



SAMPLE PAPER 2 2024-25

Class 12 - Biology

Time Allowed: 3 hours

Maximum Marks: 70

General Instructions:

1. All questions are compulsory.
2. The question paper has five sections and 33 questions. All questions are compulsory.
3. Section–A has 16 questions of 1 mark each; Section–B has 5 questions of 2 marks each; Section– C has 7 questions of 3 marks each; Section– D has 2 case-based questions of 4 marks each; and Section–E has 3 questions of 5 marks each.
4. There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
5. Wherever necessary, neat and properly labeled diagrams should be drawn.

Section A

1. The possible beneficial effect of grazing animals is the: [1]
a) Removal of wild plants. b) Eradication of weeds.
c) Addition of their excreta in the soil. d) Removal of wild animals.
2. The periodic abstinence by a couple for family planning should be from: [1]
a) Day 13 to 15 of menstrual cycle b) Day 16 to 20 of menstrual cycle
c) Day 5 to 10 of menstrual cycle d) Day 10 to 17 of menstrual cycle
3. The earth summit (1992) was held at: [1]
a) Japan b) Rio-de Janeiro
c) South Africa d) Johannesburg
4. In a population, the condition at which the rate of addition of new members is more than the rate of individuals lost indicates: [1]
a) Zero population growth b) Fluctuating growth
c) Exponential growth d) Declining growth
5. A genetically engineered microorganism used successfully in bioremediation of oil spills is a species of: [1]
a) Trichoderma b) Pseudomonas
c) Bacillus d) Xanthomonas
6. Use of biocontrol measures will greatly reduce our dependence on: [1]
a) Plants and insects b) Fertilizers and manure

c) Useful chemicals and pesticides

d) Toxic chemicals and pesticides

7. Two genes R and Y are located very close on the chromosomal linkage map of the maize plants. When RRYYY and rryy genotypes are hybridized, the F₂ segregation will show: [1]

