[Time: 3 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 full marks.
3. Draw neat and labelled diagrams wherever necessary.

Q.1 A) Choose the correct option from the following and **REWRITE** the sentence. [10]

i) DNA replication occurs in_____ Phase.
a) S
b) G_1
c) G_2
d) M

ii) _____deals with formation and decomposition of hydrogen peroxide.
a) Peroxisomes
b) Ribosomes
c) Oxysomes
d) Glyoxysomes

iii) Ribosomes attached to the m-RNA in string are called_____.
a) Polyribosomes
b) Quantasomes
c) Multiribosomes
d) Nucleosomes

iv) Glyoxysomes are organelles involved in conversion of_____.
a) amino acids to proteins
b) amino acids to carbohydrates
c) Fatty acids to carbohydrates
d) fatty acids to lipids

v) Prader Willi syndrome is observed in human beings due to deletion of a segment in the _____chromosome.
a) 3^{rd}
b) 5^{th}
c) 10^{th}
d) 15^{th}

vi) Barr body in the female mammalian somatic cells is an inactivated_____
a) Y- Chromosome
b) X- Chromosome
c) Z- Chromosome
d) W - Chromosome

vii) The sum total of cytoplasmic genetic material is called_____.
a) Cyton
b) Plasmon
c) Cistron
d) Recon

viii) In _____mode of DNA replication, one of the daughter molecules has both parental strands and the other contains both newly synthesized strands.
a) Conservative
b) Semi-conservative
c) Disruptive
d) Continuous

ix) The function of _____enzyme is to synthesize mRNA primer.
   a) Nuclease
   b) Helicase
   c) Ligase
   d) Primase

x) The nucleotides taking part in DNA replication are_____.
   a) dNMP
   b) dNTP
   c) dNPP
   d) dNDP

B) **Answer the following in one or two sentences:** [10]

i) State two functions of mitochondria.
ii) Name the two types of translocations.
iii) What is sex linked inheritance?
iv) What do you mean by semi-conservative mode of DNA replication?
v) What is Pribnow box?

Q.2 **Answer any two of the following:** [20]

i) Explain the ultra-structure of mitochondrion in detail.
ii) Describe briefly the structure of DNA. Add a note on its function.
iii) Define Mitosis. Explain the various stages of mitosis.
iv) Describe the structure of t-RNA and the functions of its different arms.

Q.3 **Answer any two of the following:** [20]

i) What are chromosomal aberrations? Discuss inversions with reference to their origin, and cytological significance.
ii) Explain genic balance theory of sex determination in *Drosophila.*
iii) What is Haemophilia? Explain inheritance of Haemophilia in man.
iv) What is cytoplasmic inheritance? Explain Male sterility in Maize.

Q.4 **Answer any two of the following:** [20]

i) Describe briefly the molecular mechanism of DNA replication in prokaryotes.
ii) Explain briefly Meselson and Stahl's experiment of DNA replication.
iii) Explain the process of transcription in prokaryotes.
iv) Describe the steps involved in RNA processing in eukaryotes.

Q.5 **Write short notes. (Any Four)** [20]

i) Metaphase I of Meiosis.
ii) A- DNA.
iii) Colour Blindness.
iv) Sex determination in *Melandrium.*
v) Plastid transmission in *Mirabilis jalapa.*
vi) Eukaryotic RNA polymerases.

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