JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2024

B.Tech-3rd Semester (Biotechnology)

COURSE CODE (CREDITS): 18B11BT311 (04)　　　　　　MAX. MARKS: 35

COURSE NAME: Genetics

COURSE INSTRUCTOR: Prof. Sudhir Kumar　　　　　　MAX. TIME: 2 Hours

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	a) Evaluate the impact of Balanced Polymorphism on human beings giving at least one example.	IV	3
	b) Distinguish between Crossing over and Transposition. Justify with the help of an example and diagram.		2
	c) Examine the impact of monosomy in humans by giving an example.		2
Q2	a) Identify genotypes and phenotypes of the following by making a Fork Line Diagram – AABb x AaBb	I	3
	b) Calculate the frequency of heterozygotes in a population if frequency of recessive allele is 0.2.		2
	c) Assess the probability of 02 normal children out of 04 if a couple is suffering from an autosomal recessive disorder.		2
Q3	a) Identify the ethical issues in Genetics and elaborate your points.	VI	3
	b) Discuss Luria Delbruk Fluctuation Test with an example and necessary illustrations.		3
	c) Evaluate the affect of sexual reproduction on variations.		1
Q4	a) Frequency of p allele is 0.3 and q is 0.7. Genetic fitness of homozygous dominant individuals (W11) is 1.5 and for heterozygotes (W12) is also 1.5 , where as for homozygous recessive individuals genetic fitness (W22) is 1.0. Assess the frequency of p and q after one generation. Discuss your results in light of Fischer's theorem.	III	5
	b) How does a person have 47 chromosomes? Justify your answer with an example.		2
Q5	a) Arabidopsis and Drosophila are model organisms for study in Genetics. Justify these giving appropriate reasons.	V	3
	b) Differentiate between Polygenic inheritance and Pleiotropism by giving at least one example.		2
	c) Evaluate Darwin's Revolution in light of Origin of Species.		2