

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:

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- a. The site of aerobic respiration in eukaryotic cells is _____
i) Peroxisome ii) plastid iii) ~~mitochondria~~ iv) cilia
- b. How do the small molecules pass through the outer membrane of Mitochondria.
i) ATP pump ii) Carrier protein iii) Channels iv) Porins
- c. Which of the following is responsible for pigments synthesis and storage?
i) Leucoplast ii) chloroplast iii) chromoplast iv) etioplast
- d. In Grasshopper and Bugs _____ method of sex determination is
i) XX-XO ii) XX-XY iii) ZW-ZZ iv) ZO-ZZ
- e. In *Drosophila*, _____ method of sex determination is found
i) XX-XO ii) XX-XY iii) ZW-ZZ iv) ZO-ZZ
- f. Streptomycin resistance in *Chlamydomonas* is an example of
i) Cytoplasmic inheritance ii) X linked iii) Multiple allele iv) Polygenic
- g. _____ is the process for mRNA synthesis.
i) Replication ii) Transcription iii) Translation iv) Processing
- h. _____ is called as an Initiation codon.
i) CCA ii) UUG iii) AUG iv) UAA
- i. Enzyme Gyrase is a _____ type of enzyme.
i) RNA Polymerase ii) Topoisomerase iii) Holoenzyme iv) Ligase

Q.1 B) Answer the following in **one sentence**:

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- a) How many divisions are required to produce 128 gametes?
- b) Who introduced the term mitochondria?
- c) Define extranuclear inheritance.
- d) Define laggards.
- e) What is RNA?

- Q.2 Answer **any two** from the following: 20
- Explain ultrastructure and functions of mitochondria with neat labelled diagram.
 - Discuss the role of Glyoxysomes.
 - How do ribosomes work in prokaryotic and eukaryotic cell?
 - Elaborate on the various stages of Interphase.
- Q.3 Answer **any two** from the following: 20
- With suitable examples explain sex determination in homogametic females.
 - What is cytoplasmic inheritance? Explain the inheritance pattern with suitable example.
 - Explain translocation mutation with reference to its origin, genetics effect.
 - Define chromosomal aberrations. Discuss inversions with reference to their origin, cytological and genetic significance.
- Q.4 Answer **any two** from the following: 20
- Explain the processing of precursor mRNA.
 - Explain the Termination process of transcription in prokaryotes.
 - Explain Meselson and Stahl experiment
 - Explain the Initiation of transcription process in eukaryotes.
- Q.5 Write Short note on (any four): 20
- Z- DNA
 - Genetic RNA
 - Barr eye disease in *Drosophila*.
 - Philadelphia syndrome.
 - Difference between DNA and RNA.
 - Polyadenylation