

Class XII | Session 2026-27
Subject - Biology
Sample Question Paper - Set 8

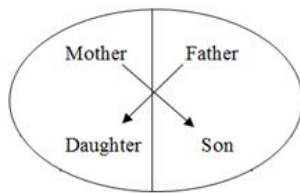
General Instructions:

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.

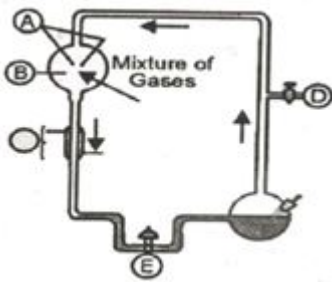
Section A

1. Female hired to develop the in-vitro fertilized egg of another female to maturity is called: [1]
 - a) Step-mother
 - b) Biological mother
 - c) Feeding mother
 - d) Surrogate mother
2. It is observed that, the species diversity decreases as we [1]
 - a) move along the equator
 - b) move away from equator to poles
 - c) move from deserts to rain-forests
 - d) move towards equator from poles
3. The rate of storage of organic matter in producers in excess of their metabolic consumption is: [1]
 - a) Biomass
 - b) Gross primary productivity
 - c) Community productivity
 - d) net primary productivity
4. The periodic abstinence by a couple for family planning should be from: [1]
 - a) Day 13 to 15 of menstrual cycle
 - b) Day 10 to 17 of menstrual cycle
 - c) Day 16 to 20 of menstrual cycle
 - d) Day 5 to 10 of menstrual cycle
5. The organism used in construction of the first artificial recombinant DNA by Cohen and Boyer in 1972 was: [1]
 - a) E. coli
 - b) Salmonella typhimurium
 - c) Agrobacterium tumefaciens
 - d) Bacillus thuringiensis
6. Which one among the following biofertilizers does **not** fix atmospheric nitrogen? [1]
 - a) Oscillatoria
 - b) Glomus
 - c) Azospirillum
 - d) Rhizobium

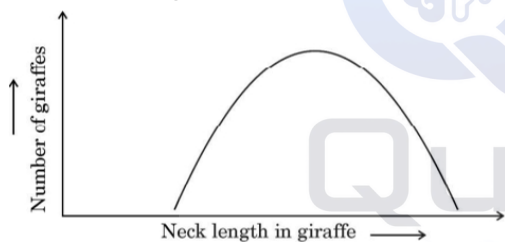
7. Represented below is the inheritance pattern of a certain type of trait in humans. Which one of the following conditions could be an example of this pattern? [1]



- a) Thalassemia
b) Haemophilia
c) Sickle Cell anemia
d) Phenyl ketonuria
8. What was the resultant found in the place marked E? [1]



- a) Organic esters only
b) Some fatty acids and organic acids
c) Some amino acids as glycine and alanine
d) Glucose, fatty acids and lipids
9. Select the option that gives the correct description of the process of Natural Selection with respect to the length of the neck of giraffe. [1]



- a) Stabilising selection as giraffes with medium neck lengths are selected.
b) Directional selection as giraffes with longer neck lengths are selected.
c) Disruptive selection as giraffes with smaller and longer neck lengths are selected.
d) Stabilising selection as giraffes with longer neck lengths are selected further.
10. Phytoplanktons are: [1]
a) Autotrophs
b) All of these
c) Saprotrophs
d) Heterotrophs
11. Large-holes in **Swiss-Cheese** are due to [1]
a) *Propionibacterium sharmanii*
b) *Penicillium chrysogenum*
c) *Saccharomyces cerevisiae*
d) *Acetobacter aceti*
12. Thermostable DNA polymerase is isolated from bacterium: [1]
a) *Rhizobium*
b) *Escherichia coli*
c) *Thermus aquaticus*
d) *Salmonella typhii*
13. **Assertion:** Statins is a blood-cholesterol lowering agents. [1]
Reason: It inhibiting the enzyme responsible for synthesis of cholesterol.

