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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY WAKNAGHAT

Test-3

Semester : 4th BTech Biotechnology

COURSE : Cell Culture Technology MAX.MARKS:35

COURSE CODE: 10B11BT412 TIME:2HR

Q1. *Picrorhiza* sp. has disease resistance characteristics and *Swertia* sp. has anti-diabetic properties. How you can produce plants having both the characteristics? Which methodology you would like to use and how? (5)

Q2. How you can develop high content cell lines from the callus of *Valeriana*? Which technology can be applied for the production of enhanced metabolites from the same? Explain(5)

Q3. Does the cryopreservation of somatic embryo can be done? Explain the process if yes and if not, how you would like to pursue for the same. (5)

Q4. Which type of tissue/cells could be used for the production of Haploid plants? How you can regenerate the double homozygous plants? Explain it along with diagram.(5)

Q5. Explain the factors responsible for the production of secondary metabolites through cell culture techniques ? What are the advantages and limitations of the *in vitro* techniques? Explain with examples.

Q6. Explain the followings:

a. Why triploids plant are produced through *in vitro* techniques?
b. What is the significance of somaclones?
c. Why plant stem cells are in trends now?
d. What is the usage of hairy roots? (5x2=10)
e. Why we need to do biotransformation?