2018

ZOOLOGY

(Major)

Paper : 4·2

(Genetics)

Full Marks : 60

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Answer the following as directed : 1×7=7

(a) Translocation involves exchange of segments between non-homologous chromosomes.

(State True or False)

(b) 30% of nucleotides in DNA from the locust is 'A', what will be '%' value for 'T' [A = T]?

(c) Morgan and Castles formulated 'the chromosome theory of linkage' in the year of 1812/1910/1912.

(Choose the correct answer)

(d) The strength of linkage is inversely proportional to distance between the genes.

(State True or False)

(e) The point at which homologous chromosome forms a cross is called _____.

(Fill up the blank)

(f) The graphic representations of genes are known as _____.

(Fill up the blank)

(g) The initiator and terminator codons are known as signals and this phenomenon is known as a recombination/ conjugation/punctuation.

(Choose the correct answer)

2. Give brief answer to the following : 2×4=8

(a) What is tautomerization?

(b) Write the differences between nucleotides and nucleosides.

(c) Write the differences between transformation and transduction in bacteria.

(d) What do you mean by mitochondrial DNA?

3. Answer any *three* questions from the following : 5×3=15

(a) Write a note on Tobacco Mosaic virus.

(b) Describe the role of DNA polymerase enzymes in the process of DNA replication.

(c) Explain incomplete dominance and codominance with suitable example.

(d) How is crossing over greatly reduced by the phenomenon of interference and coincidence?

4. Define crossing over. Illustrate the structure of synaptonemal complex with its significance. 1+6+3=10

Or

What do you mean by mutation in molecular level? Describe various mechanisms of change in gene at nucleic level. 2+8=10

5. Write down the salient features of multiple allele. Explain this phenomenon taking 'ABO' blood groups and their inheritance. 3+7=10

Or

What is nucleic acid? Write the biological significance of Watson and Crick Model of DNA. 4+6=10

6. Explain the process involved in recombination of genetic material in bacteria and virus. 5+5=10

Or

What is polyploidy? Discuss different kinds of polyploids. Give brief account on the phenotypic effects of polyploidy in organisms. 1+6+3=10

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