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(6th Semester)

ZOOLOGY

Paper : ZL–IX

(Molecular Biology and Genetics)

Full Marks : 55

Time : 2½ hours

(PART : A—OBJECTIVE)

(*Marks* : 20)

The figures in the margin indicate full marks for the questions

SECTION—A

(*Marks* : 5)

Tick (✓) the correct answer in the brackets provided : 1×5=5

1. The RNA that brings amino acids to ribosomes during translation is

(a) mRNA ( )

(b) tRNA ( )

(c) rRNA ( )

(d) None of the above ( )

2. Damage to a single nitrogenous base is repaired by the enzyme glycosylase in

(a) base excision repair ( )

(b) nucleotide excision repair ( )

(c) double-strand breakage ( )

(d) None of the above ( )

3. Three structural genes are involved in

(a) transcription ( )

(b) translation ( )

(c) *lac* operon ( )

(d) None of the above ( )

4. A cross between red and white flowers leads to pink flower in the F_1 generation and the condition is called as

(a) codominance ( )

(b) incomplete dominance ( )

(c) epistasis ( )

(d) multiple allelism ( )

5. Change in entire sets of number of chromosomes is called as

(a) aneuploidy ( )

(b) euploidy ( )

(c) monosomy ( )

(d) trisomy ( )

SECTION—B

(*Marks* : 15)

Write short notes on the following : 3×5=15

1. Euchromatin

2. Mismatch repair

3. Characteristics of genetic code

4. Pleiotropism

5. Haemophilia

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

The figures in the margin indicate full marks for the questions

1. Describe the structure of DNA with suitable diagram. 7

OR

Write the structure and functions of polytene chromosome with diagram.

2. Explain the mechanism of DNA replication by semi-conservative method with diagram. 7

OR

Explain the method of DNA repair by base excision and nucleotide excision processes with diagrams.

3. Explain the process of translation in prokaryotic cell. 7

OR

Describe the process of transcription in prokaryotic cell with diagram.

4. Explain cytoplasmic inheritance with suitable example. 7

OR

Write notes on the following : 3½+3½=7

(a) Law of segregation

(b) Codominance

5. What is mutation? Write down the causes and types of mutation. 1+6=7

OR

Write notes on the following : 3½+3½=7

(a) Crossing over

(b) Klinefelter's syndrome

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