

HISSAN CENTRAL EXAMINATION – 2080 (2024)

Grade: XII

F.M.: 75

Time: 3 hrs

BIOLOGY (2021 – D1)

The figures in the margin indicate full marks.

Attempt **all** the questions as instructed.

PART: I (BOTANY)

GROUP A

Rewrite the correct options of each question in your answer sheet. [5 × 1=5]

- What is the term for the process of formation of seeds without fertilization in flowering plants?
A) Apomixis
B) Budding
C) Sporulation
D) Regeneration
- When a cell is fully turgid, which of the following will be zero?
A) Turgor pressure
B) Diffusion pressure deficit
C) Osmotic pressure
D) Wall pressure
- Which of the following elements is NOT a component of the nitrogenous bases found in nucleic acids?
A) Hydrogen
B) Nitrogen
C) Phosphorus
D) Carbon
- How would you distinguish between a meristem and other types of plant tissues?
A) Location of the tissue within the plant
B) Type of cells produced by tissues
C) Function of the tissue in plant growth and development
D) Cellular organization within the tissue
- Which of the following is a phenomenon associated with photoperiodism in plants?
A) Phototropism
B) Thigmotropism
C) Flowering induction
D) Stomatal closure

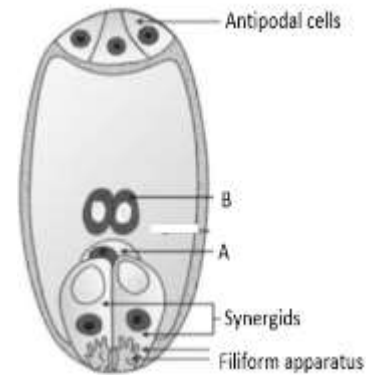
GROUP B

Answer the following question in short. [4 × 4 =16]

- Draw a labelled diagram of the vascular bundle found in T. S. of a typical monocot stem. List any two anatomical characteristics specific to monocot stems that are not observed in dicot stems. [2+2]

- Look at the figure of a female gametophyte, an essential component in the sexual reproduction of flowering plants. Then, answer the following questions:

- What is the term for the process of forming given female gametophyte from a functional megaspore? [0.5]
- Label the structure marked as A and B. [1]
- Briefly describe the various stages of female gametophyte development from the functional megaspore with labeled diagrams. [2.5]



- Define the genetic code and explain how it exhibits degeneracy, universality, and non-overlapping properties. [1+3]

OR

How does diffusion differ from osmosis in terms of the types of molecules or particles that can move across a membrane? List three roles of diffusion in plant's life. [1+3]

- How does biotechnology contribute to both medical advancements and addressing global environmental challenges such as climate change and pollution? [2+2]

GROUP C

Answer the following question in long. [2 × 8 =16]

- Discuss the significant roles of photosynthetic pigments in photosynthesis. Provide a concise account of both cyclic and non-cyclic electron transport systems. [2+6]
- According to Mendel's laws, the segregation of one pair of alleles is independent of the segregation in another pair of alleles. Which specific law does this statement refer to, and state it? Furthermore, using genetic crosses, explain the aforementioned statement by demonstrating crosses up to the second filial generation with the help of a chart. Additionally, predict the genotypic and phenotypic ratios resulting from these crosses. [2+5+1]

OR

Discuss the phenomenon of linkage, including demonstrations of both complete and incomplete linkage with the help of suitable illustrations. [2+3+3]

Part: II (ZOOLOGY)

GROUP A

Rewrite the correct options of each question in your answer sheet [6 × 1 = 6]

12. Which of the following tissue has mast cell?
A) Connective tissue B) Epithelial tissue
C) Muscles D) Nerve cells
13. Gastrulation in frog involves:
A) Epiboly B) Emboly
C) Invagination D) All of these
14. Human ear concerned with the balancing and hearing system. Which part of the internal ear deals with the hearing system?
A) Cochlea B) Semicircular canal
C) Mucous membrane D) Vestibule
15. Which of the following diseases is not caused by virus?
A) Mumps B) Rabies
C) AIDS D) Tuberculosis
16. How many double circulations are normally completed by the human heart in one minute?
A) Eight B) Sixteen
C) Thirty Six D) Seventy Two
17. If the cerebellum of a person gets injured, it will have effect on which of the following physiological function?
A) Respiratory Ability B) Body Movement
C) Memory Function D) Smelling Power

GROUP B

Answer the following question in short. [4 × 4=16]

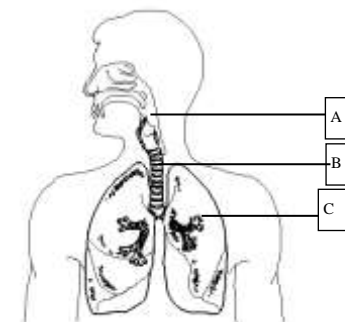
18. Define blastulation. Write down the process of blastulation during the development of frog. [1+3]

OR

What is immunity? Explain its types. [1+3]

19. Study the given diagram and answer the following question.

- i. Name the given diagram. [1]
ii. Label A, B and C. [1.5]
iii. Mention the function of A, B and C. [1.5]



20. Compare and contrast voluntary and involuntary muscle. [2+2]
21. Write the short note on test tube baby. [4]

GROUP C

Answer the following question in long. [2 × 8=16]

22. Why typhoid is called enteric fever? Illustrate its causative agent, mode of transmission, symptoms and preventive measures. [1+1+2+2+2]
23. Draw a well labeled diagram of the alimentary canal of a human being. Explain the physiology of the digestion of foods that a person under takes. What would happen is digestion when the pancreas is removed? [3+4+1]

OR

Why human heart is myogenic? Demonstrate a well labeled diagram of internal structure of heart with its description. [1+3+4]

THE END