

BIOLOGY

SAMPLE

QUESTION

PAPER

CBSE
2025-26

General Instructions :

- All questions are compulsory.
- The question paper has five sections and 33 questions.
- 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.
- 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.
- Wherever necessary, neat and properly labelled diagrams should be drawn.

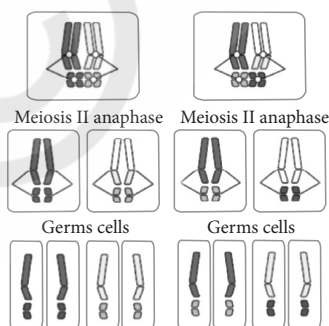
Time Allowed : 3 hours

Maximum Marks : 70

SECTION-A

Q. No. 1 to 12 are multiple choice questions. Only one of the choices is correct. Select and write the correct choice as well as the answer to these questions.

- If an angiospermic male plant is diploid and female plant is tetraploid, the ploidy level of endosperm will be
(a) haploid (b) triploid
(c) tetraploid (d) pentaploid.
- Miller and Urey performed an experiment to prove origin of life. They took gases NH_3 and H_2 along with
(a) N_2 and H_2O (b) H_2O and CH_4
(c) CH_4 and N_2 (d) CO_2 and N_2 .
- In the following figure, two ways of pairing of two homologous pairs of chromosome are shown. Which of the following phenomenon can be expressed?



- Segregation of genes
 - Independent assortment of genes
 - Linkage of genes
 - Incomplete dominance
- Identify the palindromic sequence in the following.
(a) $\frac{\text{GAATTC}}{\text{CTTUUG}}$ (b) $\frac{\text{GGATCC}}{\text{CCTAGG}}$
(c) $\frac{\text{CCTGGA}}{\text{GGACCT}}$ (d) $\frac{\text{CGATAC}}{\text{GCTAAG}}$
 - Raman and Raj have chromosomal disorders. Based on diagnosis, doctors said Raman is suffering from a syndrome in which there is an additional copy of chromosome no. 21, due to which he is short statured and also his mental development is retarded. Whereas, Raj is showing the presence of an additional copy of X-chromosome due to which he also shows feminine development. Identify the disorders Raman and Raj are suffering from.

	Raman	Raj
(a)	Turner's syndrome	Klinefelter's syndrome
(b)	Down's syndrome	Turner's syndrome
(c)	Down's syndrome	Klinefelter's syndrome
(d)	Klinefelter's syndrome	Down's syndrome

6. A swelling or tumour is present in a person for last many years. It is painless, harmless, localised and does not increase or decreases in size. Which type of tumour it may be?
 (a) Benign tumour (b) Malignant tumour
 (c) Osteoma (d) Lymphoma
7. How many of the following features are related to Nirodh, a popular brand of condoms?
 1. Prevention of STIs
 2. Physiological changes in cervical mucus
 3. Phagocytosis of sperms
 4. Male contraceptive device
 5. Act as chemical barrier
 (a) One (b) Two (c) Three (d) Four
8. Which one of the following mRNA will not translate completely?
 (a) AUG AAA CCA UUU (b) AUG UAC UAA UCC
 (c) AUG CCC CCA UUU (d) All of these
9. Why the fusion of sperm and ova do not occur during pregnancy?
 (a) High levels of estrogen and progesterone maintained by corpus luteum or placenta during pregnancy inhibit the secretion of gonadotropin and ovulation.
 (b) Woman cannot intercourse during pregnancy.
 (c) High level of HCl kill the releasing ovum.
 (d) The ova releasing during pregnancy is abnormal.
10. The relation between species richness and area for a wide variety of freshwater fishes will be
 (a) rectangular parabola
 (b) J-shaped
 (c) rectangular hyperbola
 (d) none of these.
11. Identify the blank spaces A, B, C and D given in the following table and select the correct answer.

Types of Microbes	Scientific Name	Commercial Product
Bacterium	A	Clot buster enzyme
B	<i>Aspergillus niger</i>	Citric acid
Fungus	<i>Trichoderma polysporum</i>	C
Bacterium	D	Butyric acid

- (a) A-*Streptococcus*, B-Fungus, C-Cyclosporin-A, D-*Clostridium butylicum*
 (b) A-*Clostridium butylicum*, B-Bacterium, C-Cyclosporin-A, D-*Lactobacillus*
 (c) A-*Propionibacterium shermanii*, B-Bacterium, C-Streptokinase, D-*Penicillium roqueforti*

(d) A-*Microsporium*, B-Fungus, C-Tartaric acid, D- *Streptococcus*

12. Which of the following statement is correct?
 (a) A community and the abiotic environment comprise an ecosystem.
 (b) An ecosystem is a type of community.
 (c) A biome includes only the plant community present in an environment.
 (d) An ecosystem includes only the abiotic aspects of a particular environment.

