

## UNIT TEST-4

Time: 1 ½ hrs

BIOLOGY Class XII

Marks : 35

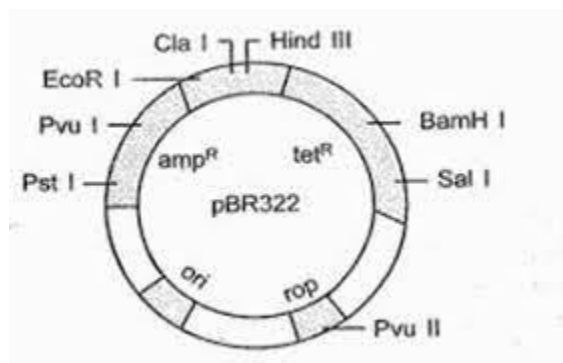
### SET A

#### General instructions :

- (i) All questions are compulsory.
- (ii) The question paper has five sections: All questions are compulsory
- (iii) Section–A has 8 questions of 1 mark ; Section–B has 3 questions of 2 marks each; Section–C has 4 questions of 3 marks; Section-D has 1 case based questions of 4 mark and Section–E has 1 question of 5 mark.
- (iv) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.

### Section-A

1. The figure below shows a plasmid



A foreign DNA was ligated at Pvu I. The transformants were then grown in a medium containing antibiotic tetracycline and ampicillin.

Choose the correct observation for the growth of bacterial colonies from the given table

	Medium with tetracycline	Medium with Ampicillin
a)	Growth	No growth
b)	No growth	Growth
c)	No growth	No growth
d)	Growth	Growth

2. Name the commonly used vector for transformation in plant cells.
  - a) Retrovirus
  - b) Bacteriophage
  - c) pBR322
  - d) Agrobacterium tumefaciens
3. In plant biotechnology , root tumors are induced by
  - a) Rhizobium species
  - b) Agrobacterium tumefaciens
  - c) Agrobacterium rhizogenes
  - d) Agrobacterium basilis
4. DNA segment cleaved by EcoRI is
  - a) ATTCGA  
TAAGCT
  - b) GAATTC  
CTTAAG
  - c) GCTTAA  
CGAATT
  - d) GTTCAA  
CAAGTT
5. Fragment of DNA formed after treatment with endonuclease are separated by the technique
  - a) Polytmerase chain reaction
  - b) Southern blotting
  - c) Electrophoresis
  - d) Colony hybridization
6. Protein encoded by cryIAc control
  - a) Cotton bollworms
  - b) Corn borer
  - c) Aphids
  - d) Jassids

*Question No.7 & 8 consists of two statements-Assertion ( A ) and reason ( R ) . Answer these questions selecting the appropriate options given below:*

- a) Both assertion and reason are true, and reason is the correct explanation of assertion.
  - b) Both assertion and reason are true, but reason is not the correct explanation of assertion.
  - c) Assertion is true but reason is false
  - d) Both assertion and reason are false
7. **Assertion** :Same restriction endonuclease enzyme is used to cut foreign DNA and vector.  
**Reason** : Stickiness of ends help DNA ligase to join foreign DNA with the vector.
  8. **Assertion** :PCR is now used routinely to detect HIV in suspected AIDS patients  
**Reason** : Very low amount of DNA can be amplified in PCR

### Section-B

9. Explain the role of enzymes in isolation / extraction of DNA from rhizopus.
10. What is the purpose and objective of GEAC ?

OR

Name the source and type of cry gene isolated from it for incorporation into crops by biotechnologists . Explain how have these genes brought beneficial changes in the GMcrops

11. How is 'Rosie' considered different from a normal cow? Explain

### Section-C

12. Explain the events that occur in the host cell on introduction of nematode resistant gene into the tobacco plant by using *Agrobacterium tumifaciens*.

