

## NEB - GRADE XII

2079 (2022)

## Biology

## Grade Increment (Supplementary) Examination

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.

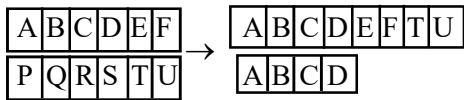
## Section : I (Botany)

## Group 'A'

5×1=5

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

1. What kind of chromosomal aberration. 2s seen 2n the given diagram ?



- A) Deletion                      B) Translocation  
C) Inversion                    D) Duplication
2. Which of the following is formed as a result of double fertilization in flowering plants ?  
A) Diploid endosperm and triploid zygote  
B) Diploid zygote and triploid endosperm  
C) Diploid oosphere and diploid endosperm  
D) Diploid zygote and triploid oosphere
3. Dendrochronology is the science of dating the age of a tree by counting the annual rings in a tree trunk. If scientists are determining the age of a tree by dendrochronology, what tissue are they looking at ?  
A) Primary xylem  
B) Primary phloem  
C) Secondary xylem  
D) Vascular cambium

2021'B'

(2)

4. Given the general equation of respiration,  
 $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + \text{Energy}$   
Which of the following is true ?

A) Glucose is reduced to water  
B) Oxygen is reduced to carbondioxide  
C) Glucose is oxidised to carbon dioxide  
D) Oxygen is oxidised to water

5. What is called the process of removing microorganisms from contamination in tissue culture process using heat ?

A) Pasteurization                      B) Immunization  
C) Fermentation                      D) Sterilization

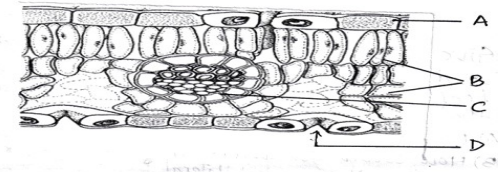
## Group 'B'

Give short answer to the following questions.

4×4=16

6. Study the anatomical structure of V.S. of a leaf as shown in the diagram and answer the following questions.                      1+2+1

- a) Label A, B C and D  
b) How would you ascertain whether it is a isobilateral or dorsiventral leaf ? Give reasons.  
c) Write the function B.



7. Pollination is the transfer of pollen grains from anther to stigma of a pistil. Write some adaptive features of a wind pollinated plants.                      4
8. Genetic engineering is one of the fields of biotechnology which have both positive and negative sides. Briefly describe the some potential benefits and hazards of genetic engineering.                      2+2
9. What is seed dormancy ? Write its types and importance in agriculture.                      1+3

OR

What is polyploidy ? Write its types and importance.

1+3

## Group 'C'

Give long answers to the following questions.

2×8=16

10. DNA acts as a genetic material for majority of the organisms but not the RNA. Give reasons to support this statement. With the help of a neat and labelled diagram describe Watson and Crick's model of DNA with functions.                      2+6

(Contd...)

(Contd...)

(3)

2021'B'

OR

What is the process of exchange of genetic material between non-sister chromatids of two homologous chromosomes during meiosis ? Describe the mechanism of this process with suitable diagrams. Why is this process important ?  
1+5+2

11. Oxygen is an essential requirement for aerobic respiration but it enters the respiratory process at the end. Why ? Draw a detailed flow chart showing the important series of events of aerobic respiration that occurs in the matrix of mitochondria.  
2+6

**Section : II (Zoology)**

**Group 'A'**

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

12. Teeth are used in the process of digestion of food. Which part of teeth is the hardest tissue ?  
A) Enamel B) Dentine C) Bone D) Canaliculi
13. Urine formation is the primary function of kidney. What is the reason behind producing hypotonic urine ?  
A) more ADH in circulation  
B) less ADH in circulation  
C) more ADH and less Aldosterone in circulation  
D) Less ADH and less Aldosterone in circulation
14. Vitamin A deficiency causes night blindness in person. In a night blinded person. Which of the following are not functioning in low intensity of light ?  
A) Cones B) Rods  
C) Both rods and cones D) Lens
15. In the wall of heart, there is presence of cardiac muscles. Which of the following is correct for cardiac muscle.  
A) Unstriated and involuntary  
B) Unstriated and voluntary  
C) Striated and involuntary  
D) Striated and voluntary
16. Gray crescent is formed soon after entry of sperm into egg of frog. What do the gray crescent mark in the future ?  
A) Anterior side of embryo  
B) Posterior side of embryo  
C) Dorsal side  
D) Ventral side

(Contd...)

(4)

2021'B'

17. Pneumonia is one of the respiratory diseases. What happens to the person during pneumonia ?

- A) Shortness of breathing  
B) Alveoli are damaged  
C) Alveoli are filled with fluid  
D) Lung tissue are thickened

**Group 'B'**

Give short answer to the following questions.

4x4=16

18. Compare and contrast RBC and WBC.

2+2

19. Discuss the process of formation of archenteron in the development of frog.  
4

OR

Explain the scopes of fish farming in Nepal.

20. Study the given diagram of pituitary gland of human beings and answer the following questions.

- a) Label A, B  
b) Discuss the role of hormones produced by B.



21. Unemployment is one of the problems of Nepalese society. Highlight the advantages of poultry farming. Mention best egg laying poultry breeds.  
3+1

**Group 'C'**

Give long answer to the following questions.

2x8=16

22. People are greatly affected by AIDS in the past. Describe causative agent, mode of transmission and AIDS related complex symptoms and methods to prevent it.  
1+2+3+2
23. Draw a well labelled diagram of human ear. Discuss the mechanism of hearing. What would happen if tympanic membrane is damaged ? Discuss the functional aspect of vestibular apparatus.  
2+3+1+2

OR

Draw labelled diagram of male reproductive organs of human beings. Describe the process of spermatogenesis. Discuss the role of male sex hormones. What would happen if prostate gland is surgically removed ?  
2+3+2+1