

KENDRIYA VIDYALAYA SANGATHAN

CLASS XII (2019-20)

SUBJECT: BIOLOGY (044)

MAX MARKS: 70

TIME: 3 HRS

SECTION – A 1 mark

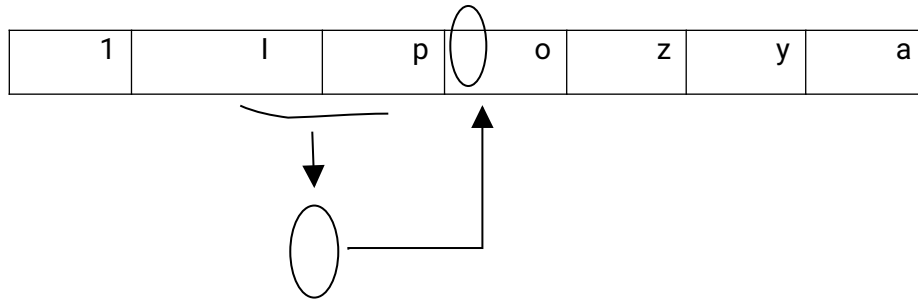
1. A moss plant produces a large number of .....but relatively only few.....
  - a. antherozoids and egg cells
  - b. egg cells and antherozoids
  - c. antherozoids and pollens
  - d. egg cells and pollens
2. High fever, loss of appetite, stomach pain and constipation are some of the symptoms seen in a patient. he is suffering from:
  - a. pneumonia
  - b. amoebiasis
  - c. malaria
  - d. AIDS
3. Name alternative source of protein for human and animal nutrition.
  - a. spirullina
  - b. yeast
  - c. clostridium
  - d. chlamydomonas
4. Crystals of Bt toxin produced by some bacteria do not kill the bacteria themselves because\_\_\_\_
  - a. Bacteria are resistant to the toxin.
  - b. toxin is immature.
  - c. toxin is inactive.
  - d. bacteria enclose toxin in a special sac.
5. India has more than 50,000 strains of rice. Mention the level of biodiversity it represents –
  - a. species diversity
  - b. genetic diversity
  - c. ecosystem diversity
  - d. biome diversity

SECTION – B 2 marks

6. Classify the following contraceptive measures into different methods of birth control.
  - (a) Saheli
  - (b) Tubectomy

(c) Diaphragms (f) Cervical caps

7. Given below is a schematic representation of a lac operon:



(a) Identify i and p.

(b) Name the 'inducer' for this operon.

8. Write the type of sex-determination mechanism, the following crosses show.

Give an example of each type.

(i) Female XX and Male XO

(ii) Female ZW and Male ZZ

9. Name and explain giving reasons, the type of immunity provided to the newborn by the colostrums and vaccinations.

10. Why are cattle and goats not seen browsing on *Calotropis* growing in the fields?

Or

Name a 'photoperiod' dependent process, one each in plants and in animals.

11. Mention two features of Ramsar convention.

12. Name the source of statin and state its action on human body

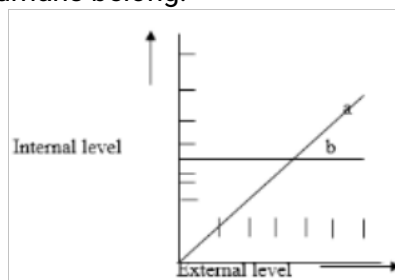
### **SECTION – C 3 marks**

13. The following graph represents the organismic response to certain environmental condition (e.g. temperature):

a. Which one of these, 'a' or 'b', depicts conformers?

b. How do these organisms of 'a' and 'b' differ from each other with reference to homeostasis?

c. Mention the category to which humans belong.

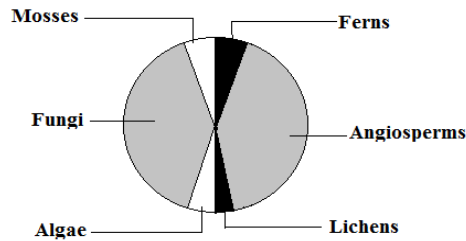


14. Observe the global biodiversity distribution of major plant taxa in the diagram and answer the questions that follow.

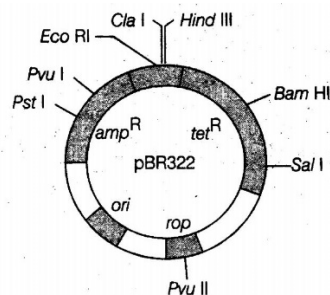
(a) Which group of plants are most endangered?

(b) Why are mosses/ferns so few? Give reason.

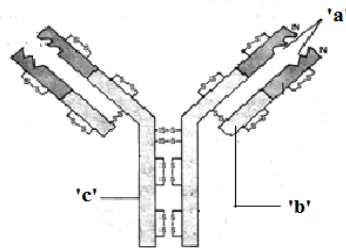
(c) Which group of plants is most advanced and which one is most primitive?



