DPP
DAILY PRACTICE PROBLEMS

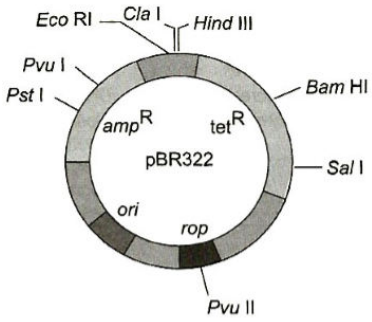
Class : XIIth
Date :

Solutions

Subject : BIOLOGY
DPP No. : 8

Topic :- Biotechnology Principles & Processes

1. The given figure is the diagrammatic representation of the *E.coli* vector pBR322. Which one of the given options correctly identifies its certain component(s)?



a) *Ori*-original restriction enzymes
b) *Rop*-reduced osmotic pressure
c) *Hind* III, Eco RI-selectabel markers
d) amp^R,tet^R-antibiotic resistances genes

2. The restriction enzyme(s) used in recombinant DNA technology that make staggered cuts in DNA leaving sticky ends is/are
a) *Eco* RI
b) Hind II
c) *Bam* HI
d) All of the above

3. RNA processing is:
a) An event that occurs after RNA transcribed
b) The rejection of old, worn-out RNA
c) An event that occurs before RNA is transcribed
d) Both (A) and (C)

4. Find out the wrong statements
a) Mobile genetic elements, transposons were visualized by Barbara McClintock
b) Udder cell and somatic cell is used to produce the cloned sheep by nuclear transplantation method
c) In pedigree analysis, a person immediately affected by and action is called propositus
d) DNA ligases are used to cleave a DNA molecule

5. Widely used tool in genetic engineering of crop plants is:
a) Protoplast fusion
b) Transposon
c) Microinjection
d) Agrobacterium mediation

6. DNA fingerprinting method is very useful for:
a) DNA tests for identity and relationships
b) Forensic studies

c) Polymorphism
d) All of the above

7. Who among the following discovered the enzyme restriction endonuclease?
a) Hamilton Othanel Smith
b) Sir Godfrey Hounsfield
c) F. Jacob
d) Andre Lwoff

8. The mobile genetic element is
a) Transposons
b) Mutation
c) Endonuclease
d) Variation

9. The enzyme used for cutting DNA segment in genetic engineering is:
a) ATP-ase
b) Ligase
c) DNA polymerase
d) Restriction endonuclease

10. When the number of genes increases in response to some signal, the effect is called:
a) Gene dosage
b) Gene pool
c) Gene amplification
d) Gene frequency

11. Identify the palindromic sequence in the following
a) $\frac{\text{GAATTC}}{\text{CTTUUG}}$
b) $\frac{\text{GGATCC}}{\text{CCTAGG}}$
c) $\frac{\text{CCTGGA}}{\text{GGACCT}}$
d) $\frac{\text{CGATAC}}{\text{GCTAAG}}$

12. Colony hybridization procedure for identification of plasmid clones is called:
a) Southern blotting
b) Grunstein-Hogness assay
c) DNA probes
d) Molecular assay

13. The different basic steps of genetic engineering are given below randomly
I. Identification of DNA with desirable genes
II. Gene transfer
III. Maintenance of DNA in host and gene cloning
IV. Introduction of DNA into host to from recombinant DNA
Which of the following represents the correct sequence of steps?
a) I, II, III and IV
b) I, IV, III and II
c) III, IV, II and I
d) I, III, IV and II

14. Which of the following steps are involved in the process of recombinant biotechnology? Arrange in correct order
I. Extraction of the desired gene product
II. Amplification of the gene of interest
III. Isolation of a desired DNA fragment
IV. Ligation of the DNA fragment into a vector
V. Insertion of recombinant DNA into the host
Correct order is
a) I, II, III, IV and V
b) III, II, IV, V and I
c) II, IV, V, III and I
d) I, IV, V, III and II

15. In bacteria, genes for antibiotic resistance are usually located in:

a) Chromosomal DNA b) Cytoplasm c) Mitochondria d) Plasmids

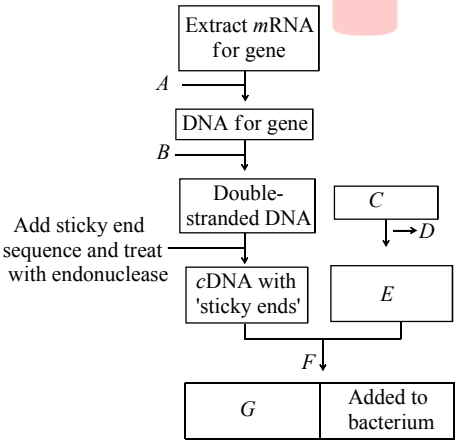
16. Natural genetic engineer is:
a) *Bacillus subtillis* b) *Pseudomonas spp*
c) *Escherichia coli* d) *Agrobacterium tumefaciens*

17. A number of bacteria with recombinant DNA of same type form:
a) Clone library b) Gene library c) Gene pool d) Gene frequency

18. I. ...A... is the ability of a cell to take up foreign DNA
II. The cell is treated with specific concentration of a divalent cation such as ...B... to increase pore size in cell wall
III. In ....C... method recombinant DNA is directly injected into the nucleus of an animal cell
The most appropriate option regarding A, B and C is
a) A-Competency, B-Calcium, C-gene gun method
b) A-Transformation, B-Sodium, C-microinjection method
c) A-Competency, B-Calcium, C-microinjection method
d) A-Transformation, B-Sodium, C-gene gun method

19. T_1 plasmid is used for making transgenic plants. It is obtained from:
a) Azotobacter b) Agrobacterium
c) Rhizobium in leguminous root d) Yeast

20. Identify and match the labelled items *A*,*B*,*C*,*D*,*E*,*F* and *G* in the diagram below from the list I-VII given with components



I. DNA polymerase
II. plasmid
III. plasmid with 'sticky ends'
IV. DNA ligase
V. restriction endonuclease
VI. recombinant DNA
VII. reverse transcriptase

The correct components are

A B C D E F G

a) VII I II V III IV VI

b) VII VI V IV III II I

c) VII V III I II IV VI

d) I II IV VI III V VII