

This Question Paper contains 8 Printed Pages.

056(E)

(MARCH, 2007)

Time : 3.00 Hours

[Maximum Marks : 100

Instructions :

1. Answer **all** questions.
2. Write the answer of **all** questions in order and start each Section from a new page.
3. Question Nos. **1** to **16** are multiple choice type questions. Each carries **1** mark. Choose one correct answer out of the given options (A), (B), (C) and (D).
4. Question Nos. **17** to **32** are *very short answer type* questions. Each carries **1** mark.
5. Question Nos. **33** to **44** are *short answer type* questions. Each carries **2** marks.
6. Question Nos. **45** to **52** are *moderate length answer type* questions. Each carries **3** marks.
7. Question Nos. **53** to **57** are *long answer type* questions. Each carries **4** marks.

SECTION - A

16

1. Which redox chain is true for PS-I?
(A) $Fd \rightarrow PQ \rightarrow Pc \rightarrow Cyt$
(B) $Q \rightarrow PQ \rightarrow Cyt \rightarrow Pc$
(C) $Fd \rightarrow Pc \rightarrow Cyt \rightarrow PQ$
(D) $Fd \rightarrow PQ \rightarrow Cyt \rightarrow Pc$
2. Respiratory Quotient is more in carbohydrates in comparison to lipids. Because
(A) Comparatively lipid contains more O_2 .
(B) Comparatively lipid contains less O_2 .
(C) Comparatively lipid contains more H.
(D) Comparatively lipid contains less H.

3. Which branch of respiratory system provides oxygen to nerve cords in Cockroach?
- (A) Dorsal branch (B) Ventral branch
(C) Lateral branch (D) Middle branch
4. How much total time will be taken for diastole by atrium and ventricle respectively in a single cardiac cycle?
- (A) 0.70, 0.55 (B) 0.15, 0.30
(C) 0.45, 0.40 (D) 0.40, 0.30
5. At the end of complete muscle contraction, in Sacromere
- (A) A-band becomes small, H-band becomes thin.
(B) A-band becomes denser, H-band disappears.
(C) I-band becomes small, H-band becomes thin.
(D) I-band becomes big, H-band disappears.
6. Parasympathetic system is known as 'House Keeping System' because,
- (A) it induces contraction of pupil of eye.
(B) it increases heart beats.
(C) it causes dilation of bronchioles.
(D) it hinders the function of the alimentary canal.
7. It is said that nutritional method of Housefly is saprophytic because
- (A) it obtains food from other animal.
(B) it obtains food from outside animal.
(C) it obtains food by predating whole animal.
(D) it digests the food outside the body.
8. During Spermatogenesis, developing sperm gets nourishment from
- (A) Seminal vesicle (B) Prostate gland
(C) Sertoli cell (D) Interstitial cells

9. Which phenomenon is responsible for opening of Crocus flower?

- (A) Thigmonasty (B) Thermonasty
(C) Photonasty (D) Hydronasty

10. The plant developed by parthenogenesis might be

- (A) only Haploid (B) only Diploid
(C) Haploid or Diploid (D) Triploid

11. Which type of interrelationship Mycorrhiza shows?

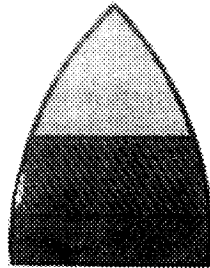
- (A) Commensalism (B) Parasitism
(C) Saprozoic (D) Mutualism

12. Which Green house Gas is 6% in air?

- (A) CO₂ (B) CFC
(C) N₂O (D) CH₄

13. In this map, the value of r

(Natural Growth rate) will be



- (A) Positive (B) Negative
(C) Zero (D) Positive or Negative

14. In our country, how much species of plants and animals are of vulnerable type respectively?

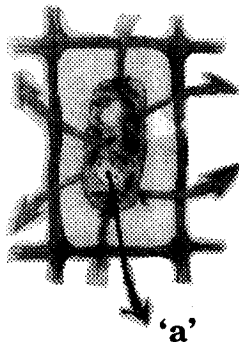
- (A) 87, 143 (B) 44, 18
(C) 113, 54 (D) 143, 113