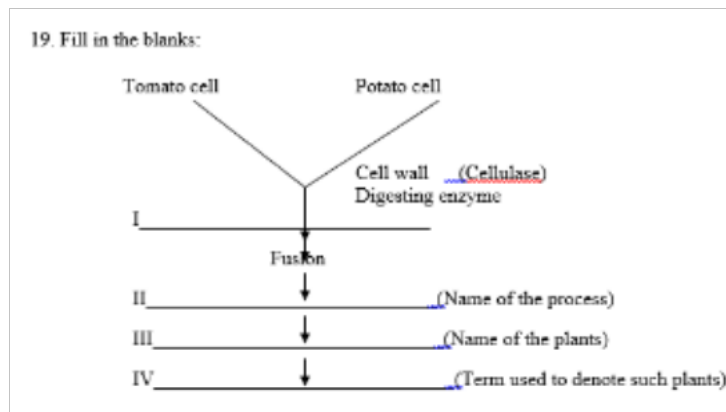
15. What is the principle behind gel electrophoresis? How the separated segments of DNA visualized?
16. (i) Name the organism in which the vector shown is inserted to the copies of the desired gene.  
 (ii) Mention the area responsible for controlling the copy number of the inserted gene.  
 (iii) Name and explain the role of a selectable marker in the vector shown.



17. (a) Name the source from which insulin was extracted earlier. Why is this insulin no more in use by diabetic people?  
 (b) How is the insulin produced by human body different from the insulin produced by the above mentioned company?
18. Identify a, b and c in the schematic diagram of an antibody given above and answer the questions.



- (i) Write the chemical nature of an antibody.  
 (ii) Name the cells that produce antibodies in humans.  
 (iii) Mention the type of immune response provided by an antibody.
19. Fill in the blanks:



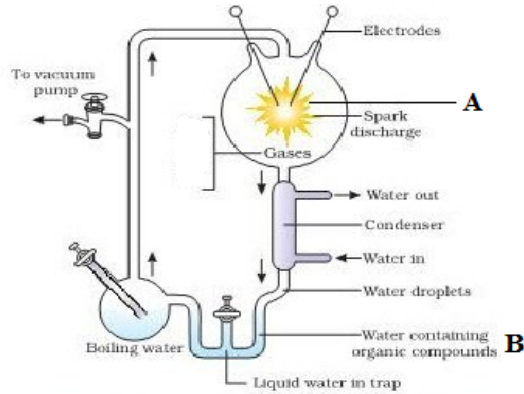
20. Choose two pairs of homologous structures from the following and mention why they are so called?  
 (i) Eyes of Octopus and mammals.  
 (ii) Thorn of Bougainvillea and tendrils of Cucurbits.

(iii) Flippers of penguins and dolphins.

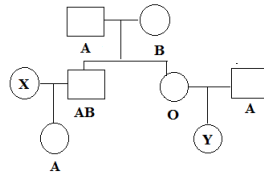
OR

Name the ancestors of man based on the features given below:

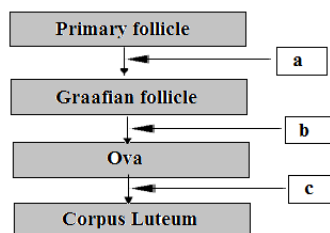
- (a) Human-like meat eater with 900 cc brain lived in Java.
  - (b) More human with brain size 1400 cc, lived in Central Asia, used hides and buried their dead.
  - (c) Man-like primate, that existed about 15 mya. Fossils found in Tanzania.
21. (a) Write the names of different gases contain and the conditions set for the reaction in the flask 'A'.  
(b) State the type of organic molecule collected in the water at 'B'.  
(c) Write the conclusion of the experiment.



22. Study the given pedigree chart showing the pattern of blood group inheritance in a family. (a) Give the genotype of the following: (i) Parents (ii) The individual 'X' in second generation. (b) State the possible blood groups of the individual 'Y' in the third generation.



23. Given below is a flow chart showing ovarian changes during menstrual cycle. Fill in the spaces a, b and c with the hormonal factor (s) responsible for the events shown.



24. From which part does fruit, seed and embryo develops in an angiospermic plant?

**SECTION – D : 5 marks**

25. What will happen to an ecosystem if -
- (a) All producers are removed.
  - (b) All organisms of herbivore level are eliminated; and
  - (c) All top carnivore population is removed.

OR

Citing lake as an example of a simple aquatic ecosystem, interpret how various function of this ecosystem is carried out. Make a food chain that is functional in this ecosystem.

26. Answer the following questions based on Meselson and Stahl's experiment:

- (a) Why did the scientists use  $^{15}\text{NH}_4\text{Cl}$  and  $^{14}\text{NH}_4\text{Cl}$  as sources of nitrogen in the culture medium for growing *E. coli*?
- (b) Name the molecule (s) that  $^{15}\text{N}$  got incorporated into.
- (c) How did they distinguish between  $^{15}\text{N}$  labeled molecules from  $^{14}\text{N}$  ones?
- (d) Mention the significance of taking the *E. coli* samples at definite time intervals for observations.
- (e) Write the observation made by them from the samples taken at the end of 20 minutes and 40 minutes respectively.

OR

- (a) Describe the various steps of Griffith's experiment that led to the conclusion of the 'Transforming Principle'.
- (b) How did the chemical nature of the 'Transforming Principle' get established?

27. (a) Trace the events in the formation of pollen grains from the pollen mother cell.
- (b) Draw a labeled diagram of the sectional view of a mature pollen grain.
- (c) It was found in a polyembryonic seed that some embryos were haploid and some were diploid. Analyse the possibilities for the formation of such embryos.

OR

- (a) Distinguish between Leydig cell and Sertoli cells in a human testis, regarding their location and function.
- (b) Draw a sectional view of human ovary and label the following parts in it ovarian follicles in four different stages of development, ovum and corpus luteum.