

Pre-Board Examination (2019-2020)

GRADE: XII CBSE

TOTAL MARKS: 70

BIOLOGY

DATE: _____

TIME: 3 Hrs.

General Instructions:

1. There are a total of 27 questions and five sections in the question paper. All questions are compulsory.
2. Section A contains question numbers 1 to 5, multiple choice questions of one mark each.
Section B contains question numbers 6 to 12, short answer type I questions of two marks each.
Section C contains question numbers 13 to 21, short answer type II questions of three marks each.
Section D contains question number 22 to 24, case-based short answer type questions of three marks each (1+1+1).
Section E contains question numbers 25 to 27, long answer type questions of five marks each.
3. There is no overall choice in the question paper. However, internal choices are provided in two questions of one mark, one question of two marks, two questions of three marks and all three questions of five marks. An examinee is to attempt any one of the questions out of the two given in the question paper with the same question number.

Section A

Answer the following questions. Each question carries 1 mark.

[5x1=5]

1. A few statements with regards to sexual reproduction are given below:
 - a) Sexual reproduction does not always require two individuals
 - b) Sexual reproduction generally involves gametic fusion
 - c) Meiosis never occurs during sexual reproduction
 - d) External fertilisation is a rule during sexual reproduction

Choose the correct statements from the options below:

- | | |
|------------|------------|
| a) a and d | b) a and b |
| c) b and c | d) a and d |
2. Bt cotton is not
 - (a) GM plant
 - (b) Insect resistant
 - (c) A bacterial gene expressing system
 - (d) Resistant to all pesticides
 3. GEAC stands for:
 - a) Genome Engineering Action Committee
 - b) Ground Environment Action Committee

- c) Genetic Engineering Approval committee
- d) Genetic and Environment Approval committee

4. Distance between the genes and percentage of recombination shows:
- a) a direct relationship
 - b) an inverse relationship
 - c) a parallel relationship
 - d) no relationship

OR

Waste water treatment generates a large quantity of sludge, which can be treated by

- a) Anaerobic digesters
 - b) floc
 - c) Chemicals
 - d) oxidation pond
5. A probe which is a molecule used to locate specific sequences in a mixture of DNA or RNA molecules could be:
- a) A single stranded RNA
 - b) A single stranded DNA
 - c) Either RNA or DNA
 - d) Can be ss DNA but not ss RNA

OR

Ecological niche is:

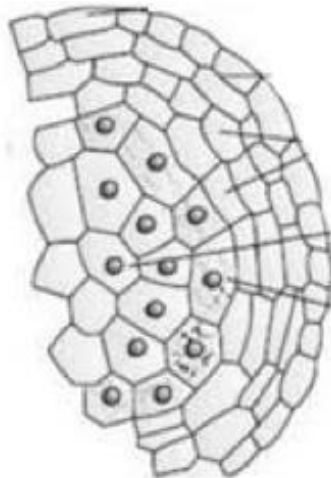
- a) the surface area of the ocean
- b) an ecologically adapted zone
- c) the physical position and functional role of a species within the community
- d) formed of all plants and animals living at the bottom of a lake

Section B

Answer the following questions. Each question carries 2 marks.

[7X2=14]

- 6. How do sweet potato and potato differ in terms of evolution?
- 7. Identify the diagram and label the parts



OR

What is double fertilization? Mention its significance

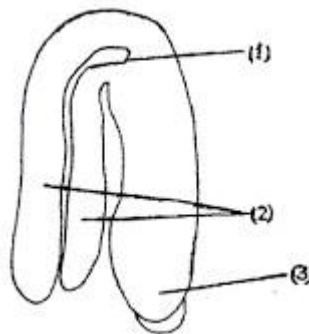
8. What are the parts of the fallopian tube? How does the fallopian tube pick up the egg?
9. We must be careful while using pesticides such as DDT.
 - a) Name the process by which pesticides like DDT circulate through the biological systems through successive trophic levels there by increasing its concentration.
 - b) How does DDT affect bird population.
10. What are the barriers that comprise innate immunity?
11. A recombinant DNA molecule was created by ligating a gene to a plasmid vector. By mistake, an exonuclease was added to the tube containing the recombinant DNA. How does this affect the next step in the experiment i.e. bacterial transformation?
12. Can a child have blood group O if his parents have blood group 'A' and 'B'. Explain

Section C

Answer the following questions. Each question carries 3 marks.

