

<b>Anjuman Islam Degree College of Science Murud, Janjira Murud-Janjira Raigad-402401 Affiliated to University of Mumbai</b>	
<b>Class: S. Y. B Sc</b>	<b>Subject: Botany-II</b>
<b>Semester: III</b>	<b>Course Code: USB0302</b>
<b>Exam Event: Additional Exam Summer 2024(FH)</b>	<b>Marks: 100</b>
<b>Date: 23/03/2024</b>	<b>Duration: 03:00 Hours</b>

**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 sentences. (10M)**

- i. Glyoxysomes are organelles involved in Gluconeogenesis which is Conversion of-----  
a) Amino acids to proteins    b) Fatty acids to carbohydrates  
c) Amino acids to carbohydrates    d) Fatty acids to lipids
- ii. Pairing of homologous chromosomes is seen during-----  
a) Leptotene    b) Zygotene    c) Pachytene    d) Diplotene
- iii. The number of mitochondria per cell depends on -----  
a) pH of the cell    b) Shape of the cell    c) Functional state of the cell    d) a & b
- iv. Adjacent nucleotides are joined by ----- bond.  
a) Co-valent bond    b) Hydrogen bond    c) Ionic Bond    d) Phosphodiester bond
- v. Barred eye of *Drosophila* is an example of -----chromosomal aberration.  
a) Deletion    b) Duplication    c) Inversion    d) Translocation
- vi. Barred eye of *Drosophila* is an example of -----chromosomal aberration.  
a) Deletion    b) Duplication    c) Inversion    d) Translocation
- vii. The chromosomes which fails to move to either poles during anaphase are called -----  
a) Bridges    b) Laggards    c) Karyotype    d) Isochromosome
- viii. -----is the process by which DNA makes exact and accurate copy of itself.  
a. Replication    b. Transcription    c. Translation    d. Polymerization
- ix. In their experiment Messelson and Stahl used ----- bacterium.  
a. *E. coli*    b. *Salmonella typhi*    c. *Streptococcus pneumoniae*    d. *Salmonella typhimurium*
- x. ----- enzyme catalyzes the synthesis of RNA primers to initiate DNA replication.  
a. Nuclease    b. Helicase    c. Ligase    d. Primase

**Q. 1. B) Answer the following in one or two sentences. (10M)**

- i. What are the two types of ribosomes?
- ii. Name the purines and pyrimidines.
- iii. Define chromosomal aberration.
- iv. Give an example of sex influenced character in man.
- v. Define the term Replication.

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

**(20M)**

- i. Explain in detail the ultra-structure of mitochondrion. Add a note on its function.
- ii. What is cell cycle? Explain various phases of cell cycle.
- iii. Explain A & Z forms of DNA.
- iv. Define Mitosis. Explain the various stages of mitosis.

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

**(20M)**

- i. What are chromosomal aberrations. Discuss duplications with reference to their origin, cytological and genetic significance.
- ii. Explain the methods of sex determination in homogametic females with suitable examples.
- iii. What is sex linked inheritance. Explain it with reference to colour blindness in human beings.
- iv. What is cytoplasmic inheritance. Explain streptomycin resistance in *Chlamydomonas*.

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

**(20M)**

- i. Describe how Meselson-Stahl experiment proved that DNA replication is semi conservative.
- ii. Explain the role of various enzymes involved in prokaryotic DNA replication.
- iii. Describe in brief the RNA polymerases, Transcription factors and promoters involved during transcription in eukaryotes.
- iv. Describe in brief the RNA processing involved in Prokaryotes.

**Q. 5: Write Short Notes on (any four):**

**(20M)**

- i. Peroxisomes
- ii. Structure of t-RNA
- iii. XX – XY type of sex determination.
- iv. Lyon's hypothesis
- v. Leading and lagging strands
- vi. Eukaryotic RNA polymerases