SAMPLE PAPER

SUBJECT: BIOOGY (044)

CLASS XII

Time: 3 hrs. **Maximum Marks. 70**

General Instructions:

i) All questions are compulsory.

ii) This question paper consists of four sections A, B, C and D. Section A contains 8 questions of one mark each; section B contains 10 questions of two marks each, section C contains 9 questions of three marks each and section D contains 3 questions of five marks each.

iii) There is no overall choice. However, an internal choice has been provided in one question of two marks, one question of three marks and all three questions of five marks Weightage. A student has to attempt only one of the alternatives in such questions.

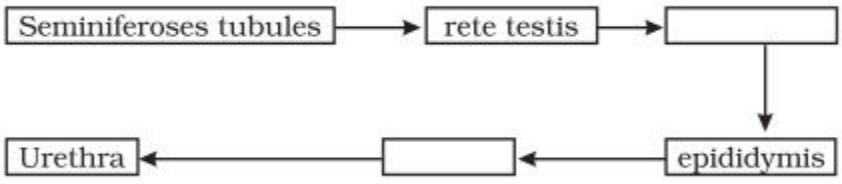
iv) Wherever necessary, the diagrams drawn should be properly labeled

SECTION - A.

1. Name the variety of Brassica which is resistant for Aphids made by hybridization and selection. (1)
2. You are working with a plasmid (here) that has two antibiotic resistance genes for tetracycline (tet^r) and ampicillin (amp^r) with a BamHI restriction site within the tet^r gene. You restrict a mixture of foreign DNA and your plasmid with BamHI, use ligase to create recombinant molecules, and transform E. coli sensitive to both antibiotics with the mixture. You then spread the *E. coli* onto plates with four types of media: (1) without any antibiotic, (2) with just tetracycline, (3) with just ampicillin, and (4) with both antibiotics. The bacteria with the recombinant plasmid would grow on which plate/s?(1)

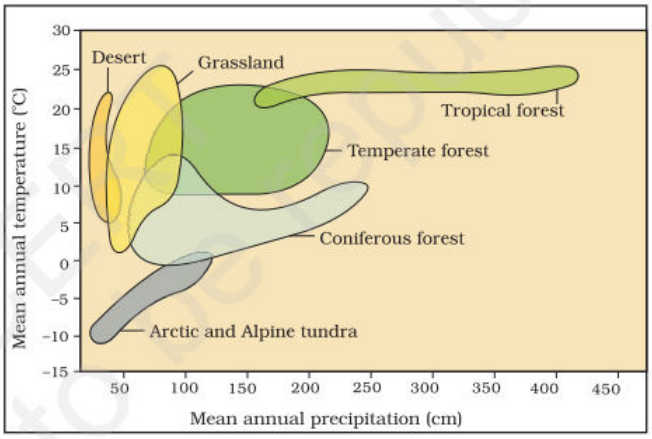
3. Name two intermediate hosts of parasite human liver fluke. (1)
4. Arrange the following steps of decomposition in a sequential order: (1)
   "Catabolism, Leaching, Detritus, Mineralization, Humification, Litters and Fragmentation".
5. Why not all copulations lead to fertilization and pregnancy? (1)
6. How thalasemia differs from sickle celled anaemia? (1)
7. Identify the restriction enzyme for the given palindromic site. (1)

8. The path of sperm transport is given below. Provide the missing steps in blank boxes. (1)



SECTION – B

9. Study the given figure and answer the following questions. (2)



(a) Which biome shows maximum range of annual precipitation?

(b) Which biome shows maximum range of annual temperature?

(c) Give range of mean annual precipitation by temperate forest.

(d) Which biome has lowest mean annual temperature?

10. What are the limitations of the ecological pyramids? (2)

11. In a pea plant green pod color is dominant over the yellow color. What will be the expected ratio of the phenotypes of the offsprings in a cross between – (2)

    (a) Heterozygous green with heterozygous green.

    (b) Homozygous green with homozygous yellow.

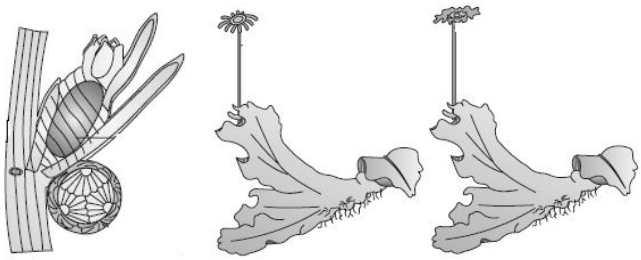
12. Explain how the bacterial DNA gets protected against phage DNA. (2)

OR

Distinguish between Mendelian disorder and Chromosomal disorder with one example from each. (2)

13. Observe the diagram below and answer the questions. (2)

A B



(a) Identify the given plants.