Q. No. 13 to 16 consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:

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

13. **Assertion :** Xenogamy is pollination between two flowers on different plants.

Reason : Pollination between two flowers on the same plant is autogamy.

14. **Assertion :** *Streptococcus pneumoniae* and *Haemophilus influenzae* are responsible for causing infectious disease in human beings.

Reason : A healthy person acquires the infection by inhaling the droplets released by an infected person.

15. **Assertion :** Recognition site should be preferably single and responsive to commonly used restriction enzyme.

Reason : In pBR322, alien DNA can be ligated in the area of *Bam* HI site of tetracycline resistance gene.

16. **Assertion:** Interspecific competition is the potent force in organic evolution.

Reason : Unexceptionally two closely related species competing for the same resources cannot co-exist indefinitely.

SECTION-B

17. A. (i) In a hospital, two newborn babies were interchanged.

Nobody has any idea about their actual parents. How this issue can be resolved?

- (ii) What are the other applications of the above technique other than solving paternity issues?

OR

- B. (i) Construct a complete transcription unit with promotor and terminator on the basis of the hypothetical template strand given below:

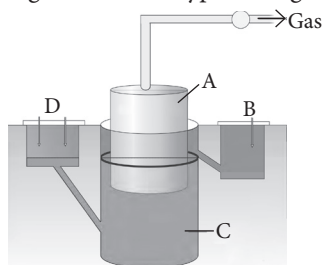
A T G C A T G C A T A C
 ← + + + + + + + + + + + + + + +

- (ii) Write the RNA strand transcribed from the above transcription unit along with its polarity.

18. Refer to the given figure and answer the following questions.



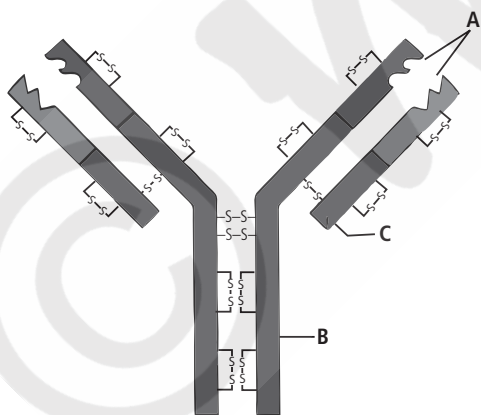
- (i) Identify A, B, C and D in the given figure.
 (ii) Briefly describe parts B and D.
19. The below diagram shows a typical biogas plant.



- A. Identify A, B, C and D in the diagram.
 B. What is activated sludge?
20. Name the embryonic stage that gets implanted in human female. Explain the events that occur during this process.
21. (i) Draw a labelled diagram of a “replicating fork” showing the polarity.
 (ii) Why does DNA replication occur within such ‘forks’?

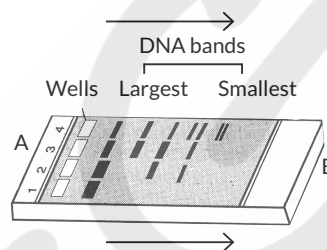
SECTION-C

22. Observe the given diagram and answer the questions that follow.



- A. Identify the labelled part 'A' 'B' and 'C'.
 B. What does the diagram illustrate?
 C. Mention the type of immune response provided by the given structure.

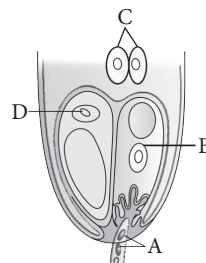
23. Thomas Hunt Morgan carried out several dihybrid crosses on *Drosophila*. Morgan hybridised yellow-bodied white eyed females to brown bodied, red-eyed males and intercrossed their F_1 progeny. He observed that the F_2 ratio deviated very significantly from Mendelian dihybrid ratio of 9 : 3 : 3 : 1. Explain the phenomenon behind this deviation.
24. Given below is the diagram representing the observations made for separating DNA fragments by gel electrophoresis technique. Observe the illustration and answer the questions that follow.



