



APEEJAY SVRAN GLOBAL SCHOOL
SESSION-2020-2021
PRE-BOARD II
SUBJECT- BIOLOGY
CLASS- XII

Name- _____
Date- _____

M.M : 70
Duration: 3 Hours

General Instructions:

- (i) All questions are compulsory.
- (ii) The question paper has four sections: Section A, Section B, Section C and Section D. There are 38 questions in the question paper.
- (iii) Section–A has 18 questions of 1 mark each questions. Section–B has 14 questions of 2 marks each. Section–C has 3 questions of 3 marks each and Section–D has 3 questions of 5 marks each.
- (iv) There is no overall choice.
- (v) Wherever necessary, neat and properly labeled diagrams should be drawn

SECTION A

- 1 What type of allele produces its effects only in homozygous individual .
 - a) dominant,
 - b) recessive,
 - c) incomplete dominant ,
 - d) incomplete recessive.
- 2 Write the phenotypic ratio of dihybrid cross.
- 3 Name two organisms where males are heterogametic.
- 4 Scientific name of garden pea is _____
- 5 Tendency of gene to link together in a same locus is called _____
- 6 Name two Mendelian disorder that are sex- linked
- 7 What are the components of a nucleoside ?
- 8 Who experimentally proved the semiconservative nature of DNA replication?
- 9 How is the nitrogenous base linked to the pentose sugar ?
- 10 Which enzyme is used in the Transcription process ?
- 11 Write the dual function of AUG.
- 12 Expand VNTR .
- 13 What is the role of restriction endonuclease in biotechnology?
- 14 Restriction endonuclease usually isolated from bacteria and bacteria use it for its self protection. How?
- 15 ----- and ----- are two main processes used in downstream processing.
- 16 Name the enzyme that is used to dissolve cell wall of bacteria and plant.
- 17 A rDNA is inserted in the coding sequence of an enzyme and which inactivates the gene. Give the term for that.

18 Name two natural genetic engineer used in biotechnology process

SECTION B

19 Distinguish between monohybrid and dihybrid cross.

20 What is trisomy, Give an example.

21 What is co-dominance, give an example.

22 Write four symptoms of Turner's syndrome.

23 State two reasons that favor DNA to be the genetic material than that of RNA .

24 How are the exons different from introns? Give two points of difference.

25 Which strand of DNA is transcribed and Why?

26 Stat two functions of DNA polymerase.

27. Complete the table given below

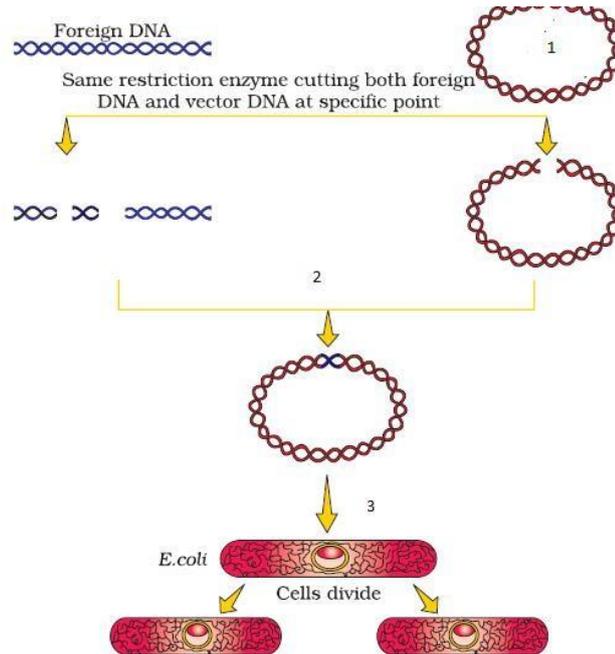
Processes	Enzyme involved
Cutting of DNA fragments at specific site	
Joining of foreign DNA fragments with plasmid	
Amplification of DNA fragments	
Dissolve fungal cell wall	

28. Give diagrammatic representation of rDNA technology

29. DNA being hydrophilic cannot pass through the cell membrane of a cell. Explain how recombinant DNA get introduces into the cell to transform the latter. In bacterial culture some of the colonies produce blue colour in the presence of a chromogenic substrate and some did not due to the presence or absence of an insert (rDNA) in the coding sequence of the beta- galactosidase.

- i. Mention the mechanism and steps involved in the above experiments.
- ii. How is it better than the technique of plating on two plates having different antibiotics

30. Mention the steps 1, 2, 3 in a recombinant DNA technology given below.



31. Complete the steps for separation and isolation of DNA fragment.

Cutting of DNA by-----, During -----the DNA fragments move to -----DNA fragments separate in the matrix of-----, and the -----fragments move farther where as----- fragments remain nearer. The DNA Fragments after staining are exposed to -----, Fragments are extruded from the gel piece, and is known as -----

SECTION C

32. Mentions the advantages of selecting pea plant for experiment.

33. Who postulated an adapter molecule to link the genetic code and the amino acids? State its two functions.

34. (i) What are the four levels at which gene expression is regulated in eukaryotic cell ?
(ii) Name the regulatory gene of Lac –operon .

35. What is Pedigree analysis? Write advantages.

SECTION D

36. A patient is suffering from ADA deficiency. Can he be cured?

B. What is gene therapy? Illustrate using the example of adenosine deaminase (ADA) deficiency.

OR

A. Illustrate the design of a bioreactor. Highlight the difference between a flask in your laboratory and a bioreactor which allows cells to grow in a continuous culture system.

B. How does can visualize DNA on an agarose gel?

37. A. Define transgenic animals. Explain in detail any four areas where they can be utilized.

B. While doing a PCR, 'denaturation' step is missed. What will be its effect on the process?

C. Restriction enzymes that are used in the construction of recombinant DNA are endonucleases which cut the DNA at 'specific-recognition sequence'. What would be the disadvantage if they do not cut the DNA at specific-recognition sequence?

38. A. . How did Eli Lilly company go about preparing the human insulin? How is the insulin thus produced different from that produced by the functional human insulin gene?
- B. plasmid without a selectable marker was chosen as vector for cloning a gene. How does this affect the experiment?
- C. What are Cry proteins? Name an organism which produces it. How has man exploited this protein to his benefit?