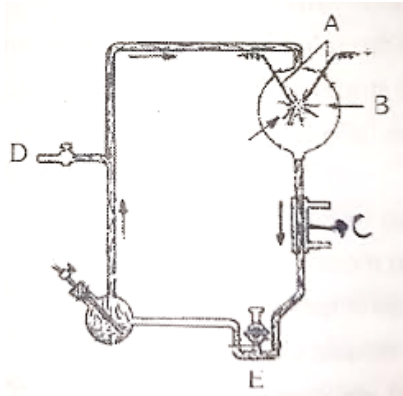
a) Segregation in 3:1 ratio

b) A higher number of parental types

c) A higher number of the recombinant types

d) Segregation in the expected 9:3:3:1 ratio

8. The diagram represents miller's experiment. Choose the correct combination of labelling. [1]



a) A-electrodes, B-NH₃ + H₂O, C-hot water, D-tap, E-U trap

b) A-electrodes, B-NH₄ + H₂ + CO₂ + CH₃, C-hot water, D-vacuum, E-U trap

c) A-electrodes, B-NH₃ + H₂ + H₂O + CH₄, C-cold water, D-vacuum, E-U trap

d) A-electrodes, B-NH₃ + H₂ + H₂O + CH₄, C-steam, D-vacuum, E-U trap

9. Primary carnivores are: [1]

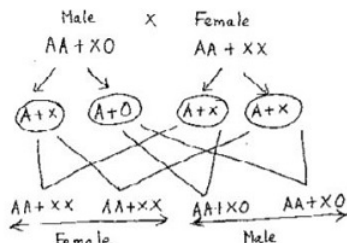
a) Primary producers

b) Secondary consumers

c) Tertiary consumers

d) Primary consumers

10. What does the chart give below represent? [1]



a) XX - XO type of sex determination

b) XX - XY type of sex determination

c) XO - XX type of sex determination

d) xy - xx type of sex determination

11. A complex polysaccharide produced from sucrose by the bacterium *Leuconostoc mesenteroides* is: [1]

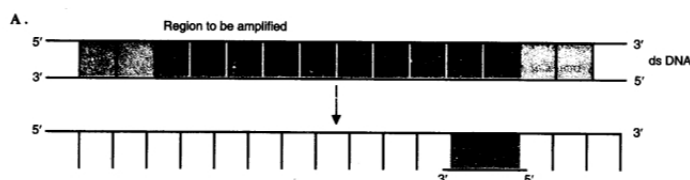
a) Starch

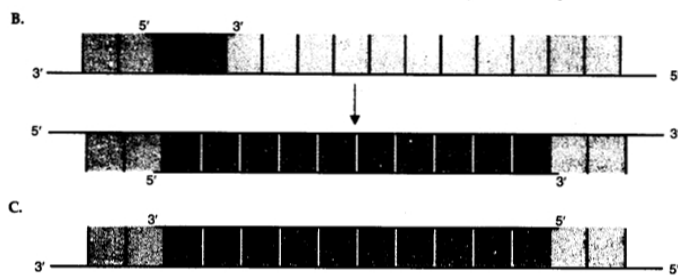
b) Cellulose

c) Chitin

d) Dextran

12. The figure below shows three steps (A, B, C) of Polymerase Chain Reaction (PCR). Select the option giving correct identification together with what it represents? [1]





- a) C - extension in the presence of heat stable DNA polymerase. b) A - denaturation at a temperature of about 50°C.
- c) B - denaturation at a temperature of about 98°C separating the two DNA strands. d) A - annealing with two sets of primers.

13. **Assertion (A):** Ormeloxifene, also known as centchroman, is used as a nonsteroidal oral contraceptive. [1]

Reason (R): It causes an asynchrony in the menstrual cycle between ovulation and the development of the uterine lining.

- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false. d) A is false but R is true.

14. **Assertion (A):** The alcoholic content of fortified wines are high. [1]

Reason (R): The fermentation is stopped before all the sugars are being converted.

- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false. d) A is false but R is true.

15. **Assertion (A):** The photic region contains only producers. [1]

Reason (R): The aphotic region contains only consumers.

- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false. d) A is false but R is true.

16. **Assertion (A):** Miller used four gases - methane, oxygen, hydrogen and water vapour for formation of simple organic compounds. [1]

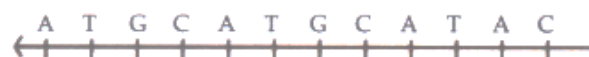
Reason (R): He prepared some amino acids in his apparatus.

- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false. d) A is false but R is true.

Section B

17. What are the advantages of the techniques of GM crops? [2]

18. Write the RNA strand transcribed from the given transcription unit along with its polarity. [2]

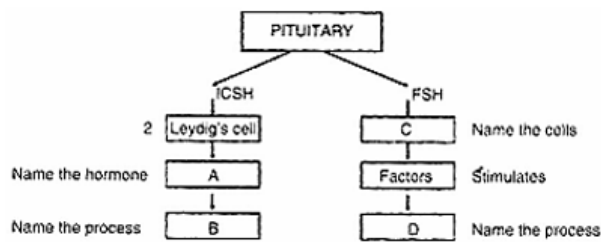


19. In the diagram given below, show the path of a pollen tube from the pollen on the stigma into the embryo sac. [2]

Name the components of egg apparatus.



20. Given below is an incomplete chart showing the influence of hormones on gametogenesis in males. Observe the chart carefully and fill in the blanks A, B, C and D [2]



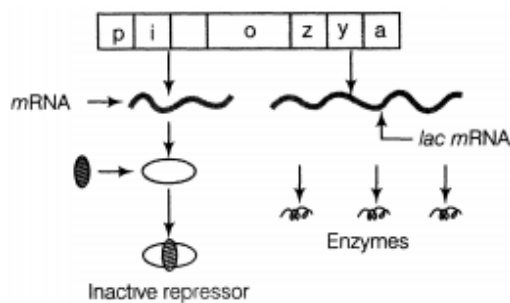
21. What is the use of lipase and streptokinase enzymes? [2]

OR

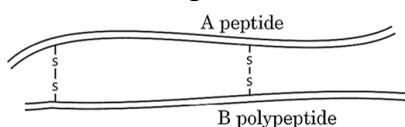
What is LAB? What is its role in human stomach?