(b) How are they different from each other with regard to reproductive organs they possess?

14. Write the role of following in biological control of pest. (2)

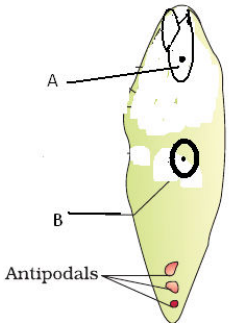
a. Ladybird

b. Bacillus thuringiensis

c. Nucleopolyhedrovirus

d. Trichoderma

15. Answer the following questions: (2)



(a) Name the structures which the parts 'A' and 'B' shown in the diagram above respectively develop into.

(b) Write the ploidy of 'A' and 'B'. Explain the process of development which 'B' undergoes in coconut.

16. Answer a, b, c, and d in the given table below: (2)

Genetic material	Process	Enzyme involved
DNA → DNA	a	DNA polymerase
b	Transcription	RNA polymerase
RNA → DNA	c	Reverse transcriptase
RNA → Protein	d	Ribozyme

17. Give reasons for (2)

(a) DNA is considered as better genetic material than RNA.

(b) Transcription and translation can be coupled in prokaryotes but not in eukaryotes.

18. Give one example of each of the following type of immunity can be developed in human being. (2)

a. Natural active immunity.

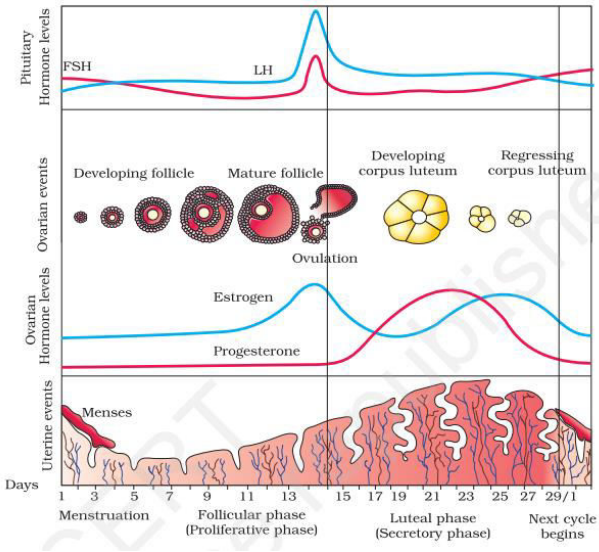
b. Artificial active immunity.

c. Natural passive immunity.

d. Artificial passive immunity.

SECTION - C

19. Study the diagram and answer questions that follows: (3)



(a) What is the role of corpus luteum in menstrual cycle?

(b) Name the hormone stimulate follicular growth.

(c) Which hormone is responsible for ovulation?

(d) What stimulates the degeneration of corpus luteum towards the end of the menstrual cycle?

(e) What is the source of oestrogen during proliferative phase?

(f) In which phase of menstrual cycle the 1st polar body released?

20. Answer the following questions regarding human genomic project; (3)

(a) Name the largest known human gene.

(b) How many genes are present in chromosome I and Y respectively?

(c) What percent of human genome codes for proteins? (3)

OR

In what sense translation in Eukaryotes differs from Prokaryotes. Explain. (3)

21. Answer the following questions in relation to inheritance of color blindness. (3)
    (a) What is the effect that a colorblind suffers from?
    (b) In what condition a female can be a colorblind?
    (c) A daughter can receive a defective color blind gene from father and mother, whereas son can receive the defective gene only from the mother not from the father. Why more male suffer from colorblindness in comparison to female?
22. Nikhil, a class XII student, participated in a group discussion in his school on "Alcoholism and its ill effect on human health". In the evening he goes with his family for a dinner and insists on sitting in a "non alcoholic zone" of the party" to which his father (who takes alcohol regularly) objects. (3)
    (a) In this situation, whose argument wins your support?
    (b) What are the ill effects of alcohol on human health?
    (c) Suggest any one of the effective way to create anti alcoholic awareness.
23. Answer the following questions: (3)
    (a) What is protoplast?
    (b) Name the two enzymes used in producing protoplasts.
    (c) How virus free plant can be produced from a virus infected plant?
24. Identify A, B, C, D, E and F in the table given below: (3)

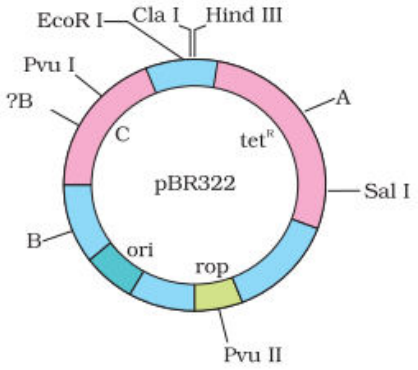
	Organism	**Bioactive molecule**	**Use**
1.	Monascus perpureus(yeast)	A	B
2.	C	D	Antibiotic
3.	E	Cyclosporin- A	F

25. Answer the following questions: (3)

(a) Name the source of Taq Polymerase. Explain the advantage of its use in biotechnology.

