

This Question Paper contains 8 Printed Pages.

056(E)

(MARCH, 2009)

Time : 3.00 Hours]

[Maximum Marks : 100

Instructions :

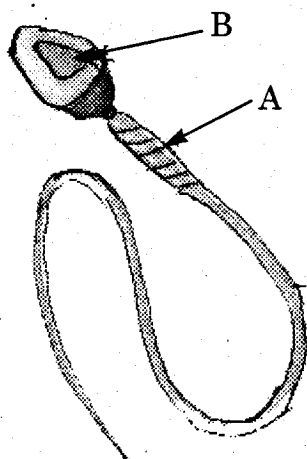
- (1) Answer **all** the questions.
- (2) Write the answer of all questions in order and start each section from a new page.
- (3) Question Nos. from **1** to **16** are *multiple choice* questions. Each carries **1** mark. Choose one correct answer out of the given options (A), (B), (C) and (D).
- (4)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

SECTION - A

1. Which of the following is correct equation of Donnan equilibrium ? **16**
- (A) $[Ci^+] [Co^+] = [Ai^-] [Ao^-]$
- (B) $[Ci^+] + [Co^+] = [Ai^-] [Ao^-]$
- (C) $[Ci^+] [Ai^-] = [Co^+] [Ao^-]$
- (D) $[Ci^+] + [Co^+] = [Ai^-] + [Ao^-]$

2. Which type of changes in atmosphere will increase the rate of Transpiration ?
- (A) Decrease in humidity, Increase in temperature.
 - (B) Increase in humidity, Decrease in temperature.
 - (C) Increase in both humidity and temperature.
 - (D) Decrease in both humidity and temperature.
3. When plasmolysed cell is placed into hypotonic solution at that time in comparison to the solution, the Cytoplasm of cell shows
- (A) Increase in Osmotic pressure and decrease in Turgor pressure.
 - (B) Decrease in Osmotic pressure and increase in Turgor pressure.
 - (C) Increase in both Osmotic pressure and Turgor pressure.
 - (D) Decrease in both Osmotic pressure and Turgor pressure.
4. Which animals use least energy for excretion ?
- (A) Cartilagenous fishes (B) Insects
 - (C) Bony fishes (D) Birds
5. Which is the cause of Emphysema ?
- (A) Excessive smoking (B) Allergens
 - (C) Fungal infection (D) All the three given
6. Which Cranial nerves are sensory and mixed successively in Human?
- (A) I, V (B) II, III
 - (C) VIII, XII (D) VII, VI
7. Which of the following represents correct total number of heart chambers in Cockroach and Human respectively ?
- (A) 1, 1 (B) 13, 3
 - (C) 1, 4 (D) 13, 4

8. Which organelle is present in the region labelled as "A" and "B", in the given diagram ?



- (A) A= Acrosome; B= Nucleus
 (B) A= Nucleus; B= Mitochondria
 (C) A= Golgi Complex; B= Nucleus
 (D) A= Mitochondria; B= Nucleus
9. Which theory of Senescence is responsible for hardening of Artery ?
 (A) Living (B) Endocrine
 (C) Cross linking (D) Living and Endocrine
10. What is Sprouting ?
 (A) Coming out of radicle from seed.
 (B) Coming out of primary root from seed.
 (C) Coming out of secondary root from seed.
 (D) Coming out of ageotropic root from seed.
11. Which unit releases highest Greenhouse gases in atmosphere ?
 (A) Agriculture (B) Deforestation
 (C) Industrial processes (D) Burning fossil fuels
12. By which option, we can reduce the pressure on mineral resource ?
 (A) Re-use the metals by melting process.
 (B) Use of Oceanic resources.
 (C) Use of substitutes of minerals.
 (D) All the above given.

