

AMRITA VIDYALAYAM

AMRITA PRE BOARD EXAMINATION 2019 - 20

Class : XII

Marks : 70

Time : 3 hrs

BIOLOGY (044)

GENERAL INSTRUCTIONS:

1. All questions are compulsory.
2. This question paper consists of five sections - A, B, C, D and E.
3. Section A consists of multiple choice questions of 1 mark each.
4. Section B consists of short answer type I questions of 2 marks each.
5. Section C consists of short answer type II questions of 3 marks each.
6. Section D consists of case based short answer type questions of 3 marks each.
7. Section E consists of long answer questions of 5 marks each.
8. There is no overall choice. However, internal choices are provided in two questions of 1 mark, one question of 2 marks, two questions of 3 marks and all three questions of 5 marks. An examinee is to attempt any one of the questions out of the two given in the question paper with the same question number.

SECTION - A

1. Part of fallopian tube close to ovary is _____.
(Infundibulum, Cervix, Ampulla, Isthmus)

OR

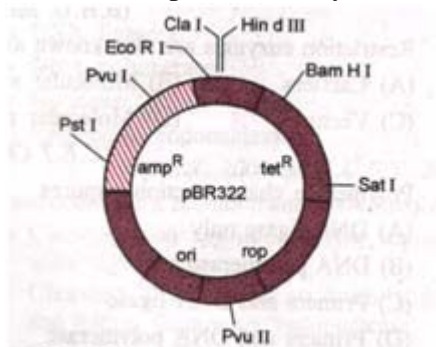
Testes descent into scrotum in mammals for _____.
(Spermatogenesis, Fertilization, Development of sex organs, Development of visceral organs)

2. Which type of immune response is responsible for the rejection of tissues / organs in patient's body post transplantation?
(Auto immune response, Humoral immune response, Physiological immune response, Cell mediated immune response)

OR

Wuchereria is found in _____.
(lymph nodes, gonads, lungs, kidneys)

3. It is pBR 322 vector of *E. coli*. Which option correctly identifies its components?



- a) Ori - Original restriction enzyme
b) rop - reduced osmotic pressure
c) Hind III, EcoR1 - Selectable markers
d) amp^R, tet^R - antibiotic resistance genes
4. GEAC stands for _____.
(Genome Engineering Action Committee, Ground Environment Action Committee, Genetic Engineering Approval Committee, Genetic and Environment Approval Committee)

5. The plant which produces highly poisonous cardiac glycosides is _____.
(cactus, calotropis, acacia, bhang)

SECTION - B

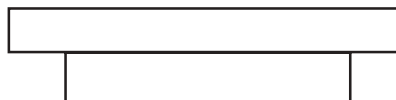
6. Banana fruit is said to be parthenocarpic whereas Turkey is said to be parthenogenetic. Why?
OR

What are gemmules and conidia? Name one organism each in which these are formed.

7. Expand the following.
a) IVF b) ZIFT c) IUI d) MTP
8. a) Why *Drosophila* is said to show heterogamety? Explain.
b) Explain female heterogamety with the help of an example.
9. State the dual role of deoxyribonucleoside triphosphates during DNA replication.
10. Identify A, B, C and D in the given table.

Crop	Variety	Resistance of disease
A	<i>Himgiri</i>	Leaf rust
Cauliflower	<i>Pusa shubhra</i>	B
Brassica	<i>Pusa swarnim</i>	C
Cow pea	D	Bacterial blight

11. a) State the role of DNA ligase in Biotechnology.
b) What happens when *Meloidogyne incognitia* consumes cells with RNAi gene?
12. In the pyramid of biomass drawn below, name the two crops
a) the one which supported and b) the one which supports.
In which ecosystem is such a pyramid found?



SECTION - C

13. a) Name the organic material by which exine of the pollen grain is made up of. How is this material advantageous to pollen grain?
b) Still it is observed that it does not form a continuous layer around the pollen grain. Give reason.
c) How are 'pollen banks' useful?
14. What is a test cross? How can it decipher the heterozygosity of plant?

OR

Work out the monohybrid cross up to F₁ by taking a suitable example so as to show the following phenotype.

- a) F₁ represents only one of the parents.
b) F₁ with both the parental characteristics.
15. a) Draw a diagram of the structure of a human ovum surrounded by corona radiata. Label the following parts.
(i) Ovum (ii) Plasma membrane (iii) Zona pellucida
b) State the function of Zona pellucida.
16. a) Mention two events in which DNA is unzipped.
b) Predict the consequences when both the template and the coding strands of a DNA segment participate in transcription process.
17. a) State Hardy Weinberg principle. Name any two factors which affect it.
b) Draw a graph to show that selection leads to directional change.

