

4. For each MCQ, the correct answer must be written along with its alphabet.
e.g., (a)/ (b)/ (c)/ (d)
5. Evaluation of each MCQ would be done for the first attempt only.
6. Draw neat, labelled diagrams wherever necessary.

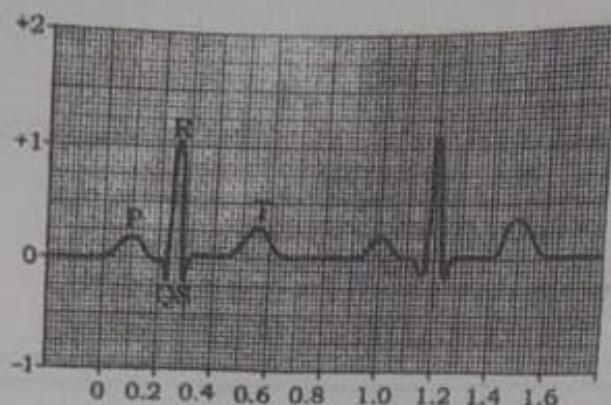
Q.1. Select and write the correct answer.

(10)

- (i) The ploidy level is NOT the same in
(a) Integuments and nucellus (b) Root tip and shoot tip
(c) Secondary nucleus and endosperm (d) Antipodals and synergids
- (ii) Find the mismatched pair.
(a) Down's syndrome = $44+XY$ (b) Turner's syndrome = $44+XO$
(c) Klinefelter's syndrome = $44+XXY$ (d) Super female = $44+XXX$
- (iii) Select the correct pair.
(a) Gene Z - Transacetylase (b) Gene y-B₅ - galactosidase
(c) Gene a - Beta - galactoside permease (d) Gene I - Repressor
- (iv) Fossils of Homo erectus were obtained in and
(a) Kenya, Shivalik hill (b) Java, Peking
(c) Africa, Asia (d) Neanderthal valley, Taung
- (v) Find the odd one out with respect to growth.
(a) GA₃ (b) cytokinin (c) ABA (d) Auxins

(01)

- (vi) In the electrocardiogram shown below, which wave represents ventricular diastole?



- (a) P wave (b) R wave (c) T wave (d) QRS wave
- (vii) A hormone responsible for normal sleep wake cycle is
 (a) epinephrine (b) gastrin (c) melatonin (d) insulin
- (viii) Which of the following is caused by smoking?
 (a) Liver cirrhosis (b) Pulmonary tuberculosis
 (c) Emphysema (d) Malaria
- (ix) Antibiotic chloromycetin is obtained from
 (a) *Streptomyces erythreus* (b) *Penicillium chrysogenum*
 (c) *Streptomyces venezuelae* (d) *Streptomyces griseus*
- (x) India has deserts, rain forests, mangroves, coral reefs, wetlands, estuaries and alpine meadows. What kind of biodiversity is depicted in this statement?
 (a) Geographic diversity (b) Species diversity
 (c) Ecological diversity (d) Genetic diversity

Q.2. Answer the following.

(08)

- (i) What is the main role of pistil in pollen-pistil interaction?
 (ii) Give definition of amphimixis
 (iii) What are allosomes?
 (iv) From which source was zeatin isolated for the first time?
 (v) Enlist hormones of thyroid gland
 (vi) Which substrates are used for biogas production?
 (vii) What are seral communities?
 (viii) Which bacteria transform acetic acid into biogas?

SECTION-B

Q.3. Answer the following questions.

(Any Eight)

(16)

Column A (Mechanism) Column B (Example)

- | | |
|--------------------|----------------|
| (1) Geitonogamy | (a) Thea |
| (2) Herkogamy | (b) Gloriosa |
| (3) Self-sterility | (c) Cucurbita |
| (4) Protogyny | (d) Calotropis |

Q.4. Distinguish between Blastula and Gastrula

Q.5. Give significance of corpus luteum

Q.6. Distinguish between DNA in prokaryotic and DNA in eukaryotic cells.

Match the columns

Human stage

- (1) Homo sapiens
- (2) Homo neanderthalensis
- (3) Homo habilis
- (4) Homo erectus

Cranial capacity in CC

- (a) 650-800
- (b) 900
- (c) 1400
- (d) 1450

- Q.8. What are adhesive and cohesive forces?
- Q.9. What is the ecological process behind the biological control method of managing with pest insects?
- Q.10. Give the significance of, (a) Synthetic auxin and (b) Ethylene
- Q.11. Match the columns.

