JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS- 2025

B.Tech-VII Semester (BT)

COURSE CODE (CREDITS): 18B11BT311 (3-1-0)   MAX. MARKS: 25

COURSE NAME: Genetics

COURSE INSTRUCTORS: Dr Sudhir Syal/ Dr Tyson   MAX. TIME: 1 Hour 30 Min

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

(b) The candidate is allowed to make Suitable numeric assumptions wherever required

for solving problems

Q.No	Question	CO	Marks
Q1	Outline the process of meiosis in oogenesis, highlighting the formation and role of polar bodies.	I	3
Q2	Classify chromosomal disorders into structural and numerical types, providing examples and explaining their causes.	IV	3
Q3	Define cell potency and differentiate between totipotent, pluripotent, and multipotent cells with examples from embryonic development.	II	3
Q4	What is cell fate determination and how do specification and commitment contribute to this process also compare autonomous and conditional specification of cell fate	II	4
Q5	Outline the key steps of fertilization in sea urchins and describe the fast and slow blocks to polyspermy in sea urchins and their significance.	II	4
Q6	Describe the process of gastrulation in mammals, focusing on the role of the inner cell mass and primitive streak.	II	4
Q7	Calculate the allele and genotype frequencies for a population in Hardy-Weinberg equilibrium, given that 16% of individuals are homozygous recessive for a trait. Discuss how deviations from Hardy-Weinberg equilibrium can indicate evolutionary processes	III	4