

IV/ BIO-TECH (iv)

2015

(4th Semester)

BIOTECHNOLOGY

Paper : BT-IV

(Genetics)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(Marks : 35)

The questions are of equal value

1. Explain the chromosomal theory of inheritance.

Or

Explain codominance with a suitable example.

2. Describe the four types of chromosomal sex-determining mechanisms.

Or

Describe the relation between crossing-over and the phenomenon of linked genes.

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(Turn Over)

3. Explain gene mapping of a cross involving two loci with a suitable example.

Or

Explain diploid gene mapping where recombination involves more than two genes.

4. Explain Griffith's experiment that led to the discovery of transformation concept.

Or

Describe the mechanism of conjugation in bacteria.

5. Explain the abnormal variations found in the structure of chromosomes.

Or

Write a note on chromosome's structure.

2015

(4th Semester)

BIOTECHNOLOGY

Paper : BT-IV

(**Genetics**)

(PART : A—OBJECTIVE)

(Marks : 20)

The figures in the margin indicate full marks for the questions

SECTION—I

(Marks : 5)

Put a Tick (✓) mark against the correct answer in the brackets provided : 1×5=5

1. aa mates with Aa. What will be the characteristic of their offspring?

(a) 100% recessive ()

(b) 75% recessive ()

(c) 50% recessive ()

(d) 25% recessive ()

2. There are three genes a, b, c. Percentage of crossing-over between a and b is 20%, b and c is 28%, and a and c is 8%. What is the sequence of genes on chromosome?

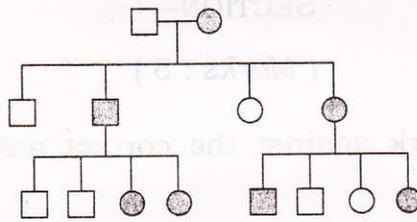
(a) b, a, c ()

(b) a, b, c ()

(c) a, c, b ()

(d) b, c, a ()

3. The figure shown below depicts the inheritance pattern :



Choose the correct answer.

(a) X-linked dominant trait ()

(b) X-linked recessive trait ()

(c) Y-linked dominant trait ()

(d) Y-linked recessive trait ()

4. Which method of gene transfer involves direct contact between the bacteria?

(a) Conjugation ()

(b) Transduction ()

(c) Transformation ()

(d) All of the above ()

5. If a zygote has 4 chromosomes, the somatic cells formed from it have — chromosomes.

(a) 2 ()

(b) 4 ()

(c) 8 ()

(d) 16 ()

SECTION—II

(Marks : 15)

Answer the following briefly :

3×5=15

1. Write a note on sex-linked inheritance.

2. Give the characteristics of physical mapping.

a) Conjugation

b) Transduction

c) Transformation

d) All of the above

5. If a cell has 4 chromosomes, the somatic cells have how many chromosomes?

(a) 2

(b) 4

(c) 8

(d) 16

3. Write a note on IS elements.

4. Write a note on lampbrush chromosome.

BIO-TECHNOLOGY

Part IV

(Genetics)

(PART : A—OBJECTIVE)

(Marks : 20)

The figure in the margin indicates full marks for the questions

SECTION—1

(Marks : 5)

Put a tick (✓) mark against the correct answer in the bracket provided.

- 1. In a cross between two heterozygous individuals, the phenotypic ratio of their offspring is:
(a) 100% recessive
(b) 75% recessive
(c) 50% recessive
(d) 25% recessive

5. Solve the dihybrid cross between $AaBB \times aaBb$ using the forked line or branch diagram method.

and c is 85%. What is the sequence of genes on chromosome?

(a) b, c, a

(b) a, b, c

(c) a, c, b

(d) b, c, a

3. The figure shown below depicts the inheritance pattern of



Choose the correct answer.

(a) X-linked dominant trait

(b) X-linked recessive trait

(c) Y-linked dominant trait

(d) Y-linked recessive trait
