Time 3hrs **Marks 75M**

Q.1 ATTEMPT ALL MULTIPLE CHOICE QUESTIONS **20M**

1	The complimentary strands of DNA are linked together with	a Phosphodiester bond b Hydrogen bond c Peptide bond d Glycosidic bond
2	Which of the following enzyme is used to cut DNA molecule in rDNA technology	a ligase b phosphotase c ribonuclease d Restriction enzyme
3	Translation occurs	a In the nucleus of the cell b At the ribosomes in the cytoplasm of the cell c Outside the cell d Can happen in both nucleus and ribosomes
4	Region of DNA where RNA polymerase binds and transcription begins	a Transcription factors b RNA polymerase c TATA box d Promoter
5	The production of secondary metabolite requires the use of	a meristem b Cell suspension c protoplast d Axillary buds
6	Encapsulation of somatic embryos with _____ produces synthetic seed	a Sodium acetate b Sodium nitrate c Sodium chloride d Sodium alginate
7	Totipotency means development of a	a fruits from flowers in a culture b organ from cell in a culture medium c Flowering in culture medium d All of the above
8	The most commonly used pectinase is	a Macerozyme b Rhozyme HP150 c Cellulase d Pectiolose
9	Name the vector which is used in crop improvement and crop management	a Asperigillus b S.aureus c Acetobacter d Agrobacterium
10	Elicitors are molecule that	a Induce cell division b Stimulate production secondary metabolites c Stimulate hairy root formation that accumulate secondary metabolites d None of these

11	The precursor amino acid used in indole alkaloids is	a Tryptophan b Lysine c Arginine d Leucine
12	 The diagram represents the ------ type of immobilization technique	a Cross -linking b Entrapment c Encapsulation d Covalent binding
13	The most popular and widely engineered plasmid vector is	a pBR322 b PUC vectors c pBR325 d pUC19
14	During molecular cloning , after recombination, the bacteria showed white colonies . This signifies	a Bacteria have taken plasmids with the foreign DNA b Bacteria have taken plasmids without the foreign DNA c Bacteria do not take up any plasmid d None of the above
15	Synthetic seeds are	a Seeds synthesized artificially b Seeds of plants modified genetically c Somatic embroyos encapsulated in suitable matrix d None of these
16	A method that uses accelerated microprojectiles to deliver DNA into intact tissues and cells is	a Microinjection b Biolistic c electroporation d Laser mediated
17	In bubble column reactors the mass transfer depends on	a Impellors b Size of the bubble c Flow of gas d None of the above
18	One of the followings occurs in the absence of free liquid	a Submerged fermentation b Batch fermentation c Solid state fermentation d Surface fermentation
19	one of the following is not an advantage of single cell protein	a Used as a protein rich diet b Reduces environmental pollution c Increased supply of protein d Increased air pollution
20	Ergot alkaloids is synthesised from the strain	a Claviceps purpurea b Agrobacterium tumifaceins c Agrobacterium rhizogenes d Saccharomyces cerevisiae

Q,2. Answer any two of the following **(10 X 2 = 20M)**

A. i. Give a flow chart to explain DNA recombinant technology
ii. Differentiate between adsorption and covalent bonding enzyme immobilization technique

B. i. Write a note on the process of cloning in plant cell
ii. Explain the principle and advantages of bubble column bioreactor and fluidized bed bioreactor

C. Explain the hairy root multiple shoot cultures in detail with respect to the vector, process of production using an example and application of hairy root cultures.

Q.3. Answer any seven out of the nine from the following **(5 X 7 = 35M)**

A. Explain the application of plant biotechnology in Pharmacy
B. Define the term synthetic seed. Explain the process of preparation of the same
C. Write a note on somatic hybridization with its applications
D. Explain with examples, how elicitors can help in the production of secondary metabolite
E. Discuss the application of PCR in plant genome analysis.
F. Explain the microinjection method of gene transfer
G. Write a note on single cell proteins
H. Give two applications of biotransformation in plant cell biotechnology
I. Summarize the different sterilization methods used in plant biotechnology

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