

Roll No. _____

Code : 112016-044-A

Please check that this question paper contains **23** questions and **6** printed pages.

**CLASS-XI
BIOLOGY**

Time Allowed : 3 Hrs.

Maximum Marks : 60

General Instructions :

- (i) *All questions are compulsory.*
- (ii) *There are 23 questions in all. Question No.1 to 6 carry one mark each; questions 7 to 10 carry two marks each; questions 11 to 19 carry three marks each; question 20 carry four marks & questions 21 to 23 carry five marks each.*
- (iii) *There is no overall choice. However, internal choices have been provided in one question of two marks, one question of three marks and all the questions of five marks. You have to attempt only one of the choices in such questions.*
- (iv) *Fifteen minutes time has been allotted to read the question paper. During this time, the student will read the question paper only and will not write any answer on the answer script.*
- (v) (a) *Question no. 24 and 25 are OTBA questions of five marks each.*
(b) *OTBA questions are being provided by the CBSE.*

Section-A

- 1. (a) Which protein rich structure gives flexibility to *Euglena* ?
(b) Name the photosynthetic pigment present in Euglenoids. (1)
- 2. List one external distinguishing features of a bony fish from a cartilaginous fish with regard to the position of their mouth. (1)
- 3. Why is blind spot devoid of vision ? (1)
- 4. What is the function of crista & macula in the inner ear ? (1)
- 5. How are lipid molecules arranged in a cell membrane ? (1)
- 6. Atul was doing an experiment on the effect of antibiotics on bacteria. He found that some bacteria could grow on antibiotic rich medium, while some other bacteria could not. He knew that bacterial genomic DNA usually do not contain antibiotic resistance gene. What else could have conferred these bacteria the ability to grow on antibiotic rich medium ? (1)

Section-B

7. (a) Brinjal and potato belong to the same genus, *Solanum*, but are considered as different species. Why ?
(b) Name the order and family to which *Homo sapiens* belong ? (2)
8. Name the gland that secretes vasopressin. Under what conditions is it released in the human body ? How does it affect the functions of the kidney ? Name the disease caused due to the failure of its secretion. (2)
9. (a) Name the scientist who first observed ribosomes.
(b) What are ribosomal subunits made up of chemically ? (2)

OR

What do you mean by active transport across a cell membrane ? Explain with one example.

10. (a) Do whole grains/pulses stored in air-tight containers respire ? Do they have water within them ?
(b) Why do plants die in a water logged soil ? (2)

Section-C

11. (a) Where does reduction division take place in the life cycle of a fern and a gymnosperm ? What is the fate of spores formed in both.
(b) Give one difference between homosporous and heterosporous pteridophytes. (3)
12. (a) A patient suffering from dengue has a decreased platelet count. To which type of animal tissue platelets belong ?
(b) How is a compound epithelium different from a simple epithelium ? Where is compound epithelium found in the body ? Give one example and its function. What is the function of the compound epithelium ? Give one example. Where it is found in the human body ? (3)
13. Describe three different types of placentations found in flowering plants ? Illustrate your answer with diagrams. (3)
14. Explain the mechanism of generation of light induced image formation in the retina. (3)

15. Name a pair of hormones where the members work antagonistic to each other to control blood glucose level in the human blood. Explain their functions. (3)

16. (a) Draw a neat labeled diagram of a chloroplast.

(b) Which parts of chloroplast contains the following :

(i) the chloroplast pigment

(ii) the enzymes for the synthesis of carbohydrates and proteins. (3)

OR

(a) Draw a neat labeled diagram of a nucleus.

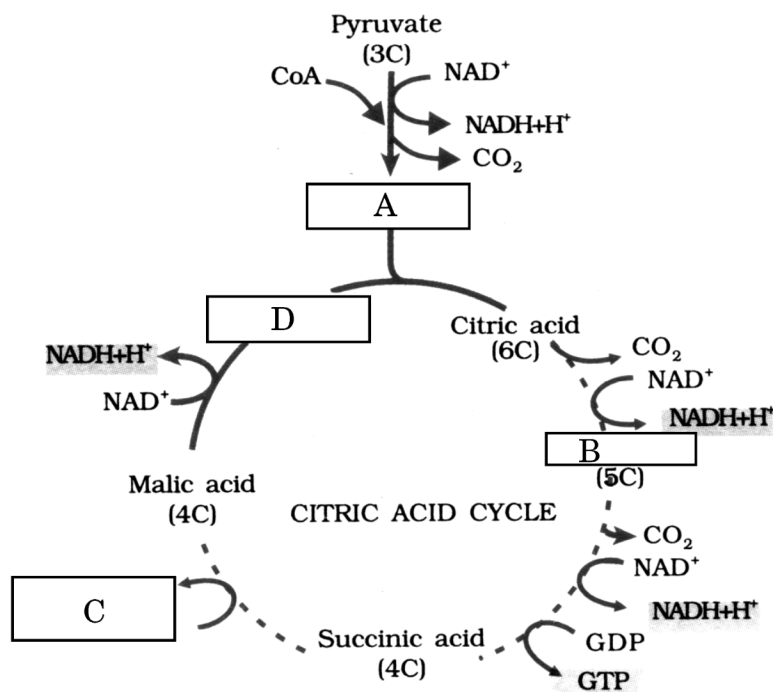
(b) Name the site of active ribosomal RNA synthesis in the nucleus.

(c) What is a perinuclear space ?

