CLASS XI

SUBJECT : BIOLOGY

2/2014

TIME: $3\frac{1}{2}$ hrs M.M : 70

General Instructions:

i) All questions are compulsory

ii) The question paper consists of five sections A, B, C, D and E. Section -A consists of 5 questions of 1 mark each, Section -B consists of 5 questions of 2 marks each, Section- C has 10 questions of 3 marks each , Section -D consists of 3 questions of 5 marks each.

iii) Section- E consists of questions based on Open Text Material provided by CBSE.

iv) There is no overall choice. However, an internal choice has been provided in one question of 3 marks and all three questions of 5 marks weightage given in section D . A student has to attempt only one of the alternatives in such questions.

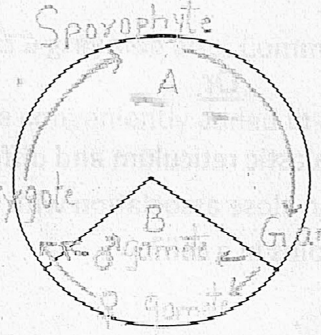
v) Wherever necessary , the diagrams drawn should be neat and properly labeled.

SECTION A

1. Name the enzyme involved in the crossing over of genetic material during the Pachytene stage of Meiosis I. (1)
2. "X" is a kind of archaebacteria present in the gut of several ruminant animals. What is "X"? (1)
3. Rhizophora grows in swampy areas. Name the types of roots these plants possess and give their function. (1)
4. The nodal musculature in our heart is described as autoexcitable. Justify the statement. (1)
5. Why is ATP formation in mitochondria called oxidative phosphorylation? (1)

SECTION B

6. (a) Identify the type of life cycle represented by the figure given below.
   (b) In which group of plants is this life cycle seen?
   (c) What is the ploidy of the sporophyte? (2)



7. The respiratory pathway is an amphibolic pathway. Discuss. (2)

8. (a) What are the salient features of Echinoderms?

(b) Describe "Pseudocoelomates" with examples. (2)

9 Name two hormones released by the posterior pituitary and state their functions. (2)

10. What is emphysema? What is its major cause? (2)

SECTION C

11. Describe competitive inhibition with an example.
OR
Explain the energy changes which characterize an enzyme-catalyzed reaction. (3)

12. Draw the floral diagram and write the floral formula for a flower of the following description:

"Bisexual; Actinomorphic; Five sepals, Gamosepalous; Five petals, Gamopetalous; Valvate aestivation; Five stamens, Epipetalous; Ovary bicarpellary, syncarpous, superior, placenta swollen with many ovules; Axile placentation. (3)

13. Answer the following with reference to the anatomy of dicot root:

(a) Where is the pericycle located?
(b) How are the xylem vessels arranged? What is such an arrangement called?
(c) Which type of cells constitute the cortex? (3)

14. (a) Write the location of the following in the human body:

(i) areolar tissue (ii) ciliated epithelium
(iii) smooth muscles

(b) State any three functions of bones in our body. (3)

15. (a) What is meant by complimentary base pairing in a DNA molecule?
(b) Differentiate between essential and non-essential amino acids. (3)

16. Describe the Fluid Mosaic model of Plasma membrane and draw a well-labelled diagram for the same.

Or

(a) Name the two types of endoplastic reticulum and differentiate between them.
(b) Why do Golgi bodies remain in close association with the ER?
(c) What is the function of nucleolus in a cell? (3)

17. Name the endocrine part of pancreas that secretes insulin. What are the functions of this hormone? Name the disease caused due to the failure of insulin secretion. (3)

18. Explain the classification of chromosomes on the basis of the position of the centromere. (3)

19. Draw a standard ECG and explain the different segments in it. (3)

20. Give any six points of difference between C_3 and C_4 plants. (3)

SECTION D

21. Draw a well labeled diagram of the human eye and answer the following questions:

(a) What is the blind spot?

(b) Differentiate between aqueous humor and vitreous humor.