- A. Why are the DNA fragments seen to be moving in the direction A → B?
 B. Write the medium used in which DNA fragments separate.
 C. Mention how the separated DNA fragments can be visualised for further technical use.
25. Draw a schematic representation of a transcription unit explaining the various regions.
26. Double fertilisation is reported in plants of both castor and groundnut. However, the mature seeds of groundnut are non-albuminous and castor are albuminous. Explain the post fertilisation events that are responsible for it.

OR

Refer to the given figure and answer the questions based on it.



- (i) What does the given figure represent?
 (ii) Label the parts marked A, B, C and D.
27. Describe one chromosomal disorder produced in humans due to gain of chromosome.

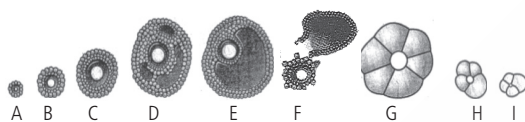
28. Study the table given below and answer the questions that follow:

Species A	Species B	Name of Interaction
+	+	A
-	-	Competition
+	-	B
+	-	Parasitism
+	0	C
-	0	D

- A. Identify A, B, C and D in the given table and explain any three of them with the help of an example each.
B. What do phytophagous insects feed on?

SECTION-D

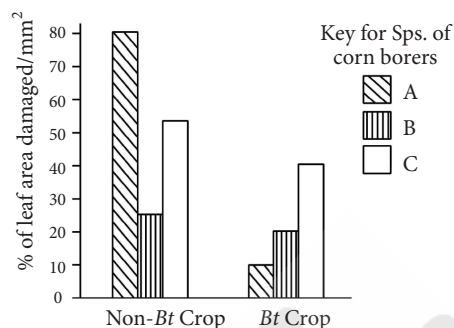
29. The following is the illustration of the sequence of ovarian events "A" to "I" in a human female.



- A. Write the difference between 'C' and 'H'.
B. Identify the figure that illustrates ovulation and mention the stage of oogenesis it represents. Name the pituitary hormone that causes ovulation.
Attempt either subpart C or D.
C. What is the fate of corpus luteum in the absence of fertilisation.

OR

- D. Draw a labelled sketch of the structure of a human ovum prior to fertilisation.
30. An experimental field study was conducted by the scientists to see the efficacy of the *Bt* corn plant against the attack of corn borers. Three different species of corn borers namely 'A', 'B', 'C' were collected and were independently fed on non-*Bt* corn plants and *Bt* corn plants separately for the same period. The extent of the damage caused to the leaf area of the plant was observed and noted down. With the help of the observations and data collected, the following bar graph was plotted. Study the graph and answer the questions that follow.



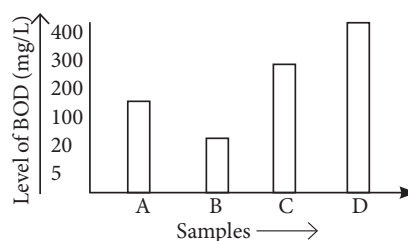
- A. Identify the species of the corn borer that was most successfully controlled by *Bt* corn plant. Give appropriate reason for your inference.
B. Identify the species of the corn borers which shows least impact of toxin produced by *Bt* genes.
Attempt either subpart C or D.
C. Name one *Bt* gene that encodes protein in corn plants to control corn borers.

OR

- D. What would be your advise as a Scientist, to the farmers for growing this particular *Bt* corn variety in the area which is infested by species 'B' of corn borers?

SECTION-E

31. A. BOD is a measure of organic matter present in the water. The data below shows the concentration of BOD in different samples obtained from the primary effluent, secondary effluent, untreated sewage and river water.



- (i) With reference to the above graph, identify the source of different samples A, B, C and D.
(ii) Which among the given samples will contain large number of pathogenic microbes?
(iii) What would happen if D is disposed off in B directly?
(iv) What would be the reason for the higher value of BOD in sample D? Name the steps required to lower the BOD of sample D.

OR

- (i) Define the following terms :
(a) Antibiotics (b) Biogas (c) Sewage
- (ii) Compare biocontrol agents and biofertilisers.
- 32. A. Explain *in situ* conservation. Discuss briefly about the two *in situ* conservation methods used for biodiversity conservation.

OR

- B. What is *ex-situ* conservation? Describe atleast two approaches for *ex-situ* conservation.

- 33. (A) (i) How do the observations made during moth collection in pre- and post-industrialised era in England support evolution by natural selection?
- (ii) Explain the phenomenon that is well represented by Darwin's finches other than natural selection.

OR

- B. (i) 'Anthropogenic actions can lead to evolution', explain.
 - (ii) 'The rate of appearance of new forms is linked to the lifespan of an organism'. Explain.
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