

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- May-2023

B.Tech-4<sup>th</sup> Sem (BT)

COURSE CODE(CREDITS): 18B11BT411

MAX. MARKS: 35

COURSE NAME: Cell Biology and Culture Technology

COURSE INSTRUCTORS: Dr Hemant & Dr Udaybanu

MAX. TIME: 2Hours

*Note: All questions are compulsory. Marks are indicated against each question in square brackets.*

- Q1. How do you carry out the production of disease-free plants of *Valeriana* sp? Which different treatments would be utilized for gaining effectiveness and how would you index the plants for disease-free character? (CO1&2,) (5 marks)
- Q2. How secondary metabolites are produced by using the hairy root technique in *Trillium govianum* ? Conceptualize the complete methodology. (CO3) (4marks)
- Q3. Which technology would be utilized for the development of Somatic hybrids of Apple and Apricot plants? How you can verify the production of desired and reproducible Somatic Hybrid? (CO3 &6 )( 4 marks)
- Q4. How would you carry out the genetic modification of *Musa* sp. for red fruit color? Explain the methodology for the production of the same by using the Biolistic gun method. (CO4 ) (4marks)
- Q5. An animal cell culture environment is essential for the maintenance of cell lines. Design an optimum cell culture environment for the maintenance of fibroblasts. (5 Marks)(CO2)
- Q6 . Monitoring the response and health of cells in culture after treatment with various stimuli is carried out by various methods:
- Total of 100,000 cells are stained with trypan blue. 10,000 cells retained the trypan blue stain. Calculate the viable cells. (2 Marks)
  - How would you measure the metabolic activity of the cell? (2 Marks)
  - Address two basic questions in cell culture: Are the cells dying? How are they dying? (3 Marks) (CO5)
- Q7. Microtubules, microfilaments, and intermediate filaments have different functional properties in maintaining structure and cellular functions. Explain.(5 Marks) (CO6)