

[This question paper contains 4 printed pages.]

Sr. No. of Question Paper : 1460

F-7

Your Roll No.....

Unique Paper Code : 2531302

Name of the Paper : CONCEPTS OF GENETICS

Name of the Course : MICROBIOLOGY ERSTWHILE FYUP

Semester : III

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt five questions in all.
3. All questions carry equal marks.

1. (a). Discuss the following as model organism in genetics : (3.5×2=7)

(i) *E.coli*

(ii) *Saccharomyces cerevisiae*

- (b) Explain the mechanism of inheritance in the following organisms : (4×2=8)

(i) *Paramecium*

(ii) *Limnaea peregra*

2. (a) Define the following terms (Any Six) : (2×6=12)

Pleiotropism, Penetrance, Phenotype, Aneuploidy, Heterozygosity, allele, Dicentric Chromosome.

P.T.O.

- (b) A woman with blood type A has a child with blood type O. What are the genotypes of the mother and child? What genotypes could the father NOT have? (3)
3. Differentiate between the following pairs : (5×3=15)
- (a) SINES and LINES
 - (b) Inversion and Translocation
 - (c) C banding and T banding technique
 - (d) Turners and Klinefelter syndrome
 - (e) Constitutive and Facultative heterochromatin
4. Write short notes (**any three**) : (3×5=15)
- (a) Centromere
 - (b) Recessive Epistasis
 - (c) Crossing over
 - (d) Codominance
 - (e) Cot Value
5. (a) Given below is a 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)
- A_p = Apricot eyes

- bl = black body
- fb = fine bristle

Phenotype	count
Wild	756
apricot	59
fine	414
black	21
Apricot fine	23
apricot black	417
fine black	60
Apricot fine black	750

- (b) A heterozygous pea plant with round seeds with purple flower is crossed with plant with wrinkled, white flowered variety. Give the genotypes and phenotypes of offsprings. Discuss the results obtained? (4)
- (c) 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)
6. (a) Explain the packaging of double stranded DNA to the level of metaphase chromosomes with diagrams. (7)

(b) Write the contributions of following scientists :

(2×4=8)

(i) T.H. Morgan

(ii) Punnett

(iii) Correns

(iv) McClintock