MODEL EXAMINATION, JANUARY - 2020
SUBJECT : BIOLOGY (044)

Class : XII **Time Allowed : 3 hours** **Maximum Marks: 70**

SET : A

General Instructions:

1. There are a total of 27 questions and five sections in the question paper. All questions are compulsory.

2. Section `A' contains question numbers 1 – 5, multiple choice questions of one mark each.

Section `B' contains question numbers 6 – 12, short answer type I questions of 2 marks each.

Section `C' contains question numbers 13 – 21 short answer type II questions of three marks each.

Section `D' contains question numbers 22 – 24, case based short answer type questions of 3 marks each.

Section `E' contains question numbers 25 – 27, long answer type questions of five marks each.

3. There is no overall choice in the question paper. However, internal choices are provided in two questions of one mark, one question of 2 marks, two questions of 3 marks and all three questions of five marks. An examinee is to attempt any one of the questions out of the 2 given in the question paper with the same question number.

SECTION : A

Multiple Choice Questions:

1. Androgens are synthesised by: (1)

a) Sertoli cells b) Leydig cells

c) Seminal vesicles d) Bulbourethral gland

OR

A procedure that finds use in testing for genetic disorders, but is also misused for female foeticide is: (1)

a) Lactational amenorrhea b) Amniocentesis

c) Artificial insemination d) Parturiton

2. Use of anti-histamines and steroids gives a quick relief from (1)

a) Allergy b) Nausea c) Cough d) Fever

OR

The substance produced by a cell on viral infection that can protect other cells from further infection is

a) Serotonin b) Colostrum (1)

c) Interferon d) Histamine

3. Which of the given statement is correct in the context of observing DNA separated by agarose gel electrophoresis? (1)

a) DNA can be seen in visible light

b) DNA can be seen without staining in visible light.

c) Ethidium bromide stained DNA can be seen in visible light.

d) Ethidium bromide stained DNA can be seen under exposure to UV light.

4. The DNA polymerase enzyme used in PCR is obtained from (1)

a) Thermus aquaticus b) Escherichia coli

c) Agrobacterium tumefaciens d) Salmonella typhimurium

5. Which among the following is not a method of in-situ conservation? (1)

a) National Park b) Botanical Garden

c) Wildlife Sanctuary d) Ramsar Sites

SECTION : B

6. How does an encysted Amoeba reproduce on return of favourable conditions? (2)

OR

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

7. State one reason why breast feeding the baby acts as a natural contraceptive for the mother? (2)

8. What happens when chromosomes fails to segregate during cell division cycle? Explain your answer with an example. (2)

9. State the dual role of deoxyribonucleoside triphosphates during DNA replication. (2)

10. Explain the events that occur in the host cell on introduction of nematode – resistant gene in to the tobacco plant by using Agrobacterium vectors.

11. Identify A, B, C and D in the table given below: (2)

Crop	Variety	Resistance to Disease
A	Himgiri	Leaf Rust
Cauliflower	Pusa Shubhra	B
Brassica	Pusa Swarnim	C
Cowpea	D	Bacterial Blight

12. Differentiate between the two different types of pyramids of biomass with the help of one example each. (2)

SECTION : C

13. Draw the diagram of a pistil, where pollination has successfully occurred. Label the parts involved in reaching the male gametes to its desired destination. (3)

14. Human blood group is a good example of multiple allelism and codominance. Justify. (3)

OR

Work out a cross between true-breeding red and white flowered dog-flower plants (Snap dragon) up to F2 progeny. Explain the result of F1 and F2 generations.

15. Double fertilisation is reported in plants of both castor and ground nut. However, the mature seeds of ground nut are non albuminous and castor are albuminous. Explain the post fertilisation events that are responsible for it.

16. Divergent evolution leads to homologous structures. Explain with the help of an example. (3)

17. Write any three goals of Human Genome Project. (3)

18. High – yielding cattle is a good solution for food enhancement. How does the MOET technology help to increase the herd size? (3)

19. What are bio reactors? List five growth conditions that a bioreactor provides for obtaining the desired product. (3)

20. Explain, giving three reasons, why tropics show greatest levels of species diversity. (3)

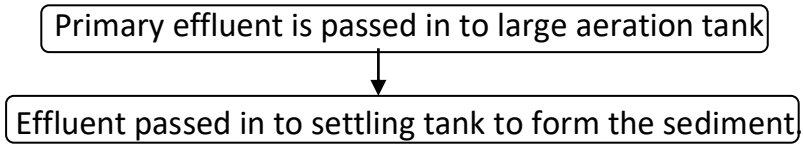
OR

Sometimes alien species affect the indigenous organisms leading to their extinction. Substantiate this statement with the help of any two examples.