Respiratory capacities

- (1) Residual volume (RV)
- (2) Vital capacity (VC)
- (3) Tidal volume (TV)
- (4) Inspiratory reserve volume (IRV)

Respiratory volumes

- (a) 500 ml
- (b) 2000-3000 ml
- (c) 1100-1200 ml
- (d) 1400-1600 ml

- Q.12. Sketch and label histology of thyroid gland.
- Q.13. Sketch and label structure of root hair
- Q.14. What are the effects of parasites on the host?

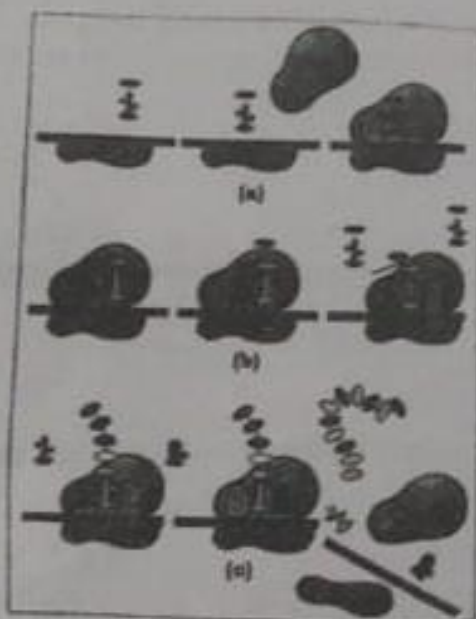
SECTION - C

Answer the following questions.

(Any Eight)

(24)

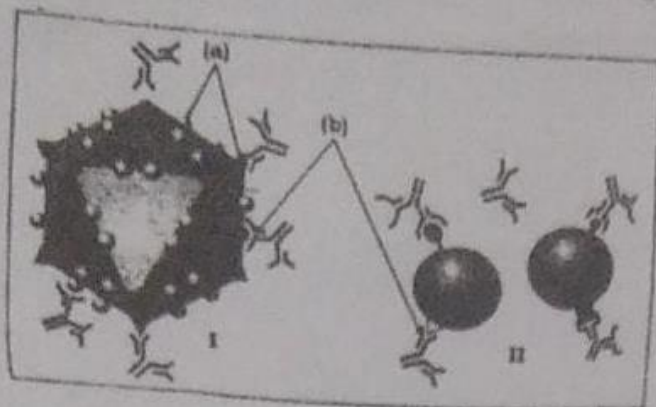
- Q.15. Distinguish between in-situ conservation and ex-situ conservation.
- Q.16. What are the three steps of parturition. Explain them briefly.
- Q.17. Observe the diagrams (a), (b) and (c)



- (1) Which step of protein synthesis is shown in the following diagrams?
- (2) During initiation, which subunit of ribosome binds with m-RNA?
- (3) What are the three binding sites for t-RNA on ribosomes?
- (4) On which site of ribosome second and subsequent t-RNA arrives?
- (5) Which link is binding amino acids in diagram (b)?
- (6) Which chain is being released from ribosome in diagram (c)?

- Q.18. Explain natural selection in action by quoting the example of industrial melanism?

- Q.19. Explain different properties of water.
 Q.20. Explain the applications of gibberellins.
 Q.21. Give one difference in the following pairs : (i) Chordae tendinae and columnae carnae (ii) Anaemia and Leukaemia (iii) Tachycardia and Bradycardia
 Q.22. Name the following cranial nerves, their type, origin and function : II, V, IV.
 Q.23. Observe the give diagram and answer the following questions.



- (1) What is I and II in the above diagram?
 (2) What structures are responsible for antigen and antibody complex? Identify them in the above diagram.
 (3) What is the study of antigen-antibody interactions called?
 Q.24. Who discovered mycorrhizae? Distinguish between Ectomycorrhizae and Endomycorrhizae.
 Q.25. Give scientific reason : The genetic engineering is alternatively called recombinant DNA technology or gene cloning.
 Q.26. From algae to forest, explain in relation with the succession.

SECTION - D

Answer the following questions (Any Three)

(12)

- Q.27. Describe three devices by which cross pollination is encouraged in Angiosperms by avoiding self-pollination?
 Q.28. What is a dihybrid cross? Explain with suitable examples using checker board method.
 Q.29. Describe the internal structure of human heart.
 Q.30. Give an account of structure of hind brain.
 Q.31. Enlist different types of restriction enzymes commonly used in r-DNA technology? Write on their role.

(04)
