

Q.P. Code :19593

[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)

- The two sub units of prokaryotic ribosomes are _____.
a) 60 S & 40 S b) 50 S & 30 S c) 60 S & 30 S d) 70 S & 30 S
- During which stage of prophase-I, crossing over takes place _____.
a) Leptotene b) Zygotene c) Pachytene d) Diplotene
- Which of the following type of DNA is left handed helix _____.
a) A b) Z c) B d) C
- Crossover suppressing characteristic is shown by _____ chromosomal aberration.
a) deletion b) duplication c) Inversion d) Translocation
- In reptiles and fishes _____ method of sex determination is found.
a) XX-XO b) XX-XY c) ZW-ZZ d) ZO-ZZ
- The daughters of a man who is colour blind and a woman who is homozygous dominant normal vision will be _____.
a) Colour blind b) Carrier c) Normal vision d) Colour blind and carrier
- Evidence of cytoplasmic inheritance in *Mirabilis jalapa* was first reported by _____.
a) Nass b) Correns c) Rhoades d) Sonneborn
- Messelson & Stahl used _____ bacterium in their experiments.
a) *E.coli* b) *Salmonella typhi* c) *Streptococcus pneumoniae* d) *Salmonella typhimurium*
- _____ protein binds to single - stranded DNA, and prevents it from forming duplex DNA.
a) DSB b) SSB c) TSB d) PSB
- Synthesis of _____ strand of DNA involves formation of series of discontinuous short segments of nucleotides called okazaki fragments.
a) Leading b) Lagging c) Parental d) Primer

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

- What is karyokinesis ?
- What is the function of peroxisome?
- Name the two types of inversion.
- What is the significance of cytoplasmic male sterility?
- What do you mean by replicon?

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Q. 2 Answer **any two** of the following: (20)
i) Describe the ultra structure of mitochondria. Add a note on its function.
ii) Describe the structure of t-RNA. Add a note on its function.
iii) Describe B and C forms of DNA.
iv) Define meiosis. Give a detailed account of prophase – I of meiosis – I.

Q. 3 Answer **any two** of the following: (20)
i) What are chromosomal aberrations? Discuss duplication with reference to their origin and genetic significance in *Drosophila*.
ii) Explain the methods of sex determination in homogametic females with the help of a suitable examples.
iii) What is sex-linked inheritance? Explain it with reference to haemophilia in human beings.
iv) Explain Cytoplasmic inheritance in *Mirabilis jalapa*.

Q. 4 Answer **any two** of the following: (20)
i) Explain the role of various enzymes involved in Eukaryotic DNA replication.
ii) Describe how Messelson-Stahl's experiment proved that DNA replication is semi-conservative.
iii) Describe briefly the molecular mechanism of DNA replication in prokaryotes.
iv) Explain the process of transcription in eukaryotes.

Q. 5 Write short notes on **any four**. (20)
i) Telophase
ii) Z-DNA
iii) ZO-ZZ type of sex determination
iv) Lyon's hypothesis
v) Translocations
vi) Central Dogma
