

Class XII | Session 2026-27
Subject - Biology
Sample Question Paper - Set 7

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 product of ecosystem processes are called as: [1]
 - a) Economic services
 - b) Ecosystem services
 - c) Ecological benefits
 - d) Biological services
2. If the mean and median pertaining to a certain population are of the same value, the following is most likely to occur: [1]
 - a) A normal distribution
 - b) A skewed curve
 - c) A T-shaped curve
 - d) A bi-modal distribution
3. Threatened species list includes: [1]
 - a) Critically endangered, endangered, vulnerable.
 - b) Only critically endangered and endangered species.
 - c) Only critically endangered species.
 - d) Only vulnerable and lower risk species.
4. Human population follows: [1]
 - a) M-shaped growth curve
 - b) J-shaped growth curve
 - c) Z-shaped growth curve
 - d) S-shaped growth curve
5. Which of the following techniques made it possible to genetically engineered living organism? [1]
 - a) Heavier isotope labelling
 - b) Recombinant DNA technique
 - c) X-ray diffraction
 - d) Hybridization
6. The first antibiotic was discovered accidentally by A while working on B. **A** and **B** are [1]

- a) A - Waksman; B - Streptococcus
b) A - Fleming; B - Staphylococci
c) A - Fleming; B - Penicillium notatum
d) A - Waksman; B - Bacillus brevis

7. In the pedigree analysis, the symbol shown below represent

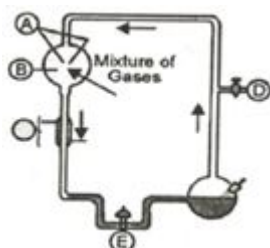
[1]



- a) Normal individuals
b) Sex unspecified
c) Affected individuals
d) Mating between relatives

8. The diagram represents the Miller experiment. Choose the correct combination of labelling.

[1]



- a) A – electrodes, B – ($\text{NH}_3 + \text{H}_2 + \text{H}_2\text{O} + \text{CH}_4$), C – cold water, D – Vacuum, E – U Trap.
b) A – electrodes, B – $\text{NH}_4 + \text{H}_2 + \text{CO}_2 + \text{CH}_3$, C – hot water, D – Vacuum, E – U Trap.
c) A – electrodes, B – $\text{NH}_3 + \text{H}_2\text{O}$, C – hot water, D – tap, E – U trap
d) A – electrodes, B – $\text{NH}_3 + \text{H}_2 + \text{H}_2\text{O} + \text{CH}_4$, C – steam, D – Vacuum, E – U trap

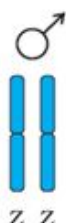
9. The organism that occupies more than one trophic level in a pond ecosystem is:

[1]

- a) Phytoplankton
b) Frog
c) Fish
d) Zooplankton

10. On the basis of the sex chromosome shown below, the bird shown is

[1]



- a) Female
b) Cannot be decided
c) Male
d) Transgender

11. Which one of the following fixes the atmospheric nitrogen but is not an autotroph?

[1]

- a) Oscillatoria
b) Rhizobium
c) Anabaena
d) Nostoc

12. Variable number of tandem repeats (VTNRs) in the DNA molecule are highly useful in:

[1]

- a) Recombinant DNA technology
b) Stem cell culture
c) DNA fingerprinting
d) Monoclonal antibody production

13. **Assertion (A):** Periodic abstinence is a natural method of birth control.

[1]

Reason (R): In this male partner withdraws his penis from the vagina just before ejaculation so as to avoid insemination.

- 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):** Rotenone is a bioinsecticide. [1]

Reason (R): Rotenone is obtained from living organism and is employed to kill bacteria.

- 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 pyramid of biomass can be inverted. [1]

Reason (R): The biomass of fishes far exceeds that of phytoplankton on which fishes feed.

- 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):** Homo sapiens have evolved from chimpanzee-like ancestors. [1]

Reason (R): There is no difference between the two in the amino acid sequence of the protein Cytochrome-C.

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

Section B

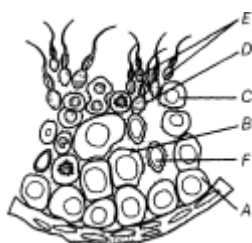
17. Some of the microbes used as biofertilizers are prokaryotes. Name the taxonomic group they come under. With the help of an example, mention how they act as biofertilizers. [2]

18. $A \xrightarrow{B} \text{DNA} \xrightarrow{C} \text{mRNA} \xrightarrow{D} \text{Protein}$ [2]

- i. Look at the above sequence and mention the event A, B and C.
- ii. What does central dogma state in molecular biology? How does it differ in some viruses?