13. If r (natural growth rate) = 0.75 and N (number of members in population) = 5000, then what will be the difference between Birth-rate and Death-rate of that particular population ?
- (A) 3750 (B) 0.00015
(C) 0.66 (D) 150
14. Which one is living symbiotically with Azolla ?
- (A) Rhizobium (B) Blue-green algae
(C) Spirogyra (D) Lemna
15. Which of the following aspects of biodiversity will be useful in maintaining the Ecosystem ?
- (A) Maintenance of Global temperature.
(B) Maintenance of Climate.
(C) Maintenance of Soil.
(D) All the above given.
16. Which one is known as Immuno modulator ?
- (A) INA (B) Somatostatin
(C) Interferons (D) Ig

SECTION - B

17. How Imbibition differs from Osmosis ?
18. How many ATP molecules will be generated by complete oxidation of one FADH_2 ?
19. Give one deficiency symptom (one for each) of micronutrients, which are responsible for photolysis of Water.
20. Give any two reasons for Osteoporosis.
21. What is Heterodont teeth and Thecodont teeth ?

22. What is Saltatory Conduction ?
23. What is the main difference between Thrombus and Embolus ?
24. At the age of 70 years, which effect will be observed in Lungs and Sight of human ?
25. Give full name of 2-4-D and give its effect on leaves.
26. Which are two preconditions for seed germination ?
27. Give an example of plant which shows characteristics given below :-
 - (a) Floating hydrophytes which lack root-system.
 - (b) Submerged and free-floating hydrophytes.
28. Write nutrition pattern and function of Clostridium.
29. How genetic uniformity is harmful to plant ?
30. Why there is more possibility of being addicted during Adolescence period ?
31. Give any two characteristics of those organisms which are susceptible to Extinction.
32. Which two diseases can be diagnosed by PET method ?

SECTION - C

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33. Write method of synthesizing Amino acid in plants.
34. Give equation of anaerobic respiration in plant and animal medium. Explain why less energy is evolved during anaerobic respiration.

35. Explain inner ear's structures which is associated with balance.

36. Write short note on digestion in stomach.

OR

Write short note on spiracles of Cockroach.

37. Why some people wear Concave lens glasses and some wear Convex lens glasses ?

38. Explain absorption of Chyle.

39. Explain the significance of vegetative reproduction in plant.

40. Give differences of four points each :

Vas deferens - Oviduct.

41. Give differences of four points each :

Mutualism - Parasitism

42. Explain different zones of aquatic habitat on the basis of penetration of light.

43. Why ELISA TEST is to be repeated frequently ?

OR

Why certain diseases from which one suffered in childhood does not repeat in life time ?

44. Explain DNA hybridization and PCR diagnostic methods.

SECTION - D

45. Explain the theory of Cohesion-force.

OR

Write concentration of micronutrient and macronutrient per 1 gram dry mass of plant and describe Hydroponic method.

46. Differentiate between C₃-path and C₄-path by six points each.

47. Write short note on Malnutrition.

OR

Write full form of GH and GTH and write their functions.

48. Explain conduction of CO₂ through blood plasma in the form of HCO₃⁻ ions.

49. Explain three extra Embryonic membranes.

50. Give main difference between Tropism and Nastism. Explain Nastism with examples.

51. Define Ecological Efficiency. Give four formulae to measure it.

OR

Give three approaches of each – Water Conservation and Water Management.

52. Write carriers, symptoms and remedies of Fungal diseases and Bacterial diseases in plant.

SECTION - E

53. Draw a chart of Glycolysis and explain Dephosphorylation and also write the equation.

OR

Draw a chart of Calvin cycle and describe first two stages of it.

54. Draw a labelled diagram showing circulation path in human heart. Explain rhythm and regulation of Heart-beat.

OR

Draw diagram of hind limb alongwith Pelvic girdle and describe Pelvic girdle.

55. Draw a labelled diagram of internal structure of Kidney and explain any two phases of urine formation.

56. Explain Fertilization in plants. (Diagram is necessary)

OR

Draw T.S. of Anther and explain structure of Pollen grain and Embryo sac.

57. Describe the pioneer stage of Hydroseric succession and Xeroseric succession.
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