

AMRITA VIDYALAYAM

AMRITA PRE BOARD EXAMINATION 2017 - '18

Class : XII

Marks : 70

Time : 3 hrs

BIOLOGY (044)

GENERAL INSTRUCTIONS:

1. There are a total of 26 questions and five sections in the question paper. All questions are compulsory.
2. Section A consists of question nos 1 - 5 carrying 1 mark each.
Section B consists of question nos 6 - 10 carrying 2 marks each.
Section C consists of question nos 11 - 22 carrying 3 marks each.
Section D consists of question no 23. It is a value based question carrying 4 marks.
Section E consists of question nos 24 - 26 carrying 5 marks each.
3. There is no overall choice. However, an internal choice has been provided in one question of 2 marks, one question of 3 marks and all the three questions of 5 marks.
Attempt only one of the choices in such questions.
4. Wherever necessary, the diagrams drawn should be neat and properly labelled.

SECTION - A

1. Our government has intentionally imposed strict conditions for M.T.P. in our country. Justify giving a reason.
2. Mention two contrasting flower related traits studied by Mendel in pea plant experiments.
3. Why do RNA viruses undergo mutation faster than most of other viruses?
4. Write the probable differences in eating habits of *Homo habilis* and *Homo erectus*.
5. State what happens when an alien gene is ligated at Pvu I site of pBR 322 plasmid.

SECTION - B

6. Shark is eurythermal while polar bear is stenothermal. What is the advantage the former has and what is the constraint the later has?
7. Is sweet potato analogous or homologous to potato tuber? Give reasons to support your answer.
8. Why is it that transcription and translation can be coupled in prokaryotic cells but not in eukaryotic cells?

OR

Mention the role of ribosomes in peptide bond formation. How does ATP facilitate it?

9. Give the binomials of two types of yeast and the commercial bioactive products they help to produce.
10. State the role of Oxytocin in parturition. What triggers its release from the pituitary?

SECTION - C

11. a) What precaution(s) would you recommend to a patient requiring repeated blood transfusion?
b) If the advice is not followed by the patient, there is an apprehension that the patient might contract a disease that would destroy the immune system of his / her body. Explain with the help of a schematic diagram how the immune system would get affected and destroyed.
12. Name and describe any three causes of biodiversity losses.
13. a) List the three stages the annuals and biennial angiosperms have to pass through during their life cycle.
b) List and describe any two vegetative propagules in flowering plants.

14. Name two hormones that are constituents of contraceptive pills. Why do they have high and effective contraceptive value? Name a commonly prescribed non-steroidal oral pill.
15. List the criteria a molecule that can act as genetic material must fulfill. Which one of the criteria is best fulfilled by DNA or by RNA, thus making one of them a better genetic material than the other? Explain.

OR

The base sequence in one of the strands of DNA is TAGCATGAT.

- a) Give the base sequence of its complementary strand.
- b) How are these base pairs held together in a DNA molecule?
- c) Explain the base complementarity rule? Name the scientist who framed this rule.
16. a) Rearrange the following greenhouse gases in increasing order of their relative contribution to the total global warming: N₂O; CFC; CO₂; CH₄.
- b) What is the effect of global warming on polar ice-caps? Comment on its possible ecological impact.
17. a) Name the selectable markers in the cloning vector pBR322? Mention the role they play.
- b) Why is the coding sequence of an enzyme (β-galactosidase) a preferred selectable marker in comparison to the ones named above?
18. How does RNA interference help in developing resistance in tobacco plant against nematode infection?
19. a) Mention the property that enables the explants to regenerate into a new plant.
- b) A banana herb is virus-infected. Describe the method that will help in obtaining healthy banana plants from this diseased plant.
20. Differentiate between divergent and convergent evolution. Give one example of each.
21. Predation is usually referred to as a detrimental association. State any three positive roles that a predator plays in an ecosystem.
22. Define a climax community. How does a sere differ from a seral community?

SECTION - D

23. A youth in his twenties met with an accident and succumbed to the injuries. His parents agreed to donate his organs. List any two essential clinical steps to be undertaken before any organ transplant. Why is the transplant rejected sometimes? What views would you share with your health club members to promote organ donation?

SECTION - E

24. a) Name the hormones secreted
 - (i) by corpus luteum and placenta (any two) and write their functions.
 - (ii) during Follicular phase and parturition.
- b) Name the stages in a human female where
 - (i) Corpus luteum and placenta co-exist.
 - (ii) Corpus luteum temporarily ceases to exist.

OR

Read the following statement and answer the questions that follow.

‘A guava fruit has 200 viable seeds.’

- a) What are viable seeds?
- b) Write the total number of
 - (i) Pollen grains
 - (ii) Gametes in producing 200 viable guava seeds.
- c) Prepare a flow-chart to depict the post-pollination events leading to viable-seed production in a flowering plant.

25. a) Name the stage in the cell cycle where DNA replication occurs.
b) Explain the mechanism of DNA replication. Highlight the role of enzymes in the process.
c) Why is DNA replication said to be semiconservative?

OR

- a) A pea plant bearing axial flowers is crossed with a pea plant bearing terminal flowers. The cross is carried out to find the genotype of the pea plant bearing axial flowers. Work out the cross to show the conclusions you arrive at.
b) State the Mendel's law of inheritance that is universally acceptable.
26. a) Name the types of lymphoid organs, lymph nodes and thymus. Explain the role played by them in causing immune response.
b) Differentiate between innate immunity and acquired immunity.

OR

- a) How does *Bacillus thuringiensis* act as a biocontrol agent for protecting *Brassica* and fruit trees? Explain.
b) (i) List the components of biogas.
(ii) What makes methanogens a suitable source for biogas production?