19. State one advantage and one disadvantage of cleistogamy. [2]

20. Name the labels A, B, C, D, E and F in the diagram of seminiferous tubule. [2]



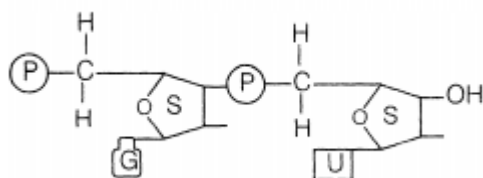
21. Effluent from the primary treatment of sewage is passed for secondary treatment. Explain the process till the water is ready to be released into natural water bodies. [2]

OR

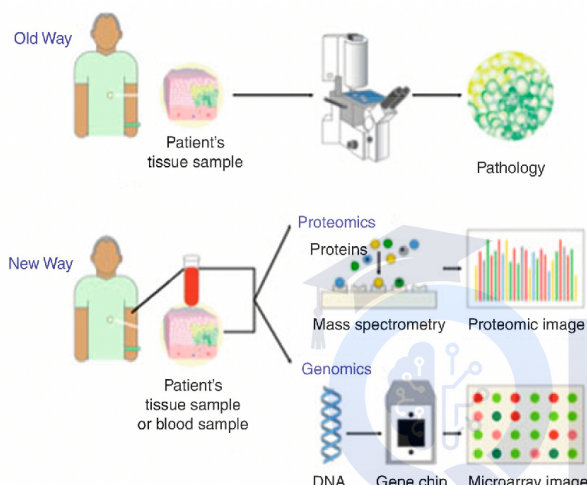
Name the enzyme produced by Streptococcus bacterium. Explain its importance in medical sciences.

Section C

22. Answer the questions based on the dinucleotide show below. [3]



- i. Name the type of sugar to which guanine base is attached to.
 - ii. Name the linkage connecting the two nucleotides.
 - iii. Identify the 3' end of the dinucleotide. Give a reason for your answer.
23. Why is the frequency of red-green color blindness is many times higher in males than that in females? [3]
 24. Differentiate between an **Expanding age pyramid** and a **Stable age pyramid**. Substantiate your answer with diagrams. [3]
 25. The image below describes the molecular diagnostic procedures. [3]

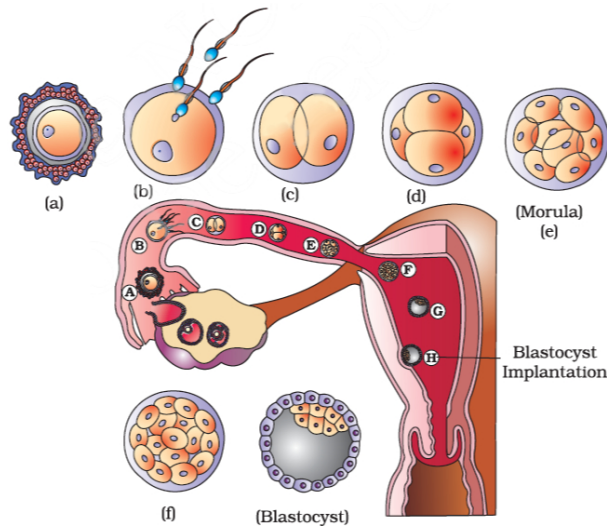


- i. Write any two biochemical/molecular diagnostic procedures for early detection of viral infection.
 - ii. Explain the principle of any one of them.
26. With the help of three examples, explain the **broadly utilitarian** argument for conservation of biodiversity. [3]
- OR
- i. Explain the concept of endemism.
 - ii. Name four regions in and around our country that are considered hot-spots.
27. Who proposed the term evolution? What is evolution? List the different evidences in support of evolution. [3]
 28. Different types of antibodies are produced in our body by the B-lymphocytes in response to a pathogen that enters in our blood. Name any two antibodies produced and draw a schematic representation of an antibody molecule and label its four parts. [3]

Section D

29. **Read the following text carefully and answer the questions that follow:** [4]
- Nikita and Anita studying about fertilization and implantation. They have to represent a poster in the class on this topic so they both have made the following poster which includes all the stages starting from fertilization to

implantation.



- Describe the zygote division till the stage of blastocysts. (1)
- Specify endocrine function of corpus luteum. How does it influence the uterus? Why is it essential? (1)
- What will happen if the fallopian tubes are partially blocked and the ovulated eggs are prevented from reaching the uterus? (2)

OR

State the fate of the trophoblast of a human blastocyst at the time of implantation. (2)

30. **Read the following text carefully and answer the questions that follow:**

[4]

A pathogen is defined as **an organism causing disease to its host**, with the severity of the disease symptoms referred to as virulence. Pathogens are taxonomically widely diverse and comprise viruses and bacteria as well as unicellular and multicellular eukaryotes. The immune system of a person is suppressed. He was found positive for a pathogen in the diagnostic test ELISA.



- Name the disease, the patient is suffering from. (1)
- Which pathogen is identified by ELISA test? (1)
- Which cells of the body are attacked by the pathogen? (2)

OR

Suggest preventive measures of the infection. (2)

Section E

31. Differentiate between:

[5]

- hypocotyl and epicotyl
- coleoptile and coleorrhiza
- integument and testa
- perisperm and pericarp

OR

- Explain the monosporic development of embryo sac in the ovule of an angiosperm.
- Draw a diagram of the mature embryo sac of an angiospermic ovule and label any four parts in it.

32. a. Describe the structure of a **transcription Unit**. [5]
b. Explain the basis of defining the two DNA strands of a structural gene in a transcription unit.

OR

How did Matthew Meselson and Franklin Stahl experimentally prove that DNA replication is semiconservative? Explain.

33. How and why is the bacterium *Thermus aquaticus* employed in recombinant DNA technology? Explain. [5]

OR

- Draw a schematic diagram of the cloning vector pBR 322 and label (1) Bam HI site (2) gene for ampicillin resistance (3) **ori** (4) **rop** gene.
- State the role of **rop** gene.
- A cloning vector does not have a selectable marker. How will it affect the process of cloning?
- Why is insertional inactivation preferred over the use of selectable markers in cloning vectors?



Powered by QualCrypt