Section C

22. Study the figure given and answer the questions. [3]



- How does the repressor molecule get inactivated?
 - When does the transcription of lac mRNA stop?
 - Name the enzyme transcribed by the gene z.
23. Differentiate between multiple allelism and pleiotropy with the help of an example each. [3]
24. How do organisms like fungi, zooplanktons and bears overcome the temporary short lived climatic stressful conditions? Explain. [3]
25. A schematic diagram of matured human insulin is given below: [3]



How is the process of its formation naturally in the human body different from that of its formation by rDNA technology? Explain.

26. Of the four major causes for the loss of biodiversity (**alien species invasion, habitat loss and fragmentation, over-exploitation and co-extinctions**) which according to you is the major cause for the loss of biodiversity? Give reasons in support. [3]

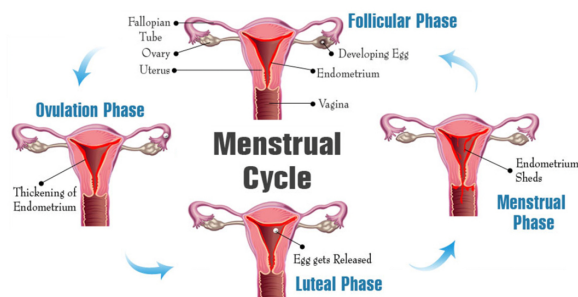
OR

- a. Enlist two criteria that are used to identify a region for maximum protection as **Biodiversity hotspots**.
b. Name any two **hotspot** regions in our country.
27. What is divergent evolution? Explain by taking examples of plants. [3]
28. What are the symptoms of cancer? [3]

Section D

29. **Read the following text carefully and answer the questions that follow:** [4]

The image below shows the menstrual cycle of a human female. On the basis of this cycle:



- i. Explain the menstrual phase in a human female. State the level of ovarian and pituitary hormones during this phase. (1)
ii. Why is follicular phase in the menstrual cycle also referred as proliferative phase? Explain. (1)
iii. Explain the events that occur in a Graafian follicle at the time of ovulation and thereafter. (2)

OR

Draw a Graafian follicle and label antrum and secondary oocyte. (2)

30. **Read the following passage and answer the questions that follow.** [4]

In 1981, the health workers of United States of America had become aware of the increased frequency of Kaposi's sarcoma, cancer of the skin and blood vessels and another disease pneumocystis pneumonia, a respiratory infection caused by a protozoan. Both these diseases were very rare in the general population, but occurred frequently in more severely "immunosuppressed" individuals. This led to the recognition of the immune system disorder that was named Acquired Immune Deficiency Syndrome (AIDS).

In 1983, virologists working in the USA and France had identified a causative agent for 'AIDS', now known as Human Immunodeficiency Virus (HIV). 'HIV' follows a set path to attack the human body to cause the disease.

- a. Name the group of cells the HIV attacks after gaining entry into the human body and write the various events that occur within this cell. (1)
b. Write the expanded form of the diagnostic test used for detecting AIDS. Write the possible treatment available for the disease at present. (1)
c. Mention any two steps suggested by WHO for preventing the spread of this disease. (2)

OR

"A patient suffering from AIDS does not die of this disease but from some other infection." Justify the statement. (2)

Section E

31. Define apomixis. Mention two applications of apomicts in hybrid seed industry. How is it different from polyembryony? [5]

OR

- i. Show the development of megaspore mother cell upto the formation of mature embryo sac in flowering plants

with the help of labelled diagrams only.

- ii. How does geitonogamy differ from xenogamy?
- iii. Name the type of flowers that are invariably autogamous.

32. i. Name and describe the technique which is an important tool of forensic science. [5]
 ii. Mention any two applications of this technique other than its use in forensic studies.

OR

State the aim and describe Messelson and Stahl's experiment.

33. Can you list 10 recombinant proteins which are used in medical practice? Find out where they are used as [5]
 therapeutics.

OR

- i. Explain how to find whether an *E.coli* bacterium has transformed or not when a recombinant DNA bearing ampicillin resistant gene is transferred into it.
- ii. What does the ampicillin resistant gene act as in the above case?

To buy solution of this sample paper at Rs 50 kindly whatsapp at 9811296736