

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2023

MSc-I Semester (BT/BI)

COURSE CODE (CREDITS): 20MS1BT113 (2)

MAX. MARKS: 35

COURSE NAME: Plant & Animal Biotechnology

COURSE INSTRUCTORS: Dr. Uday & Dr. Hemant

MAX. TIME: 2 Hours

*Note: (a) All questions are compulsory.*

*(b) Marks are indicated against each question in square brackets.*

*(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems*

1. Paclitaxel is biosynthesized in *Taxus brevifolia* in 1-2 % after 5 years of growth of the plant under field conditions. Develop an outline containing the appropriate techniques for the production of these bioactive compounds to 7-8% in a 6-month duration of the period. [4 Marks]
2. Spartan III corn was developed for bioethanol production. Explain the methodology used for the production of the same plants and which technology would be preferred for the release of bio-safe planting material. [4 Marks]
3. Which technology would be used for the development of the somatic hybrids of mango and papaya? How would you screen and grow the developed hybrids? Explain with an illustration of a complete outline. [4 Marks]
4. Explain the following with examples: [6 Marks]
  - a. Molecular pharming
  - b. Difference between intra and cis-genesis
  - c. Pharmacogenomics
5. Explain various steps involved in Embryo transfer technology (ETT) in animals and briefly explain the different protocols used for super ovulation. [5 Marks]
6. Describe the different techniques used in cryopreservation of sperm and the functionality of cryoprotectants. [5 Marks]
7. Discuss the role of artificial insemination in improving reproductive efficiency in dairy cattle and potential drawbacks of artificial insemination. [5 Marks]
8. Briefly discuss somatic cell nuclear transfer (SCNT) and its applications. [3 Marks]