- a) Assertion and reason both are correct statements and reason is correct explanation for assertion.
- b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.
- c) Assertion is correct statement but reason is wrong statement.
- d) Assertion is wrong statement but reason is correct statement.

14. **Assertion (A):** Our laws permit legal adoption and it is as yet, one of the best methods for childless couples looking for parenthood. [1]

Reason (R): Emotional, religious and social factors are also no deterrents in the legal adoption of orphaned and destitute children in India.

- a) Both Assertion and Reason are true, and Reason is the correct explanation of the Assertion.
- b) Both Assertion and Reason are true, but Reason is **not** the correct explanation of the Assertion.
- c) Assertion is true but Reason is false.
- d) Both Assertion and Reason are false.

15. **Assertion (A):** Primer pheromones bring about physiological changes in the receivers. [1]

Reason (R): Releaser pheromones cause immediate change in the receivers.

- 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):** Evolution of man is the example of progressive evolution. [1]

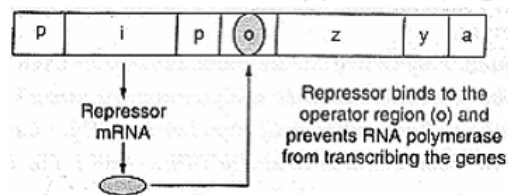
Reason (R): Tapeworm is developed due to retrogressive evolution.

- 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 flocs? State their role in biological treatment of sewage. [2]

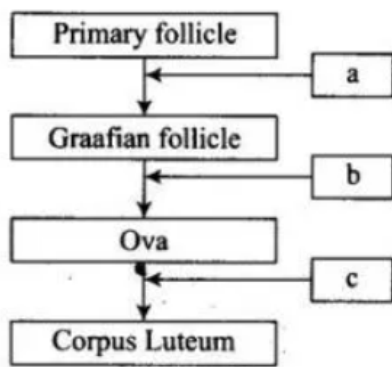
18. Look at the figure below depicting lac operon of E.coli. [2]



- i. What could be the series of events when an inducer is present in the medium in which E.coli is growing?
- ii. Name the inducer.

19. What is the function of the two male gametes produced by each pollen grain in angiosperms? [2]

20. Given below is a flow chart showing ovarian changes during the menstrual cycle. Fill in the spaces giving the name of the hormones responsible for the events shown. [2]



21. a. Cattle excreta is important source for producing a domestic fuel. Name the fuel and write its main components. [2]
 b. Write the biological process that is responsible for the production of this fuel.

OR

Mention the product and its use produced by each of the microbes listed below

- (i) *Streptococcus*
 (ii) *Lactobacillus*
 (iii) *Saccharomyces cerevisiae*

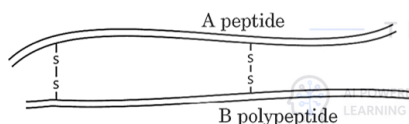
Section C

22. i. Construct a complete transcription unit with promotor and terminator on the basis of the hypothetical template strand given below. [3]



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

23. State Mendel's law of dominance. How did he deduce the law? Explain with the help of a suitable example. [3]
 24. Differentiate between an **Expanding age pyramid** and a **Stable age pyramid**. Substantiate your answer with diagrams. [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.

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26. Which one of the two **in-situ** or **ex-situ** biodiversity conservation measures help the larger number of species to survive? Explain. [3]

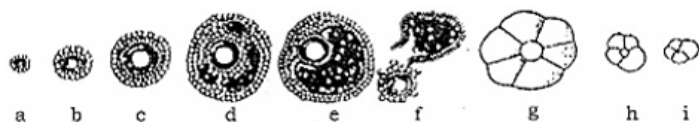
OR

With the help of three examples, explain the **broadly utilitarian** argument for conservation of biodiversity.

27. i. Write how parasites have evolved with adaptation to co-exist with their hosts in an ecosystem. [3]
 ii. Parasites are host specific and tend to co-evolve. How would the parasite respond if the host evolves a certain mechanism to resist or reject the parasite?
 28. Name and explain the two types of immune responses in humans. [3]

Section D

29. **Read the following text carefully and answer the questions that follow:** [4]
 The following is the illustration of the sequence of ovarian events (a-i) in a human female.



