NEB - GRADE XII
2081 (2024)

Biology

(New Course)

(For regular and grade increment students whose first two digits of registration number starts from 78, 79 and 80)

Multiple Choice Questions

Rewrite the correct option of each question in your same answer sheet.

Section : I (Botany)

Group 'A' [5×1=5]

1. Which of the following type of artificial vegetative propagation in which root is induced while it is still attached to the parent plant and it is particularly suitable for plants having soft branches lying near to soil ?

   A) Air layering
   B) Grafting
   C) Soil layering
   D) Cutting

2. What causes cell elongation in the internodal regions of plants ?

   A) Indole acetic acid
   B) Gibberellins
   C) Abscisic acid
   D) Cytokinins

3. Which of the following genotypes represents monosomy, a type of aneuploidy ?

   A) 2n - 2
   B) 2n - 1
   C) 2n + 1
   D) 2n + 1 + 1

4. What is the primary function of the cambium in the perennial dicot vascular plants ?

   A) To produce lateral roots
   B) To provide structural support
   C) To produce new xylem and phloem
   D) To regulate transpiration

5. How does plasmolysis alter the osmotic process across the cell membrane ?

   A) Alters solute equilibrium, promoting water withdrawl from the cell
   B) Blocks water exit, causing water accumulation within the cell
   C) Disturbs solute balance, causing water to enter the cell
   D) Increases solute diffusion across the membrane, leading to osmotic equilibrium

(Contd...)

Section : II (Zoology)

Group 'A' [6×1=6]

12. Which of the following epithelium forms the inner lining of vagina ?
    A) Columar B) Cuboidal
    C) Stratified keratinized squamous D) Stratified non-keratinized squamous

13. Which is the correct sequence in embryonic development of frog ?
    A) Morula, blastula, gastrula
    B) Blastula, morula, gastrula
    C) Morula, gastrula, blastula
    D) Blastula, gastrula, morula

14. What would happen, if the oxyntic cells of gastric glands becomes non-functional due to some reasons ?
    A) Lipase enzyme becomes more active
    B) Protein digestion does not take place
    C) pH of stomach falls
    D) Pepsin is not secreted

15. Show the correct path for the flow of urine.
    A) Renal pelvis, ureter, urinary bladder, urethra
    B) Renal pelvis, ureter, urethra, urinary bladder
    C) Renal pelvis, urinary bladder, urethra, ureter
    D) Renal pelvis, urethra, ureter, urinary bladder

16. If the person has puffy appearance, moon face, low body temperature and is intolerance to cold. What do you think he is suffering from ?
    A) Grave's disease B) Conn's disease
    C) Myxoedema D) Hashimoto's disease

17. What is the substance sampled during amniocentesis ?
    A) Placental cells
    B) Amniotic fluid
    C) Maternal blood
    D) Umbilical cord tissue

Sub.Code : 2021'V'

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Please complete first section I (Botany) and then section II (Zoology). Answer of each section should 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**

Group 'A' (Botany and Zoology)

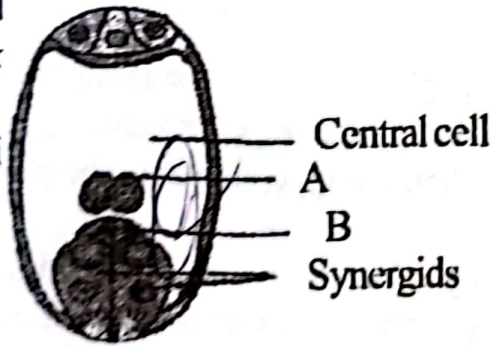
Multiple Choice Questions No. 1 to 6 (Group A Botany) and Question No 12 to 17 (Group A Zoology) will be provided after 30 minutes of starting examination. Rewrite its (MCQ) correct options (answer) in your same answer sheet.

Section : I (Botany)
Group 'B'

Short answers questions. **[4×4=16]**

6. Draw a labelled diagram of T.S. of a typical dicot stem and mention any two anatomical characteristics of its vascular bundles. [3+1=4]

7. Look at the figure related to the sexual reproduction of angiosperms and answer the following questions:



a) What is the figure about, and why is it important ? [1]

b) Label the parts marked as A and B. [1]

c) Describe the different phases of female gametophyte development using labelled diagrams. [2]

8. In which cross, the genotypic and phenotypic ratio are same ? Explain it with reference to *Mirabilis jalapa* plant. [1+3]

OR

Apply your understanding of various processes involved in the ascent of sap in cohesion tension theory for the maximum uptake of water in plants. [4]

(Contd...)

9. How do organic fertilizers contribute to sustainable agricultural practices compared to chemical fertilizers. and why is prioritizing their use advantageous ? [3+1]

Group 'C'

Long answer questions. [2×8=16]

10. How does aerobic respiration differ from anaerobic respiration ? Describe the cycle that involves breakdown of two carbon compound Acetyl CoA in aerobic respiration with necessary diagram. [3+5]

11. "Genes are inherited in new combination due to crossing over in the gametes". Interpret this statement with its mechanism and necessary diagrams. Write the significance also. [6+2]

OR

Briefly discuss the Watson and Crick's model of DNA with the help of neat and labelled diagram. Give three points of differences between DNA and RNA in their structure, composition and function. [5+3]

Section : II (Zoology)

Group 'B'

Short answers questions. [4×4=16]

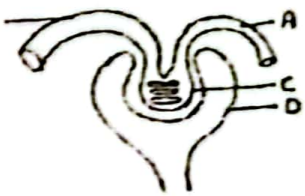
18. Compare and contrast between simple and compound epithelium. [2+2]

19. What is blastula ? How is blastula formed during development of frog ? Why micromeres divide faster than the macromeres ? [1+2+1]

OR

Explain the basic steps involved in IVF. Mention any two potential risks or complications associated with IVF. [2+2]

20. Study the given figure and answer the following questions.
    i) Label the parts C and D [1]
    ii) What is the difference between the parts A and B ? (any two) [1]
    iii) Mention the function of part C. [2]



21. "Tobacco smoking is injurious to health." Identify some of the health hazards of tobacco smoking and suggest some preventive measures of smoking. [2+2]

(Contd...)

Group 'C'

Long answer questions. [2×8=16]

22. Name the causative agent of AIDS. Mention its mode of transmission, symptoms and preventive measures. Why is it prevelance among intravenous drug users ? [1+2+2+2+1]

23. Human alimentary canal is a complete tube designed for ingestion, digestion, absorption, assimilation and egestion process. Draw a labelled diagram of human digestive system and explain the parts of alimentary canal. What would happen if the bile duct becomes blocked ? [2+5+1]

OR

Human ear is concerned with hearing and equilibrium. With the help of a labelled diagram, explain the structure of human ear. What would happen, if the opening of Eustachian tube becomes blocked ? [2+5+1]

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