OR

Describe in detail the sliding filament theory of muscle contraction. Draw diagrams to illustrate your answer. (5)

22. (a) What is Glycolysis?

(b) Give a schematic representation of the steps involved in this process.

(c) Calculate the net gain in ATP if one molecule of glucose is completely oxidized.

OR

(a) Draw the Calvin cycle and explain its steps in detail.

(b) Work out how many ATP and NADPH molecules will be required to make one molecule of glucose through the Calvin pathway. (5)

23. (a) Explain the process of secondary growth in the stems of woody angiosperms with the help of labeled schematic diagrams.

(c) What is the significance of this process? (5)

OR

Explain how the counter current mechanism is responsible for concentrating the urine in the human kidney.

SECTION E

24. "India shining" picture has a grey side also. Comment. (5)

25. Can exercises and yoga be conveniently added in the everyday schedule of youth? Suggest how? (5)

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SECTION A

1. Name the stage of cell cycle in which the morphology of the chromosomes can be most easily studied. (1)
2. Name the smallest living organisms which completely lack a cell wall and can survive without O_2. (1)
3. Name the type of leaf seen in Neem and explain the arrangement. (1)
4. The biosynthetic phase of photosynthesis is also termed as Dark Reaction. Is it a misnomer? Why? (1)
5. Define Residual Volume and explain its significance. (1)

SECTION B

6. Explain the type of life cycle seen in Bryophytes. (2)
7. Define Respiratory Quotient. Give its value for carbohydrates and fats. (2)
8. Describe Phylum Annelida by giving any four characteristic features along with examples. (2)

9 Give examples of:

(a) Hyperglycemic hormone

(b) Hypercalcemic hormone

(c) Blood pressure lowering hormone (2)

(d) Androgens (2)

10. Explain Eryrthroblastosis Foetalis.

SECTION C

11. Explain the code for classifying and naming enzymes. (3)

12. Define the terms Aestivation and Placentation and explain their types. (3)

13. Differentiate between:

(a) Heartwood and Sapwood

(b) Radial and Conjoint vascular bundles.

(c) Loose and dense connective tissue. (3)

14. (a) Write the location of the following:

(i) Malphigian tubules (ii) Compound epithelium

(iii) Lenticels

(b) Explain the three types of cell junctions found in animal tissues. (3)

15. Differentiate between

(a) Essential and non-essential amino acids.

(b) Tertiary and Quartenary structure of proteins. (3)

16. What is a mesosome in a prokaryotic cell? Mention the function that it performs.

OR

(a) Name the two types of endoplastic reticulum and differentiate between them.

(b) Why do Golgi bodies remain in close association with the ER?

(c) What is the function of nucleolus in a cell? (3)

17. Which endocrine gland secretes the growth hormone? What is the function of this hormone? What are the effects of its oversecretion and undersecretion? (3)

18. Explain the classification of chromosomes on the basis of the position of the centromere. (3)

19. Explain the three modes of regulation of kidney function. (3)

20. Give any six points of difference between C_3 and C_4 plants. (3)

SECTION D

21. Draw a well labeled diagram of the human heart and explain the events in one cardiac c ycle.

OR

Discuss the main steps in the digestion of proteins as the food passes through the alimentary canal. (5)

22. Give a schematic representation of the biochemical reactions involved in the Tricarboxylic Acid Cycle. Calculate the net gain in ATP if one molecule of glucose is completely oxidized.

OR

Differentiate between Cyclic and non-cyclic photophosphorylation. Give diagrams to illustrate. (5)

23. (a) Explain the process of secondary growth in the stems of woody angiosperms with the help of labelled schematic diagrams.

(b) What is the significance of this process?

OR

(a) Draw well labelled diagrams of the stages of Mitosis.

(b) Give the significance of Meiosis.

SECTION E

26. "India shining" picture has a grey side also. Comment. (5)

27. Can exercises and yoga be conveniently added in the everyday schedule of youth? Suggest how? (5)