Q.P. Code :19594

[Time: Three Hours] **[Marks:100]**

Please check whether you have got the right question paper.

N.B:
1. All questions are compulsory.
2. Figures to the right indicate marks.
3. Draw neat and labelled diagrams wherever necessary.

Q. 1 A) Choose the correct option from the following: **(10)**

i) DNA replication occurs in _____.
a) S phase b) G1 Phase c) G2 Phase d) M Phase

ii) Who coined the term Mitochondria_____
a) Kolliker b) Altman c) Benda d) Flemming

iii) The anticodon region is an important structural component of _____
a) m – RNA b) r – RNA c) DNA d) t – RNA

iv) In _____ type of inversion centromere is not a part of inverted segment.
a) Pericentric b) Paracentric c) Genetic inversion d) Zygotic inversion

v) *Drosophila* has _____ pairs of chromosomes.
a) 3 b) 4 c) 6 d) 8

vi) Y – linked genes are also called _____.
a) Holandric genes b) Plasma genes c) Cytoplasmic genes d) Sex- linked genes

vii) In *Mirabilis jalapa* plant, if the female parent is from green branch and the male parent from variegated branch the colour of the offspring will be _____.
a) White b) Variegated c) Green d) Mixed

viii) _____ is ATP dependent unwinding enzyme which promotes separation of the two parental strands by disrupting hydrogen bonds.
a) Nuclease b) Helicase c) Ligase d) Primase

ix) The replication of DNA starts at a specific or unique sequence of nitrogenous bases in the DNA molecule called _____ of replication.
a) Terminal b) Priming c) Origin d) Initiation

x) The enzyme _____ hydrolyses the p-p into inorganic phosphates (pi) & releases energy in DNA replication.
a) Pyrophosphatase b) Helicase c) Ligase d) Primase

B) Answer the following in one or two sentences. **(10)**

i) What are the two subunits of prokaryotic & Eukaryotic ribosome?
ii) What is the function of DNA.
iii) Define chromosomal aberration.
iv) What is haemophilia.
v) What is the function of SSB proteins.

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Q. 2 Answer **any two** of the following: **(20)**

i) Define Mitosis. Explain the various stages of Mitosis.
ii) Describe the Watsons and Crick's double helical structure of DNA.
iii) Describe briefly the structure of t-RNA. Add a note on its functions.
iv) Describe the Ultrastructure of mitochondria and give its functions.

Q. 3 Answer **any two** of the following: **(20)**

i) What are chromosomal aberrations? Discuss translocation with reference to their cytological and genetic significance.
ii) Explain Genic balance theory of sex determination in *Drosophila*.
iii) What is sex linked inheritance? Explain it with reference to haemophilia in human beings.
iv) What is cytoplasmic inheritance? Explain streptomycin resistance in *chlamydomonas*.

Q. 4 Answer **any two** of the following: **(20)**

i) Explain the role of various DNA polymerases involved in eukaryotic DNA replication.
ii) Explain the three modes of DNA replication.
iii) Explain the process of transcription in prokaryotes.
iv) Describe in brief the RNA processing involved in eukaryotes.

Q. 5 Write short notes on **any four**. **(20)**

i) Function of Glyoxysomes and Peroxisomes.
ii) Significance of mitosis and meiosis.
iii) Duplications.
iv) XX-XY type of sex determination.
v) Sex influenced character.
vi) Central Dogma.

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