(b) Expand the name of enzyme ADA. Why is this enzyme essential in human body?

26. Study the plasmid pBR322 and answer the questions follow. (3)



(a) Label the part A, B, and C.

(b) What is the role of 'rop' gene?

27. Name the type of population interaction in the given examples. (3)

(a) Barnacle growing on the back of whale

(b) Marine fish infested with copepod

(c) Fig tree and species of wasp

(d) Abingdon tortoise and goat in Galapagos Island.

(e) Cuscuta growing on hedge plant.

(f) Clown fish and sea anemone.

SECTION – D

28. Answer the following questions. (5)

(a) What are the possible effect of the loss of biodiversity in a region?

(b) What are four major causes of biodiversity loss? Explain one of them.

OR

Answer the following question (5)

(a) Expand the CFC.

(b) CFCs are a part of green house gases. Name the other gases.

(c) Explain the major harms caused by these gases.

(d) Mention the consequences of degradation of O_3.

(e) Write the units used to detect O_3

29. A DNA segment GCC AGG GGG ATG CCA was translated into an oligopeptide, Arginine-Serine-Proline-Tyrosine-Valine. (5)

a. What are the codons for five amino acids?

b. Write the sequences of the sense strand of the transcription unit from which it is transcribed.

c. What would be the sequence of the amino acids in the new oligopeptide if Guanine substitutes the first Adenine?

d. Is there any mutation? Explain.

e. Name the enzyme responsible for the peptide bond formation during translation.

OR

Study the given chart below and answer the questions that follow: (5)

(a) S strain → into mice → mice die

(b) R strain → into mice → mice live.

(c) Heat killed S strain + live R strain → into mice → A

(d) Heat killed S strain + DNase + live R strain → into mice → B

(i) Name the organism and differentiate between its two strains R and S respectively.

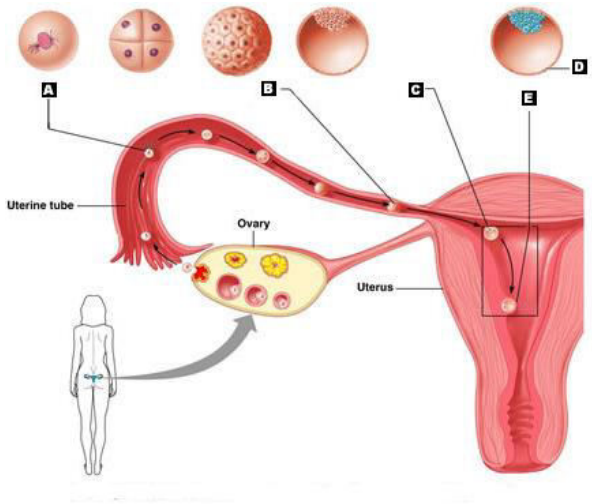
(ii) Write the results A and B obtained in step (c) and (d) respectively.

(iii) Name the Scientist who performed the steps (a), (b) and (c).

(iv) Write the specific conclusion drawn from the step (d).

(v) Name the scientists who performed the step (d)

30. Answer the following questions in relation to the diagram given below. (5)



(a) Identify the structure labeled 'B'.

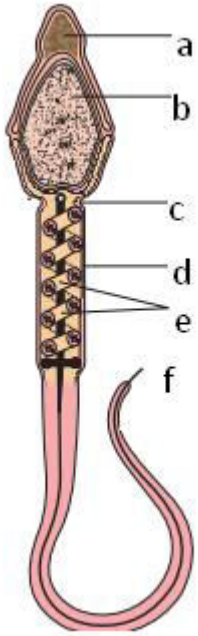
(b) What you call to each cell of structure 'B'

(c) What you call to the process by which the structure 'A' converted into 'B"

(d) After how many days of fertilization, structure 'A' converted into 'D' and reached at E?

(e) What are the two different types of cells present in structure 'd'? **OR**

Study the diagram below and answer the question follow. (5)



Identify 'b' and write its ploidy.

(a) Identify and write the function of 'a'

(b) Which part provides energy for motility? Name it.

(c) Name the fluid in which these structures are present.

(d) Which hormone stimulates their production?

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