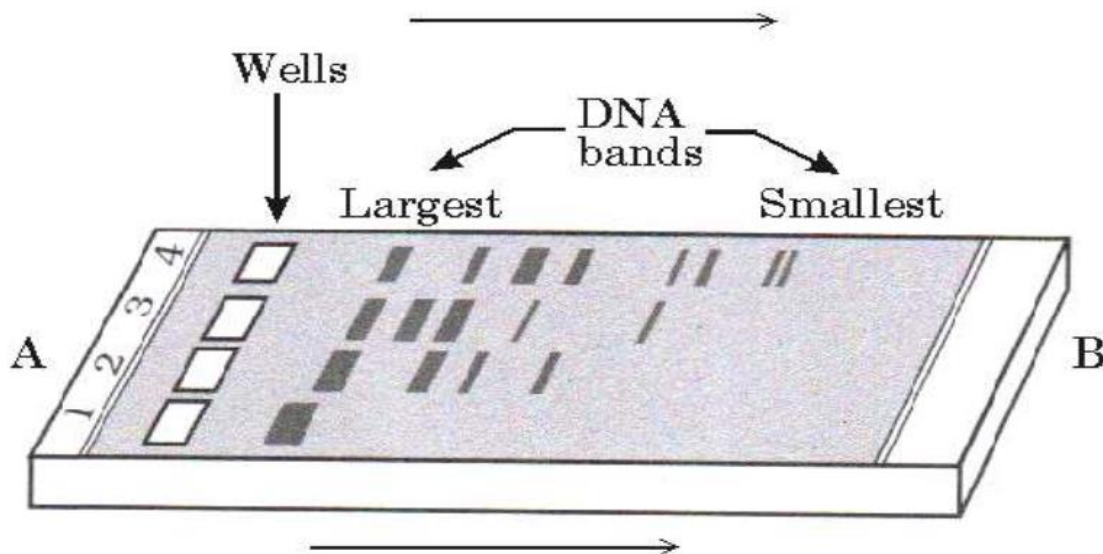
OR

- a) How is the action of exonuclease different from that of endonuclease
  - b) Why DNA cannot pass through the cell membrane? Explain. How is a bacterial cell made 'competent' to take up recombinant DNA from the medium?
13. Explain the role of transgenic animals in
    - a) Vaccine safety testing
    - b) Biological products. Give examples
  14. How is the amplification of a gene sample of interest carried out using PCR?
  15. Expand the name of the enzyme ADA . Why is this enzyme essential in the human body ? Suggest a gene therapy for its deficiency. Describe the technique.

### Section-D

**Q.no. 16 is case based question .there is subpart with internal choice in one subpart.**

16. With reference to below given figure answer the following questions



- a) What does this figure depict?
- b) What is responsible for differential mobility of these DNA bands?
- c) Name the compound used to visualize the DNA bands.

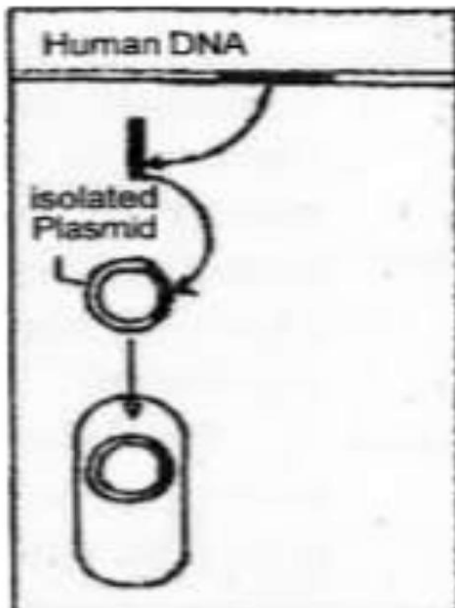
OR

Name the commonly used matrix in this technique

### Section-E

17.

- a) List the beneficial effects of GM plants
- b) Name the particular technique in biotechnology whose steps are shown in the figure. Use the figure to summarise the technique in three steps



OR

- a) A recombinant DNA is formed when sticky ends of vector DNA and foreign DNA join. Explain how the sticky ends are formed and get joined.
- b) Why is it not possible for an alien DNA to become part of a chromosome anywhere along its length and replicate normally?
- c) A recombinant vector with a gene of interest inserted within the gene of  $\beta$  galactosidase enzyme, is introduced into a bacterium. Explain the method that would help in selection of recombinants colonies from non-recombinant ones.