NEB - GRADE XII
2079 (2022)

Biology
New course

For regular students (Except technical strem 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.

1. There are many types of chromosomal disorders in organisms, among them aneuploidy is very common in population. Which one of the following conditions is true for aneuploidy ?
   A) Addition or deletion of one set of chromosomes in diploid chromosomes.
   B) Addition of one or more set of chromosomes in diploid chromosomes.
   C) Deletion of one or more sets of chromosomes in diploid chromosomes.
   D) Addition or deletion of one or more chromosomes in diploid chromosomes.

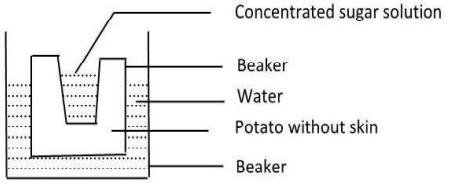
2. Which one of the following statement is correct ?
   A) Sporogenous tissue is haploid.
   B) The hard outer layer of pollen is called intine.
   C) Tapetum nourishes the developing pollen.
   D) Microspores are produced by endothecium.

3. Which one of the following vascular bundles is found in dicot stem ?
   A) Conjoint, collateral and open
   B) Concentric
   C) Conjoint, collateral and closed
   D) Radial

4. Which of the following explant is cultured to obtain haploid plants.
   A) Embryo B) Meristem
   C) Apical bud D) Anther

(Contd...)

5. The diagram given is the potato osmoscope that demonstrate the process of osmosis. What will be the result of the set-up experiment after few hours ?



   A) The level of sugar solution in the potato cavity increases due to endosmosis
   B) The level of sugar solution in the potato cavity decreases due to exosmosis
   C) The level of water in the beaker increases due to exosmosis
   D) The level of sugar solution in the potato cavity remains same.

Group 'B'

Give short answer to the following questions. 4x4=16

6. What types of complex permanent tissue helps in conduction of water from root to the leaves through stem ? Briefly describe the structure of such tissue with labelled diagram. 3+1
7. Write down the significance of crossing over. 4

   OR

   Note down the factors that affect the rate of transpiration in plants.
8. Describe the development of male gametophyte of an angiosperm with necessary labelled diagrams. 3+1
9. The use of organic fertilizers is more beneficial than chemical fertilizers in the crop field. Justify this statement with reasons. 4

Group 'C'

Give long answer to the following questions. 2x8=16

10. How do certain phenotypes appear in F_2 individuals when none of the parents originally exhibited them in dihybrid cross in *Pisum sativum* ? Show the cross up to F_2 generation in a Punnett's square to substantiate your answer. 4+4

    OR

    Replication of DNA is one of the genetical processes in organisms. How is DNA replicated ? Briefly describe the mechanism of semi-conservative method of replication that forms daughter DNAs with necessary diagrams. 2+4+2
11. How are light dependent reactions linked to the process of biosynthetic phase to the photosynthesis ? Explain the process of biosynthetic phase occurring in the stroma of the chloroplast with the help of schematic representation. 2+4+2

(Contd...)

Section : II (Zoology)

Group 'A'

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

12. During selective reabsorption, which of the following is completely reabsorbed from glomerular filtrate in a healthy person ?
    A) Glucose and amino acid
    B) Urea and salt
    C) Uric acid and urea
    D) Salt and ammonia

13. If a person using biconcave lens to correct vision, does not use glasses. Where will be the image formed ?
    A) Little behind retina
    B) On fovea centralis
    C) On blind spot
    D) Little in front of retina

14. At what time of menstrual cycle, ovulation takes place in adult female ?
    A) At the beginning of proliferative phase
    B) At the end of proliferative phase
    C) At the beginning of menstrual phase
    D) At the end of secretary phase

15. The mucosal layer of intestine is made up of
    A) Squamosal epithelium
    B) Cuboidal epithelium
    C) Columnar epithelium
    D) Transitional epithelium

16. Which one of the following is not the fate of ectoderm during development of frog ?
    A) Brain
    B) Pituitary gland
    C) Gut
    D) Stomodaeum

17. Diseases are grouped as non-communicable and communicable. Which one of the following groups of diseases are communicable ?
    A) Typhoid, tuberculosis and smoking
    B) Tuberculosis, smoking and alcoholism
    C) Smoking, alcoholism and ascariasis

(Contd...)

D) Ascariasis, typhoid and tuberculosis

Group 'B'

Give short answer to the following questions. 4x4=16

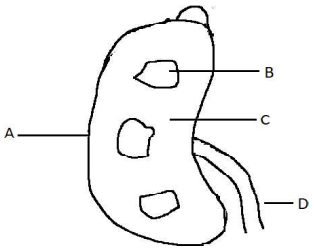
18. Differentiate between collagen fibre and elastic fibre. 2+2

19. Describe the process of gastrulation during development of frog with diagram. 2+2

OR

Describe the significance of fish farming in Nepalese context.

20. Study the diagram of L.S. of human kidney and answer the following questions. 1+2+1
    a) Label A,B,C and D
    b) Write any two differences between A and B
    c) Write the function of D



21. IVF technology in boon for the people with infertility. How does IVF help such people ? What ethical issues are being raised regarding surrogacy ? 2+2

Group 'C'

Give long answer to the following questions. 2x8=16

22. Describe causative agent, mode of transmission, symptoms and control measures of cholera in the Nepalese society. 1+2+3+2

23. Draw a well labeled diagram of a human heart. Discuss the origin and conduction of heart beat. How would it be solved if SA mode is damaged ? 2+4+2

OR

One of the properties of a neuron is the transmission of nerve impulse. Discuss how the transmission of nerve impulse along the nerve fibre take place ? Justify the roles of neurotransmitters which take part in the transmission of nerve impulse through synapse. 4+4

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