Register Number .....

B.TECH. DEGREE EXAMINATIONS: NOVEMBER 2009

Fifth Semester

BIOTECHNOLOGY

U07BT505: Genetic Engineering

Time: Three hours **Maximum Marks: 100**

Answer ALL the Questions:-

PART A (10 x 1 = 10 Marks)

1. Production of secondary metabolites requires the use of

   (A) Protoplasts (B) Apical Meristem

   (C) Auxiliary buds (D) Cell suspension

2. The essential component of Ti plasmid required for integration into plant genome is

   (A) Origin of replication (B) Tumor inducing gene

   (C) Nopaline utilization gene (D) Origin of transformation

3. Hormone pairs required for a callus to differentiate are

   (A) Auxin and Cytokinin (B) Auxin and gibberellin

   (C) Ethylene and gibberellin (D) Cytokinin and gibberellin

4. In plants embryo rescue is adopted for overcoming

   (A) Histoincompatibilities

   (B) Prezygotic fertilization barriers

   (C) Culture induced chromosomal abnormalities

   (D) Postzygotic fertilization barriers

5. Cytoplasmic male sterility is encoded by

   (A) Mitochondria (B) Chloroplast (C) Cytosol (D) Ribosomes

6. Embryo rescue is a useful technique to

   (A) Grow/generate hybrids between different plant species.

   (B) Complete the growth of embryos susceptible to defects in need development

   (C) Break the dormancy of seeds

   (D) Incomplete the growth of embryos susceptible to defects in need development

7. Mung be en nuclease could be used for

   (A) DNA synthesis

   (B) Nucleotide hydrolysis

   (C) Trimming single stranded regions in DNA

   (D) Removal of phosphate groups from the ends of the DNA

8. Yeast artifical chromosome (YAC) is used for

(A) cloning large segments of DNA

(B) cloning only yeast genomic sequences

(C) cloning of only cDNA sequences

(D) all DNA except plant DNA sequences

9. Plant breeders have an advantage over animal breeders in reproducing a desired type offspring because the plant breeders can employ

(A) Gene mutation (B) Hybridization

(C) Clonal propagation (D) Selection

10. Plant secondary metabolites production in suspension culture is mainly targeted for obtaining metabolites in aseptic condition

(A) Obtaining metabolites in aseptic condition

(B) Enhanced in vitro production of desired metabolite

(C) Enhanced production of all metabolites

(D) Obtaining new metabolites

PART B (10 x 2 = 20 Marks)

11. What are the relaxed and stringent plasmids?
12. What are the properties of an ideal cloning vehicle?
13. What is the role of genes within the cells?
14. What are the applications of r-DNA in medicine?
15. Draw a flow chart to construct r-DNA.
16. Write short notes on plasmid incompatibility.
17. What is meant by retrofitting?
18. What is the role of eIF – 4E in cDNA cloning?
19. What is meant by transgene silencing?
20. Give two examples for production of plant – derived vaccines.

PART C (5 x 14 = 70 Marks)

21. a) How the embryo transfer is involved in r-DNA technology?

(OR)

b) (i) Discuss the steps involved in the construction of cDNA library. (10)

(ii) How does a cDNA library differ from genomic library? (4)

22. a) How to get multiple copies of DNA? What are the other types of it?

(OR)

b) How to introduce the crown gall disease in plants and add a note about the Binary vectors, disarmed plasmid and co-integrate.

23. a) Explain the role of genes within the cells?

(OR)

b) Discuss briefly the method used to find out the locus of genes in DNA & PLASMID?

24. a) i) Explain at least two methods of transferring DNA molecules into a host. (10)

ii) Write short notes on safety guidelines of creating recombinant DNA research. (4)

(OR)

b) To decide whether a cell has undergone transformation, what are the methods to be performed?

25. a) Explain the method to construct a cDNA library from a brain tissue.

(OR)

b) What is PCR? Explain the different steps involved in the amplification of a DNA fragment by PCR.

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