

NEB - GRADE XII
2079 (2022)

Biology
New course

For regular students (Except technical stream students)

Please complete at first section I (Botany) then section II (Zoology).
Answer of each section should be separate in the same answer sheet.

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Time: 3 hrs.

Full Marks: 75

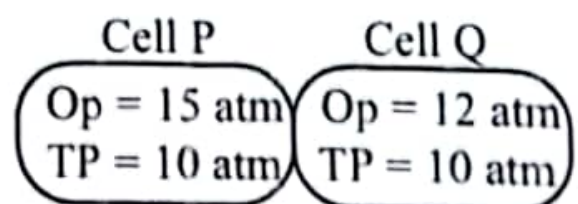
Attempt all the questions.

Section : I (Botany)
Group 'A'

5×1=5

Rewrite the correct options of each questions in your answer sheet.

- In a monohybrid cross of two heterozygous parents (Rr), what would the expected genotypes of the offsprings be ?
 A) 1 Rr : 2Rr:1rr B) 1rr:3RR
 C) 3Rr:1rr D) All Rr
- Which of the following cells in an embryo sac degenerate after fertilization?
 A) Synergids and primary endosperm cell
 B) Synergids and antipodal cells
 C) Antipodal cells and primary endosperm cell
 D) Eggs and antipodal cells
- Two cells P and Q are in contact with one another but are separated by the semi-permeable membrane as shown in the diagram. The osmotic pressure of cell P is 15 atm. and that of Q 12 atm. The turgor pressure of cell P is 10 atm. and that of Q is 6 atm. In which direction will the water move ?
 A) From cell P to cell Q
 B) From cell Q to cell P
 C) There will no movement of water
 D) Water can move either from cell P to Q or from cell Q to P



4. Which one of the following parenchyma cells makes the aquatic plants light and helps in buoyant ?
 A) Prosenchyma
 C) Aerenchyma
 B) Assimilatory parenchyma
 D) Stellate parenchyma
5. In an economically important plant species, embryo mortality is very high. What method do you suggest to check the mortality ?
 A) Micropropagation
 C) Embryo culture
 B) Polyploid mutation
 D) Meristem culture

Group 'B'

Give short answer to the following questions.

4x4=16

6. 'Meristem is also known as Juvenile tissue'. Justify. Explain the types of meristem on the basis of position. 1+3
 7. What are the differences between transpiration and guttation ? 4

OR

Explain in brief about significance of polyploidy with examples.

8. Write the salient features of dicot embryo in reference to its development pattern with labelled diagrams. 2+2
 9. 'Hybridisation is a modern breeding method for the development of crop plants with desired characters as well as hybrid vigour'. Justify this statement by describing various steps of hybridisation procedure in plants. 1+3

Group 'C'

Give long answers to the following questions.

2x8=16

10. Mutation is important from the evolutionary point of view. Give reasons. How does gene mutation occur ? Explain its types. 2+2+4

OR

Why is *Drosophila melanogaster* selected for genetical study ? 'The inheritance of sex-linked trait follows criss-cross pattern of inheritance'. Justify this statement by describing with special reference to eye colour of *Drosophila*. 3+5

11. The source of oxygen in photosynthesis is the water but not the carbon dioxide. Explain with reasons. Briefly describe the Hill reaction. 2+6

Section : II (Zoology)

Group 'A'

Rewrite the correct options of each questions in your answer sheet. 6x1=6

12. Which of the following tissues possess fat globules ?
A) Areolar tissue
B) Adipose tissue
C) Blood plasma
D) Striped muscle
13. What are the sequential steps involved in process of gametogenesis ?
A) Multiplication, growth, maturation
B) Multiplication, maturation, growth
C) Growth, multiplication, maturation
D) Maturation, growth, multiplication
14. When an organ transplantation occurs between two genetically identical individuals, what will be the type of transplantation among following ?
A) Auto graft
B) Allograft
C) Heterograft
D) Iso graft
15. Over population causes adverse consequences in the society. Highlight which of the following can control over population ?
A) Early marriage
B) Polygamy
C) Family planning
D) Food supply
16. In the middle ear of human being, there are three ear-ossicles. Identify and select which of the following ear-ossicles are arranged in correct sequence ?
A) Malleus, Incus, Stapes
B) Malleus, Stapes, Incus
C) Cochlea, Incus, Malleus
D) Malleus, Incus, Saccule
17. Pancreas is a gland having exocrine and endocrine in functions. Its exocrine part is the pancreatic acini. What would be the endocrine part ?
A) Zona glomerulosa
B) Islet of Langerhans
C) Zona reticularis
D) Adenohypophysis

2021 'N'

(4)
Group 'B'

4x4=16

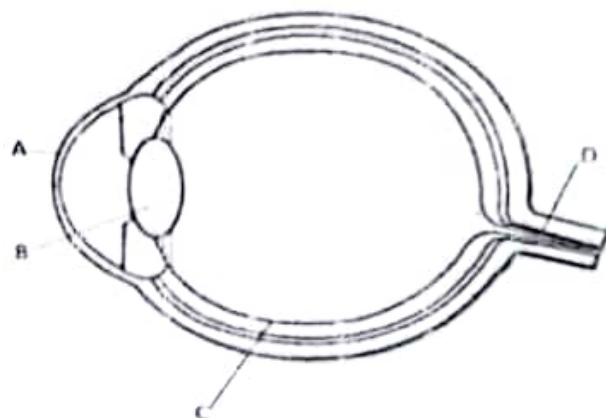
Short answer questions.

18. How would you elaborate the different types of simple epithelial tissues in animals? Support with diagrams. 3+1
19. Describe the process of oogenesis in animals with diagram. 3+1

OR

Define the term *in-vitro* fertilization. Describe its process.

20. Study the given diagram of V.S. of human eye and answer the following questions. 2+2



- a) Label A, B, C, and D
- b) Write one function each of the part labelled.

21. Kidneys are the organs which filter the blood to remove the wastes and keep the electrolyte in balance. If the kidneys do not function normally, various renal disorders are observed. Highlight any two common renal disorders in human beings. 4

Group 'C'

2x8=16

Long answer questions.

22. Explain cholera as an acute diarrhoeal disease. Discuss its causative agent, mode of transmission and symptoms. Mention its control measures. 1+1+2+2+2
23. Draw a labelled diagram of alimentary canal of a human being. How would you explain the digestion of proteins in gut? Justify the relationship between amylase and lipase enzymes in digestion of food. 3+4+1

OR

Justify the statement "sino-auricular node is a natural pacemaker." What would you suggest if the natural pacemaker does not function normally? How do you test blood grouping in human beings? 3+2+3