

[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<sub>1</sub>
  - c) G<sub>2</sub>
  - d) M
- ii) \_\_\_\_\_ deals with formation and decomposition of hydrogen peroxide.
  - a) Peroxisomes
  - b) Ribosomes
  - c) Oxsomes
  - 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<sup>rd</sup>
  - b) 5<sup>th</sup>
  - c) 10<sup>th</sup>
  - d) 15<sup>th</sup>
- 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.
- Nuclease
  - Helicase
  - Ligase
  - Primase
- x) The nucleotides taking part in DNA replication are \_\_\_\_\_.
- dNMP
  - dNTP
  - dNPP
  - dNDP

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

[10]

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

**Q.2 Answer any two of the following:**

[20]

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

**Q.3 Answer any two of the following:**

[20]

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

**Q.4 Answer any two of the following:**

[20]

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

**Q.5 Write short notes. (Any Four)**

[20]

- Metaphase I of Meiosis.
- A- DNA.
- Colour Blindness.
- Sex determination in *Melandrium*.
- Plastid transmission in *Mirabilis jalapa*.
- Eukaryotic RNA polymerases.

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