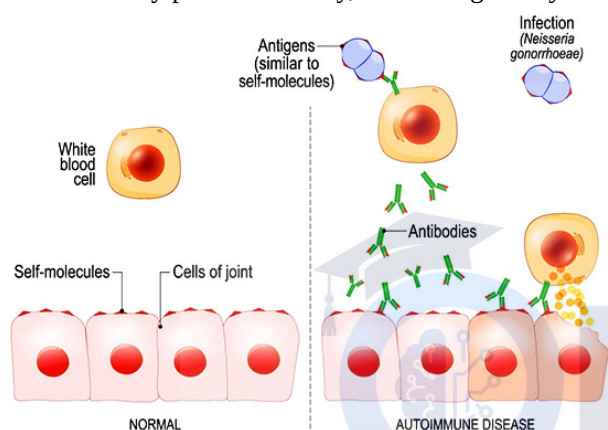
- Identify the figure that illustrates ovulation and mentions the stage of oogenesis it represents. (1)
- Name the ovarian hormone and the pituitary hormone that have caused the above-mentioned event. (1)
- Explain changes that occur in the uterus simultaneously in anticipation. (2)

OR

Draw a labelled sketch of the structure of a human ovum prior to fertilization. (2)

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

A healthy immune system defends the body against disease and infection. But if the immune system malfunctions, it mistakenly attacks healthy cells, tissues, and organs. Called autoimmune disease, these attacks can affect any part of the body, weakening bodily function and even turning life-threatening.



- Why are autoimmune diseases called degenerative diseases? (1)
- Name the autoimmune disease of body muscles. (1)
- Which types of immunity is provided by T-lymphocytes? (2)

OR

Which immune cells form humoral immune system? (2)

Section E

31. State the similarity and differences between geitonogamy and xenogamy. Why do cleistogamous flowers assure seed sets? [5]

OR

- Where is microsporangium located in an angiosperm? State the functions of tapetum and the other three layers of microsporangium.
- Describe the structure of the male gametophyte produced as a result of microsporogenesis.
- State the functions of each part of the male gametophyte.

32. Name and describe the steps involved in the technique widely used in forensics that serves as the basis of paternity testing in case of disputes. [5]

OR

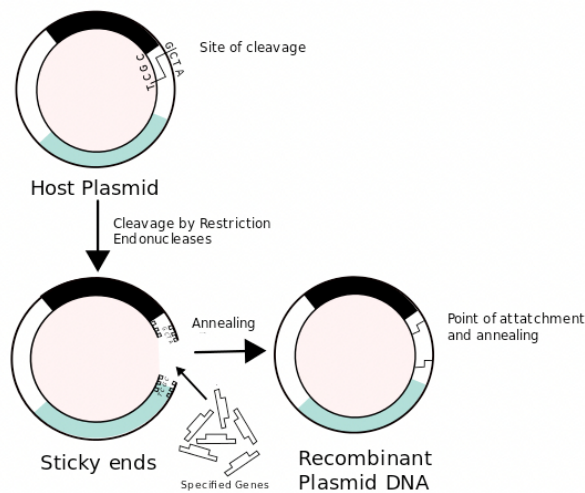
Explain how does lac operon in *E. coli* operate

- in the absence of an inducer.
- in the presence of an inducer.

33. Suggest and describe a technique to obtain multiple copies of a gene of interest in vitro. [5]

OR

Recombinant DNA vectors are typically attenuated viruses or bacteria that are unrelated to the pathogen of interest. These vectors can penetrate human cells and often replicate within them, but do not cause disease in the host.



- i. A recombinant vector with a gene of interest inserted within the gene of α -galactosidase enzyme, is introduced into a bacterium. Explain the method that would help in selection of recombinant colonies from non-recombinant ones.
- ii. Why is this method of selection referred to as insertional inactivation?



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