

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATIONS-2022

B.Tech-III Semester (BT)

COURSE CODE (03 CREDITS): 18B11BT311

MAX. MARKS: 15

COURSE NAME: Genetics

COURSE INSTRUCTOR: Dr. Sudhir Kumar

MAX. TIME: 1 Hour

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

Q1. A): If a person is suffering from cystic fibrosis which is an autosomal recessive disease married a women who is carrier of that disease, out of their three children; what is the probability that two will be normal?

CO I [1.5 marks]

B) A person is having Huntington disease with heterozygous genotype married a women who is normal, they have four children; what is the probability that two will be normal?

CO I [1.5 marks]

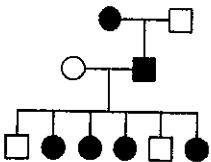
Q2: Mendel's experiments showed the following results:- 675 tall plants and 325 dwarf plants. Hypothesize the 3:1 ratio and test through chi-square analysis.

	Probability					
	0.90	0.50	0.20	0.05	0.01	0.001
df 1	0.02	0.46	1.64	3.84	6.64	10.83
df 2	0.21	1.39	3.22	5.99	9.21	13.82
df 3	0.58	2.37	4.54	7.82	11.35	16.27

$\chi^2$  values

CO I [03 marks]

Q3: A) Identify the pattern of inheritance in the following pedigree and genotype of each individual. Support your answer with logical reasoning.



CO II [02 marks]

C) How will you decide the heterozygous status of a tall pea plant (show your work).

CO II [01 mark]

Q4: A) How many different types of gametes can be formed by individuals of following genotypes i) AaBbCc ii) AaBBcc iii) AaBbCcDdEe iv) AaBBCC (show your work)

CO III [02 marks]

B) What is the role of Position Effect in modifying gene expression?

CO III [01 marks]

Q5: A) For genes whose expression seems to be tied to the sex of individuals, how do we know whether a gene is X-linked in contrast to exhibiting sex-limited or sex-influenced inheritance?

CO II [02 marks]

B) A woman with O blood group is searching for her father. Which blood type can she eliminate from her search? Justify your answer with proper reasons.

CO II [01 mark]