

No. of Q.P.: 5989

UNIQUE PAPER CODE:

2531362  
2531303

NAME OF THE PAPER:

CONCEPTS OF GENETICS  
B.Sc (Hons) Microbiology  
MICROBIOLOGY ERSTWHILE FYUP

NAME OF COURSE:

SEMESTER

III

DURATION

3 HOURS

MAXIMUM MARKS:

75 MARKS

INSTRUCTIONS FOR CANDIDATES:

Attempt five questions in all. All questions carry equal marks.

**Set B**

1. a. Discuss the following as model organism in genetics?

(i) *E.coli*.

(ii) *Drosophila melanogaster*

b. Explain the mechanism of inheritance in the following organisms

(i) *Saccharomyces*

(ii) *Limnaea Peregina peregrina*

3.5x2=7

4x2=8

a. Define the following terms (Any Six):

Back cross, Expressivity, Genotype, Euploidy, Monozygosity, Gene, Acentric Chromosome

2x6=12

b. A woman with blood type B has a child with blood type O. What are the genotypes of mother and child? What genotypes could the father NOT have?

3

Differentiate between the following pairs:

- SINES and LINES
- Deletion and duplication
- G banding and R banding technique
- Monosomy and trisomy
- Lampbrush and Polytene chromosome

5x3=15

Write short notes (any three):

3x5=15

- Telomere
- Dominant Epistasis
- Paracentric Inversion
- Multiple allelism
- Cot Value

a. Given is test cross data for a 3 point cross. Determine the order of the genes, make a map showing all map distances, and determine the interference value and interpret your results.

8

pr = purple eyes

bl = black body

dp = dumpy bristle

phenotype	count
Wild	754
Black	58
Purple	413
Dumpy	22
Black	23
Purple dumpy	418
Purple black	61
Dumpy black	752
Purple dumpy black	

A heterozygous tall pea plant with purple flower is crossed with short, white flowered variety. Determine the genotypes and phenotypes of offsprings. Discuss the results obtained?

4

If a man and a woman are heterozygous for a gene and if they have four children, what is the chance that all four will also be heterozygous?

3

a. Explain the packaging of double stranded DNA to the level of metaphase chromosomes with diagrams.

7

b. Write the contributions of following scientists:

2x4=8

- Hugo de Vries
- Bateson
- Correns
- McClintock