmental temperature is high, would involve.

- (A) Dilatation of the blood vessels of the skin
- (B) Constriction of the blood vessels of the skin
- (C) Decreased flow of blood without any change in blood vessels
- (D) No change in the above blood vessels

Ans : (A)

22. When man inhales air containing normal concentration of oxygen as well as carbon monoxide, he suffers from suffocation, because

- (A) Carbon monoxide affects the diaphragm and intercostals muscles
- (B) Carbon monoxide affects the nerves of the lungs
- (C) Carbon monoxide reacts with oxygen which is thus removed from the air entering the lungs
- (D) Haemoglobin combines with carbon monoxide instead of oxygen and the product cannot dissociate.

Ans : (D)

Category II: Questions carrying two marks each (questions 23 to 34)

23. The phylum arthropoda is characterised by the presence of

- (A) External segmentation, a pair of chelicerae and pedipalpi
- (B) Exoskeletal scales, metamerism and a pair of antennae
- (C) Chitinous exoskeleton, external segmentation and paired jointed appendages
- (D) Hairs, external segmentation and metamerism

Ans : (C)

24. A student wants to know whether the oil used to kill mosquito larvae acts as a poison or whether it cuts off the oxygen supply to the larvae. Which of the following experiments would best answer his questions.

- (A) Place larvae in an aquarium that contains nothing but oil.
- (B) Place larvae in several aquariums that contain varying amounts of oil and water.
- (C) Place larvae in an aquarium in which an obstruction prevents oil from completely covering the water.
- (D) Place larvae in two aquariums, one without oil and the other with oil covering the water

Ans : (D)

25. Which of the following groups of characters of a whale justifies its inclusion in class Mammalian?

- (A) It possesses heavy skin and mammary glands and produces young ones
- (B) It possesses gills and fins and produces young ones
- (C) It possesses vertebral column, lungs and 4-chambered heart
- (D) It possesses lungs, 4-chambered heart and kidneys

Ans : (A)

26. Beta cells of the islets of Langerhans are present in 'P' organ, secrete 'Q' hormone and decrease blood 'R' level. Choose the correct P, Q and R.

- (A) P=Pancreas, Q= Insulin, R= Glucose
- (B) P=Pancreas, Q= Glucagon, R= Glucose
- (C) P=Pituitary, Q=Insulin, R= Cholesterol
- (D) P=Testis, Q= Androgen, R=Albumin

Ans: (A)

27. Which one of the following is the correct match of a vitamin about its nature and deficiency disease?

- (A) Vitamin D-----Water soluble-----Pellagra
- (B) Vitamin A-----Fat soluble-----Night blindness
- (C) Vitamin C-----Fat soluble-----Scurvy
- (D) Vitamin K-----Water Soluble-----Beriberi

Ans: (B)

28.If the stroke volume of a person is 80 ml and its heart rate is 70 beat per minute what will be the minute volume?

- (A) 560 ml (B) 5.6 ml (C) 5600 ml (D) 5600 liter

Ans: (C)

29.Match Column I with column II and choose the correct answer.

I	II
1. Sphigmomanometer	(i)Measurement of hemoglobin
2. Hemocytometer	(ii)Determination of number of RBC and WBC in blood
3. Hemoglobinometer	(iii)Measurement of blood pressure
4. Electrocardiograph	(iv)Recording electrical impulse generated in cardiac muscle

- (A) 1(iii), 2(ii), 3(i), 4(iv)
- (B) 1(i), 2 (ii), 3 (iii), 4 (iv)
- (C) 1 (iv), 2 (ii), 3(i), 4 (iii)
- (D) 1 (iii), 2 (i), 3 (ii), 4 (iv)

Ans: (A)

30. Mention the parasite and the vector for sleeping sickness disease.

- (A) *Leishmania donovani* and sand fly
- (B) *Trypanosoma gambianse* and tsetse fly

(C) *Plasmodium vivax* and anopheles mosquito

(D) *Wuchereria bancrofti* and culex mosquito

Ans: (B)

31. Edible plant part (Column-I) is enriched with certain biomolecule (Column-II), which is required for human nutrition and health. Select the CORRECT answer after matching Column-I and Column-II.