21. Describe the naming of the restriction enzymes with an example. (3)

SECTION : D

22. Large quantities of sewage is generated every day in cities and towns, which is treated in Sewage Treatment Plants(STP), to make it less polluted. Given below is the flow diagram of one of the stages of STP.

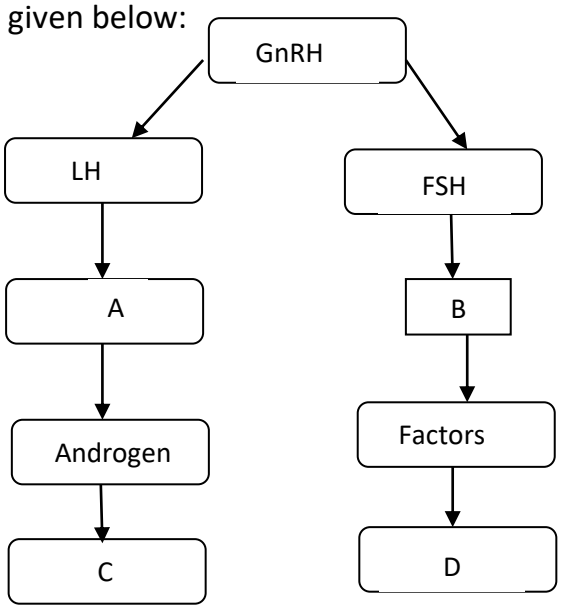


a) Why primary effluent is passed in to large aeration tanks?

b) Write the technical term used for the sediment formed. Mention its significance.

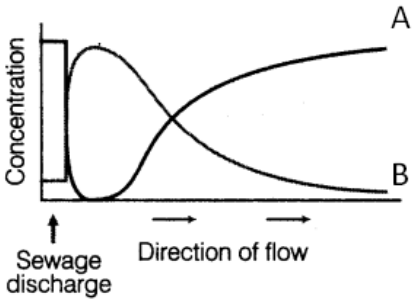
c) Explain the final step that results in the formation of biogas in the large tank before the treated effluent is released in to water bodies.

23. Identify A, B, C and D with reference to gametogenesis in humans, in the flow chart given below:



Give a brief explanation about the process D.

24.



a) Identify `A' and `B'.

b) What is the relationship between `A' and `B'?

c) Mention their effect on aquatic life in the river.

SECTION : E

25. Certain phenotypes in human population are spread over a gradient and reflect the contribution of more than two genes. Mention the term used for the type of inheritance. Describe it with the help of an example in human population. (5)

OR

Summarize the process by which the sequence of DNA bases in Human Genome Project was determined using the method developed by Frederick Sanger. Name a free living non-pathogenic nematode whose DNA has been completely sequenced. (5)

26. a) Why are lymph nodes and bone marrow called lymphoid organs? Explain the functions of each of them. (5)

b) Write the causative agent of filariasis in humans. Mention its mode of transmission and symptoms of the disease.

c) Name the plant source of Ganja. How does it affect the body of the abuser.

OR

a) Why are beehives kept in crop fields during the flowering period?

b) Indian Agricultural Research Institute has introduced several cereal and vegetable crops that are nutritionally rich in vitamins and minerals. What is this kind of breedings called? Write the main objectives with which such a breeding programme is carried out.

c) What are the advantages of micropropagation?

27. "Indiscriminate human activities have strengthened the green house effect resulting in Global warming." Give the relative contribution of various Green House Gases in the form of a pie chart and explain the fate of energy of sunlight reaching the earth's surface contributing towards Global Warming.

OR

a) How is commensalism different from competition and predation? Give an example for each.

b) Name the two growth models that represent population growth and draw the respective growth curves they represent.

c) State the basis for the difference in the shape of these curves.

THE END