COURSE CODE (CREDITS): 02

COURSE NAME: 20 MS1BT115

COURSE INSTRUCTORS: Prof. Sudhir Kumar

MAX. MARKS: 35

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: 1 a) Elaborate the misconceptions regarding Concept of Gene in the Pre DNA era.

b) Elucidate the importance of QTL analysis in plants by giving an example. 4+3

Q2: a) How do Bottleneck effect, Founder effect influence the populations? Analyze with the help of an example.

b) Differentiate between Test cross and Back cross with the help of an example. 4+3

Q3: a) Enumerate the assumptions of Hardy-Weinberg Principle.

b) Highlight the importance of Fischer's theorem in Genetics.

c) 15 persons out of 150 are suffering from an autosomal recessive disorder. Calculate the percentage of heterozygous individuals. 3+2+2

Q4: a) Identify an example of modifier gene and design crosses to justify your response.

b) Calculate the probability of having 02 daughters out of five children born to a couple.

c) Red colour is dominant to White in flower color of a plant. Will while colour allele decrease in percentage in long term future? Justify your answer. 3+2+2

Q5:- a) When the interrupted mating technique was used with five different strains of Hfr bacteria, the following orders of gene entry and recombination were observed. On the basis of these data, draw a map of the bacterial chromosome. Do the data support the concept of circularity?

Hfr Strain	Order				
1	T	C	H	R	O
2	H	R	O	M	B
3	M	O	R	H	C
4	M	B.	A	K	T
5	C	T	K	A	B

b) X-linked dominant disorder exists in a male and he married to a Carrier female. Prepare a cross and show all possible outcomes in next generation.

b) Synthetic Lethality is linked to cure Cancer. Provide evidence to this statement.

c) Elaborate the cause, symptoms and cure of Muscular Dystrophy. 3+2+2