Column-I	Column-II
P. Sesame (till) seed	i. Protein
Q. Rice grain	ii. Vitamin C
R. Lentil seed	iii. Starch
S. Orange fruit	iv. Neutral lipid

A) P- i, Q- ii, R- iii, S- iv

B) P- ii, Q- iii, R- iv, S- i

C) P- iv, Q- iii, R- i, S- ii

D) P- iv, Q- i, R- iii, S- ii

Ans: (C)

32. The meristematic tissues that arise within cortex, and between xylem and phloem are called

(A) Pith meristem and vascular cambium, respectively

(B) Cortex meristem and vascular cambium, respectively

(C) Cork cambium and vascular cambium, respectively

(D) Cortex meristem and cork cambium, respectively

Ans: (C)

33. Dormancy in apical buds and seeds is initiated by hormone 'X' and broken by hormone 'Y'. Identify the correct match of 'X' and 'Y'.

A) X = Indole acetic acid, Y = Gibberellic acid

B) X = Abscisic acid, Y = Cytokinin

C) X = Abscisic acid, Y = Gibberellic acid

D) X = Ethylene, Y = Abscisic acid

Ans: (C)

34. Which of the following statements are correct for the Xth Cranial nerve?

(i) It is mixed nerve and is most widely distributed

(ii) The motor fibre of this nerve is mostly parasympathetic type

(iii) Motor fibres of this nerve supply to the muscles and glands of various thoracic and abdominal viscera.

(iv) Its motor part supplies the ocular muscles and controls the movement of eye.

(v) Its sensory fibres carry sensations of touch, pressure, temperature and pain from mouth cavity, nasal cavity, cornea and iris of the eye.

(vi) The nerve is responsible for the movement of alimentary canal.

(A) (i), (ii), (iii) and (iv)

(B) (ii), (iii), (iv) and (v)

(C) (i), (ii), (iii) and (vi)

(D) (ii), (iv), (v) and (vi)

Ans (C)

Category III: Question having more than one correct answer (each question carries two marks) (questions 35 to 41)

35. Which of these acids may be categorized under phytohormes?

A) Gibberellic acid

B) Butyric acid

C) Abscisic acid

D) Lactic acid

Ans: (A) and (C)

36. Which of the following cell types are involved in CAM cycle?

A) Mesophyll cell

B) Idioblast cell

C) Bundle sheath cell

D) Laticifer cell

Ans : (A) and (C)

37. Which among the following are true for the function of glucagon?

- (A) Increase blood glucose level
- (B) Stimulates glycogenolysis and neoglucogenesis
- (C) Increase the utilization of glucose
- (D) Increase the permeability of glucose in various organs

Ans : (A), (B)

38. Which of the followings are true for B lymphocytes?

- (A) Undergoes maturation in the bone marrow
- (B) Is responsible for humoral immunity
- (C) Is converted to plasma cells for antibody secretion
- (D) Is responsible for cell mediated immunity

Ans: (A), (B) and (C)

39. Which of the following hormones are secreted from adrenal cortex?

- (A) Mineralocorticoids
- (B) Glucocorticoids
- (C) Adrenaline
- (D) Sex corticoids

Ans: (A), (B) and (D).

40. Enzymes involved in bacterial DNA replication are

- (A) DNA Polymerase
- (B) Helicase
- (C) Deoxyribonuclease
- (D) Esterase

Ans: (A) and (B)

41. Bacterial RNA synthesis requires

- (A) DNA template
- (B) RNA polymerase

(C) Primer

(D) rNTPs

Ans: (A), (B) and (D)