



Time: 3 Hours

Total Marks: 70

General Instructions:

- i. The question paper is divided into four sections.
- ii. **Section A:** Q.No.1 contains Ten multiple choice type of questions carrying One mark each.
Q.No.2 contains Eight very short answer type of questions carrying One mark each.
- iii. **Section B:** Q.No.3 to Q.No.14 are short answer type of questions carrying Two marks each.
- iv. **Section C:** Q.No.15 to Q.No.26 contains are short answer type of questions carrying Three marks each.
- v. **Section D:** Q.No.27 to Q.No.31 are long answer type of questions carrying Four marks each.
- vi. Figures to the right indicate full marks.
- vii. For each MCQ, correct answer must be written along with its alphabet.
E.g., (A)...../(B)...../(C)...../(D)..... Only first attempt will be considered for evaluation.

SECTION A

Q.1. Select and write the correct answer:

[10]

- i. If chromosome number (2n) in a flowering plant is 24, then which one of the following will have 12 chromosomes?
(A) Endosperm (B) Leaf cells (C) Cotyledons (D) Synergids
- ii. Which hormone stimulates release of milk from the mammary gland?
(A) Prolactin (B) Oestrogen
(C) Lateinizing hormone (D) Oxytocin
- iii. Cohesion theory of ascent of sap is based on _____.
(A) diameter of vessels (B) physical forces between water molecules
(C) surface tension (D) pressure of water in roots
- iv. Meristematic cells have the capacity
(A) to unite with other cells (B) to divide and produce new cells continuously
(C) to elongate continuously (D) to restrict the effect of hormone
- v. Vestibule, a part of respiratory system
(A) detects smells
(B) filters the air and traps the dust and suspended particles in the inhaled air
(C) warms and moistens the inhaled air
(D) is a common passage for food and air
- vi. The nervous band connecting two cerebral hemisphere is _____.
(A) Cerebral peduncle (B) Brain stem
(C) Vermis (D) Corpus callosum
- vii. Erythroblastosis foetalis is caused when mother is
(A) Rh^{+ve} (B) with antibody 'a' (C) Rh^{-ve} (D) with antibody 'b'
- viii. Which of the following is a semi-dwarf variety of wheat grown in India?
(A) Sonalika (B) IR8 (C) Ganga 3 (D) CO-12
- ix. Previously sensitized cells which retain the sensitization memory for a long time in the future are
(A) memory T-cells (B) killer T-cells
(C) helper T-cells (D) suppressorT-cells
- x. Complete the following analogy.
Sinusitis : Inflammation of sinus :: _____ : Inflammation of larynx.
(A) Pneumonia (B) Laryngitis (C) Asthma (D) Emphysema

Q.2. Answer the following:

[8]

- i. Give the function of filiform apparatus.
- ii. Give the flow chart of central dogma.



- iii. Give the names of scientists who first proposed RNA World hypothesis.
- iv. What is Diffusion Pressure?
- v. Define efficiency index.
- vi. What is angina pectoris?
- vii. What is microhabitat?
- viii. What is meant by humification?

SECTION B (Attempt any Eight)

[16]

- Q.3. Describe cutting and budding as methods of vegetative propagation in plants.
- Q.4. Match the following and write the correct answer.

	Column I		Column II
i.	21 Trisomy	a.	Turner syndrome
ii.	X Monosomy	b.	Klinefelter syndrome
iii.	Holandric traits	c.	Down syndrome
iv.	Feminized male	d.	Hypertrichosis

- Q.5. Mention the different levels at which regulation of gene expression occurs in eukaryotes.
- Q.6. Draw a graph representing Directional selection.
- Q.7. Describe the the unique features of acquired immunity.
- Q.8. Write a note on Long Day Plants.
- Q.9. Draw neat and labelled diagram of L.S. of sieve tube.
- Q.10. Write applications of plant tissue culture.
- Q.11. Explain different biosafety issues which may arise due to genetically modified (GM) organisms.
- Q.12. Explain the concept of commensalism with the help of suitable example.
- Q.13. Describe cDNA library.
- Q.14. Write a short note on genetic diversity.

SECTION C (Attempt any Eight)

[24]

- Q.15. Describe the method of asexual reproduction in *Hydra*.
- Q.16. Describe the structure of a nucleosome with the help of neat and labeled diagram.
- Q.17. Write a note on different types of fossils.
- Q.18. Explain different types of transpiration in plants.
- Q.19. Give a diagrammatic representation of nitrogen cycle.
- Q.20. Distinguish between inspiration and expiration.
- Q.21. Sketch and label formation of typical spinal nerve.
- Q.22. Explain the methods used in animal breeding.
- Q.23. Write a short note on biopatent.
- Q.24. Explain exponential growth curve of population in detail.
- Q.25. Describe various protective membranes surrounding the brain and spinal cord.
- Q.26. Explain the types of Primary productivity in details.



SECTION D (Attempt any Three)

[12]

- Q.27. Describe the development of mature embryo sac of angiosperms with the help of a neat and labelled diagram.
- Q.28. With a suitable diagram, describe the structure of the secondary oocyte.
- Q.29. A pea plant pure for yellow seed colour is crossed with a pea plant pure for green seed colour. In F_1 generation, all pea plants were with yellow seed. State and explain the law of Mendel which is applicable in the given example.
- Q.30. Describe the conducting system of human heart with the help of neat and labeled diagram.
- Q.31. Explain generation of nerve impulse in brief.



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