17. (a) Why is it essential to maintain fruits and vegetables at low temperature for their safe storage ?

(b) Give reasons as to why starch is stained blue with iodine but cellulose is not, though both are polymers of glucose. (3)

18. (a) Study the Citric Acid Cycle drawn as follows and fill in the blanks by writing your answers against the serial numbers (A, B, C, D) in your answer sheet. (3)

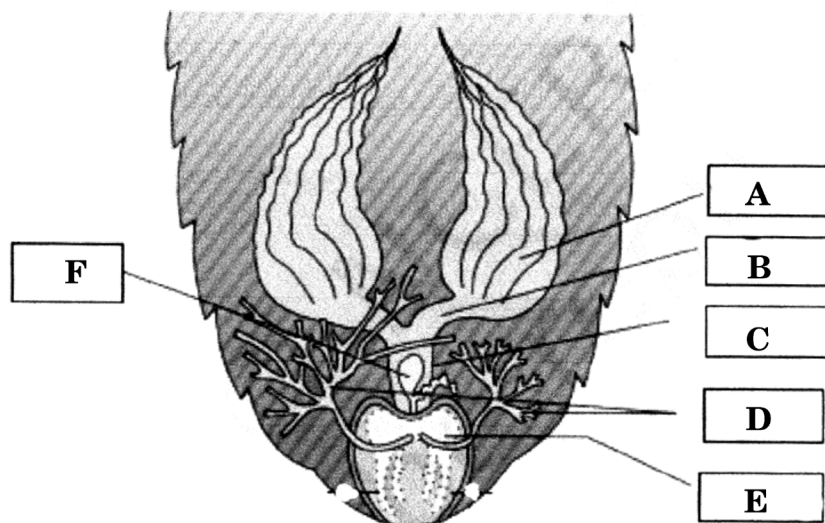


(b) What is the significance of Electron Transport System in mitochondria ? (3)

19. Explain, citing an example, how mycorrhizal association is helpful in absorption of water and minerals in plants ? (3)
20. Rahul had visited Indian Agricultural Research Institute and had met an agricultural scientist. He learnt from him the importance of plant hormones. He extensively used hormones to ripen fruits for selling in the market. His brother however, prevented him from doing so and suggested that he should allow natural ripening of fruits. Rahul convinced his brother that this is the most widely used plant growth hormone in agriculture and has many others benefits too. Answer the following : (4)
- (a) Name the plant hormone which promotes ripening of fruits.
 - (b) List two more beneficial effects of this hormone in agriculture.
 - (c) What will happen if this hormone is applied to a cucumber plant ?
 - (d) Give one advantage Rahul had over other fruit sellers.

Section-D

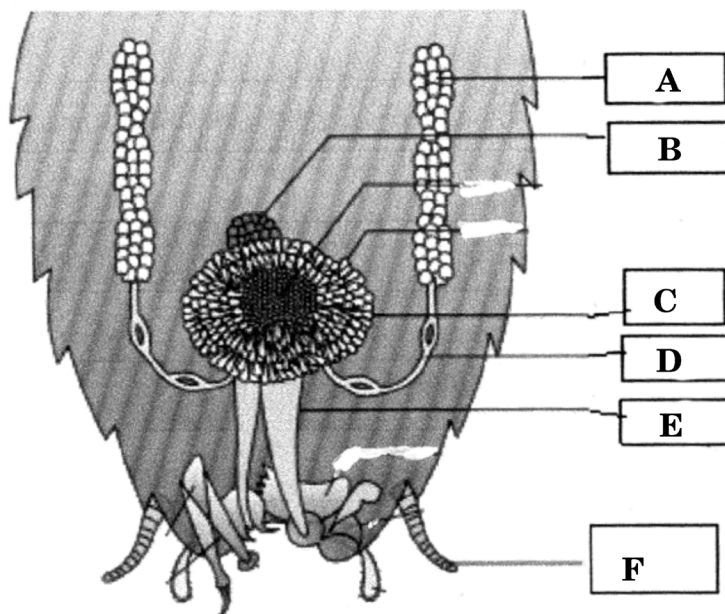
21. (a) Study and label the following diagram of female reproductive system of the cockroach. Write your answer against the serial numbers in the answer sheet. (5)



- (b) What are oothecae ? Where are they found ?
- (c) What is paurometabolous development in cockroach ?

OR

- (a) Study and label the following diagram of male reproductive system of cockroach. Write your answer against the serial numbers in the answer sheet.



- (b) What are spermatophores ?
 (c) Where are the sperms stored temporarily in the body of the male cockroach ?

22. Calvin cycle consists of three stages. Mention where this cycle takes place in C_4 plant cell and explain the stages involved. (5)

OR

Briefly describe the chemiosmotic hypothesis of ATP synthesis.

23. (a) A plant cell has 32 chromosomes. It undergoes a mitotic division. What will be the chromosome number (N) during Metaphase ? What should be the DNA content (C) during anaphase ?
 (b) A well known biologist stated that the life history of an organism could be summed up as “gametic fusion, equational division and reductional division”. Explain. (5)

OR

- (a) Predominantly lower organisms divide and multiply asexually by mitosis yet nature evolved meiosis as a means of reproduction in higher organisms. Justify its significance.

- (b) Which two key events take place during S phase in animal cells : In which parts of the cell do these events occur ?
- (c) In the cell cycle of organisms, what is the interval between mitosis and initiation of DNA replication known as ?

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