

Dr Hemant

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY WAKNAGHAT

Mid Term Examination of Summer Semester

B.Tech Biotechnology

COURSE Plant Biotechnology

MAX.MARKS:50

COURSE CODE: 14B1WBT531

TIME:2HR

Q1. *Nicotiana* 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? (8)

Q2. How you can you develop high content genotype of *Picrorhiza*? Which technology can be applied for the production of enhanced metabolites from the same? Explain(8)

Q3. Does the biotransformation has commercial potential? Explain the process if yes and if not, how you would like to pursue for the same at large scale level? (8)

Q4. What is the mechanism of transfer of foreign gene from *Agrobacterium* to plant cells for genetic modification? Explain it along with diagram.(8)

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.(8)

Q6. Explain the followings:

- a. Why Haploids plant are produced through *in vitro* techniques?
- b. What is the significance of Molecular farming in plants?
- c. Why biosynthetic pathways should be known for secondary metabolites production?
- d. What is the usage of hairy roots? (5x2=10)
- e. Why we need to do elicitation?