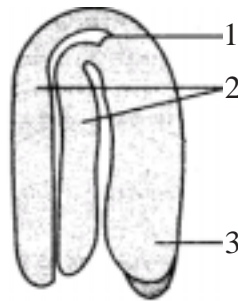
18. The Indian Agricultural Research Institute has introduced several cereal and vegetable crops that are nutritionally rich in vitamins and minerals. What is the kind of breeding called? Write the main four objectives with which such a breeding programme is carried out.
19. a) Differentiate between exons and introns.
b) What is a plasmid? Why is it selected as a vector?
20. 'Specific Bt toxin genes is incorporated into cotton plant so as to control infestation of Bollworms.' Mention the organism from which the gene was isolated and explain its mode of action.
21. State any two criteria for determining biodiversity hotspots. Name any two hotspots designated in India.

OR

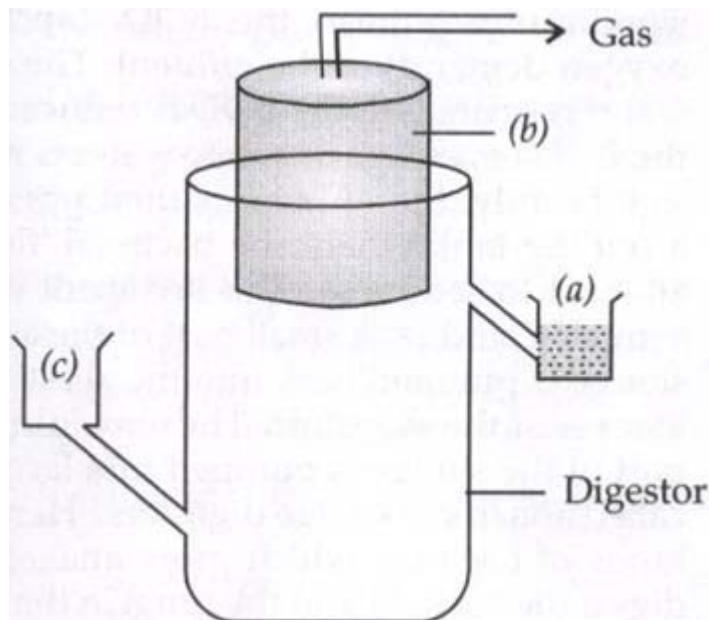
Differentiate between in-situ and ex-situ approaches for conserving biodiversity. Give an example for each.

SECTION - D

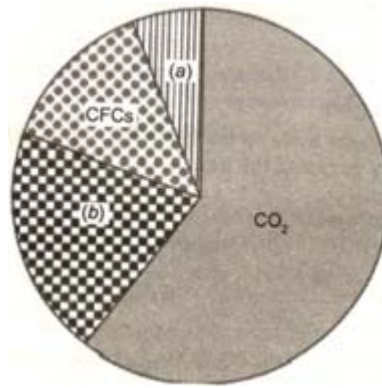
22. In the figure of a typical dicot embryo, label the part (1) (2) and (3). State the function of each of the labeled part.



23. The diagram below is that of a typical biogas plant. Explain the sequence of events occurring in a biogas plant. Identify a, b and c.



24. The figure given below shows relative contribution of various greenhouse gases to the total global warming.
a) Name the gases (a) and (b).
b) Why are these gases called greenhouse gases?



SECTION - E

25. a) How does a chromosomal disorder differ from a Mendelian disorder?
 b) Name any two chromosomal aberration associated disorders.
 c) List the characteristics of the disorders mentioned above that help in their diagnosis.

OR

A criminal blew himself up in a local market when he was chased by cops. His face was beyond recognition. Suggest and describe a modern technique that can help establish his identity.

26. Name the technology that has helped the scientists to propagate on large scale the desired crops in short duration. List the steps carried out to propagate the crops by the said technique. How are somatic hybrids obtained?

OR

- a) If a patient is advised anti-retroviral drug, name the possible infection she/ he is likely to be suffering from. Name the causative organism.
 b) How do vaccines prevent subsequent microbial infection by the same pathogen?
 c) How does a cancerous cell differ from a normal cell?
 d) Many microbial pathogens enter the gut of humans along with food. Name the physiological barrier that protect the body from such pathogens.

27. a) Public transport in Delhi uses CNG since 2002. List four advantages of this fuel policy.
 b) BOD was measured in two different places A and B of a river in the direction of its flow. BOD value was higher at A than B. What do you infer from this observation and why?

OR

- a) Name the two growth models that represent population growth and draw the respective growth curves they represent.
 b) State the basis for the difference in the shape of these curves.
 c) Which one of the curves represents the human population growth at present?
 Do you think such a curve is sustainable? Give reason in support of your answer.