15. Beta diversity means
- (A) Diversity of single habitat in single season.
 - (B) Changing diversity according to changing season in a single habitat.
 - (C) Diversity over entire geographical region.
 - (D) None of the above all.
16. In which climatic zone, we can find the animals with bushy hairs on their skin?
- (A) 0° - 20° latitude
 - (B) 20° - 40° latitude
 - (C) 40° - 60° latitude
 - (D) 60° - 80° latitude

SECTION - B

16

17. Write the formula for measuring water potential in plant.
18. Why Chlorophyll *a* is known as 'reaction-centre'?
19. Rubisco acts as which two types of enzyme?
20. Which physiological process is indicated by the cell shown in figure ?
Label 'a' in the figure, shows which part of the cell?



21. Which vitamin and mineral are responsible for clotting of Blood?
22. Write function of Thymosins.

23. Which method will be administered by the wall of small intestine in absorbing digested food like Fructose and Amino acid?
24. Why some muscles are red in colour in human?
25. Which two things are excreted by lungs, so that it is known as respiratory as well as excretory organ?
26. For which process, it is believed that some specific pigment as well as some specific hormone are responsible?
27. Why plant hormones are utilized in cutting method?
28. What is carrying capacity of an Environment?
29. Give two names of pollutants which are responsible for photochemical Smog.
30. Which is the bright aspect of Genetics?
31. Give full name of PCR and SCID.
32. What is Auto-immunity?

SECTION - C

24

33. Describe the theory of 'Suction due to transpiration'.
34. Explain Fermentation. (Chart is not required)
35. Write the single function of each surface lobes of Cerebral cortex.
36. Why some animals excrete dilute urine frequently, while some excrete concentrated urine less frequently?
37. Why it becomes lethal if selective re-absorption does not follow pressure filtration?
38. Give any four reasons for seed dormancy.

39. Differentiate between the following with single point each.

- (i) Morphallaxis - Epimorphosis.
- (ii) Programmed theories - Error and damaged theory.

40. Write short note on : Hot desert.

OR

Give information about Wind energy and Geothermal energy.

41. Differentiate between Hydroseric succession and Xeroseric succession with four points each.

42. Write the use of Doppler Ultrasound. Give three points of treatment by Sonography.

OR

Explain four types of organ transplant.

43. Write in brief any two usages of the bio-diversities.

44. Draw a schematic labelled diagram of Ig.

SECTION - D

24

45. Write two deficiency symptoms of each mineral which is responsible for developing black as purple or red or grey spots on leaves.

46. Differentiate between C_3 path and C_4 path with 6 points each side.

OR

Explain the effect of changing concentration of atmospheric CO_2 on respiration and photosynthesis.

47. Explain six differentiating points between mode of action of Steroid Hormones and mode of action of Peptide Hormones.

OR

Differentiate between Pepsinogen and Trypsinogen with six points either side.

48. Give full name and use of ECG. Draw a labelled wave of ECG and give its interpretation.
49. Write the effect of senescence on any six organs of Human.

OR

Explain Embryo development in Capsella from proembryo. (Figure is not necessary)

50. Give name of steps of Decomposition process and explain factors affecting Decomposition.
51. Write adaptations to water scarcity and high temperature in plant.
52. Why it is said that Bio-pesticides and Bio-fertilizers are better in comparison to chemical pesticides and chemical fertilizers respectively?

SECTION - E

20

53. Explain the mechanism of opening and closing of Stomata. (Figure is required)

OR

Describe the process occurred in cytoplasmic matrix of Mitochondrion. (Chart is required)

54. Explain Pectoral girdle and bones of Forelimbs. (Diagram is necessary)

55. Explain the conduction of CO₂ through blood in human.

OR

Explain some common problems of Adolescence.

56. Explain Ovarian cycle.

OR

Write kinds of water pollutants and their sources. Explain the effect of water pollution on aquatic eco-systems.

57. Explain Human Embryo Development. (Figure is not necessary)