[9X3=27]

13. What is the principle of genetic equilibrium?
14. Draw a labelled diagram of a human sperm
OR
Draw labelled diagram of a cross-section of the seminiferous tubule of testis to show spermatogenesis?
15. In the adjacent figure of a dicot embryo, label the parts (1), (2) and (3). State the function of each of the labelled part.



16. Explain convergent evolution with example.
OR
Define analogous organ with example.
17. What do you mean by withdrawal syndrome? Write the side effect of the use of anabolic steroids in males.
18. Cancer is one of the most dreaded diseases of human beings and is a major cause of death all over the globe. Explain the
 - a) Causes of cancer

- b) Techniques of detection and diagnosis
- c) Treatment and cure

19. The rate of decomposition of detritus is affected by the abiotic factors like availability of oxygen, pH of the soil substratum, temperature etc. Discuss.

20. When is insulin fully functional?

Why is the introduction of genetically engineered lymphocytes into a ADA deficiency patient is not a permanent cure? Suggest a possible permanent cure

21. You have identified a useful gene in a bacteria. Make a flow chart of the steps that you would follow to transfer this gene to a plant.

Section D

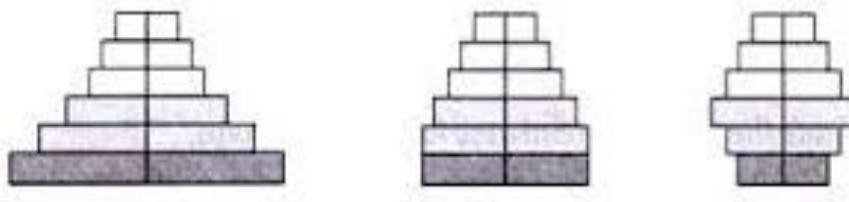
Answer any one question carries 3 (1+1+1) marks.

[3X3=9]

22. The new corona virus has been declared a global emergency by the world health organization. As a biology aspirant

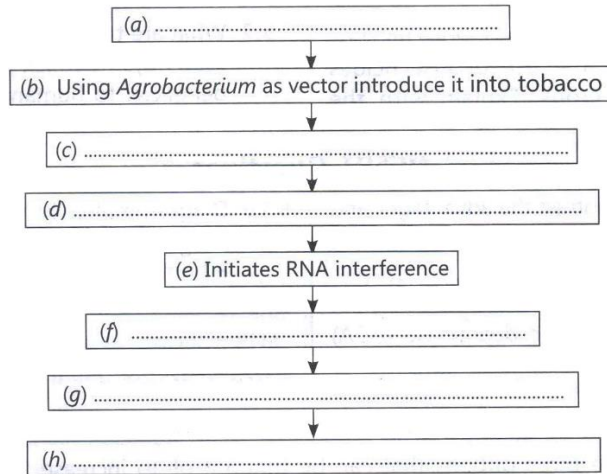
- a) Give a brief account of viruses with respect to their structure and genetic material.
- b) HIV and coronavirus. Are they same in their structure? Justify.
- c) Can an anti HIV combination or other existing drugs outwit the new corona viruses.

23. Study the 3 representative figures of age pyramid relating to human population given below and answer the following question:



- (a) Mention the name given to the 3 kinds of age profiles.
- (b) Which one of them is ideal for a population and why?
- (c) How do such age-profile studies help policy makers get concerned about our growing population and prepare for future planning

24. Two of the steps involved in producing nematode resistant tobacco plants based on the process of RNA are mentioned below. Write the missing steps in its proper sequence.



Section E

Answer the following questions. Each question carries 5 marks.

[3X5=15]

25. Why do some adolescents start taking drugs? How can this be avoided?

OR

In your locality, if a person is addicted to alcohol, what kind of behavioral changes do you observe in him. Suggest measures to overcome the problem

26. In a medium where E. Coli was growing, lactose was added, which induced the lac operon. Then why does the lac operon shut down after some time after the addition of lactose in the medium. Explain.

OR

Give the equations of both exponential and logistic growth curves. Represent them graphically

27. How are the following formed and involved in DNA packing in a nucleus of a cell

(a) Histone octamer

(b) Nucleosome

(c) Chromatin

Differentiate between Euchromatin and Heterochromatin

OR

What are biogeochemical cycles? Explain the carbon cycle.