

IV / BOT (iv)

2 0 1 5

(4th Semester)

BOTANY

FOURTH PAPER

(Microbiology, Cytology, Genetics and Evolution)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(Marks : 35)

*The figures in the margin indicate full marks
for the questions*

1. Describe the process of bacterial transduction with a neat labelled diagram. 7

Or

Write short notes on the following : $3\frac{1}{2}+3\frac{1}{2}=7$

- (a) Bacterial cell
(b) Scope of microbiology

2. Discuss the role of microorganisms in cycling of carbon. 7

G15—550/264a

(Turn Over)

(2)

Or

Write short notes on the following : $3\frac{1}{2}+3\frac{1}{2}=7$

(a) Alcoholic beverages

(b) Fermented foods

3. What is cell? With labelled diagram, explain the ultrastructure of plant cell. $1+6=7$

Or

Write notes on the following : $3\frac{1}{2}+3\frac{1}{2}=7$

(a) Incomplete dominance

(b) Complementary genes

4. Define sex determination. Describe the chromosome theory of sex determination.

$1+6=7$

Or

Give brief accounts on the following :

$3\frac{1}{2}+3\frac{1}{2}=7$

(a) Linkage map

(b) Cytological basis of crossing-over

5. Describe Darwin's theory of evolution. Mention its demerits. 7

(3)

Or

Write short notes on the following : $3\frac{1}{2}+3\frac{1}{2}=7$

- (a) Chief features of Lamarck's theory of evolution
- (b) de Vries mutation theory

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(PART : A—OBJECTIVE)

(Marks : 20)

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SECTION—I

(Marks : 5)

Select the correct answer by putting a Tick (✓) mark in the brackets provided :

1×5=5

1. When spherical bacteria form an irregular group, they are called

(a) streptococci ()

(b) staphylococci ()

(c) tetracocci ()

(d) sarcinae ()

2. The microbial reduction of nitrate to nitrite with the liberation of molecular nitrogen and nitrous oxide is called

(a) nitrification ()

(b) nitrosification ()

(c) ammonification ()

(d) denitrification ()

3. Cell division which occurs mainly in the somatic cells of the organism is

(a) mitosis ()

(b) meiosis ()

(c) amitosis ()

(d) All of the above ()

4. Crossing-over takes place in

(a) leptotene ()

(b) zygotene ()

(c) pachytene ()

(d) diplotene ()

5. Progressive evolution

(a) involves a rapid development of organs or structure resulting thereby in the formation of new organs ()

(b) takes place from complex to simpler types resulting thereby in degeneration in structure ()

(c) takes place gradually from simple to more complex types resulting thereby in more complexity in structure ()

(d) None of the above ()

(4)

SECTION—II

(Marks : 15)

3×5=15

Write short notes on the following :

1. Autotrophic and heterotrophic bacteria

(8)

2. Microbial production of enzymes

3. Lethal genes

4. Significance of crossing-over

(8)

5. Organic evolution

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IV/BOT (iv)