

Roll No. ....

**E-529****M. Sc. (Second Semester) (Main/ATKT)****EXAMINATION, May-June, 2021**

BOTANY

Paper Second

**(Molecular Biology)***Time : Three Hours ]**[ Maximum Marks : 80***Note :** Attempt all Sections as directed.**Section—A**

1 each

**(Objective/Multiple Choice Questions)****Note :** Attempt all questions.

Choose the correct answer :

1. The measurement unit of DNA :

- (a) Picogram
- (b) Microgram
- (c) Base pair
- (d) Kilo base pair

2. Helical twist in B-DNA :

- (a)  $38^\circ$
- (b)  $36^\circ$
- (c)  $32^\circ$
- (d)  $-10^\circ - 50^\circ$

3. Tailor, Woods *et al.* 1957 experimental evidence for semi-conservative mode replication the ..... species.

- (a) *Vicia faba*
- (b) China rose
- (c) *Pisum sativa*
- (d) Rose

4. DNA polymerase I is also known as :

- (a) Holoenzyme
- (b) Core enzyme
- (c) Kornberg enzyme
- (d) All of the above

5. In eukaryotes the helicase enzyme is ..... .

- (a) DNA-B
- (b) DNA-A
- (c) MCM
- (d) MDM

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6. Which of the following is not termed as hybridization ?

- (a) DNA and *c*DNA
- (b) DNA and *m*RNA
- (c) DNA from different species
- (d) DNA from male and female of same species

7. Gene mutation occurs at the time of :

- (a) DNA repair
- (b) DNA replication
- (c) Cell division
- (d) RNA transcription

8. X-rays cause mutation by :

- (a) Deletion
- (b) Transition
- (c) Transversion
- (d) Base substitution

9. Which of the following is not ionizing radiation ?

- (a) X-rays
- (b) UV-rays
- (c) Cosmic-rays
- (d) Alpha-rays

10. There are how many histones in the core of a nucleosome ?

- (a) Eight (8)
- (b) Six (6)
- (c) Four (4)
- (d) Two (2)

11. The full name of DAG :

- (a) Di Acyl Glycerol
- (b) Di Acetic Glucose
- (c) Depend Acyl Glycerol
- (d) None of the above

12. The Burkitt lymphoma belongs to ..... .

- (a) Blood cancer
- (b) Brain cancer
- (c) Breast cancer
- (d) All of the above

13. Mutated codon becomes stop signal. This condition belongs to :

- (a) Nonsense mutation
- (b) Sense mutation
- (c) Neutral mutation
- (d) Silent mutation

14. Tn 10 element belongs to :
- (a) Composite Tn element
  - (b) Non-composite Tn element
  - (c) AC-DS element
  - (d) None of the above
15. Proteins targeted to mitochondrial matrix are tagged with matrix targetting sequence rich in :
- (a) Serin and threonine
  - (b) Serin, threonine, lysine and arginine
  - (c) Serin and lysine
  - (d) Methionine and lysine
16. NMR is useful for :
- (a) Tinsue metabolism by spectroscopy
  - (b) Heartbeats
  - (c) X-rays
  - (d) None of the above
17. Immunofluorescence is a technique used for :
- (a) Electron microscope
  - (b) Light microscope
  - (c) Confocal microscope
  - (d) Light microscopy with a fluorescence microscope

P. T. O.

18. The significance of 5' capping :
- (a) It protects the *mRNA*.
  - (b) Translation initiation
  - (c) Transport of *mRNA* from nucleus to cytoplasm
  - (d) All of the above
19. The bacterial RNA polymerase consists of :
- (a) Core enzyme
  - (b)  $\sigma$ -factor
  - (c) Both (a) and (b)
  - (d) DNA polymerase  $\alpha, \beta, \gamma$
20. The size of telomeres in human :
- (a) > 10 kbp
  - (b) 10-15 kbp
  - (c) 10-50 kbp
  - (d) < 100 kbp

**Section—B**

2 each

**(Very Short Answer Type Questions)**

**Note :** Attempt all questions.

1. What is replication fork ?
2. Define central dogma ?
3. What is cot curve ?
4. Define *in situ*-hybridization ?

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5. What is RNA splicing ?
6. Define *cis-trans* test.
7. What are gene families ?
8. Define B-A translocation.

**Section—C**

3 each

**(Short Answer Type Questions)**

**Note :** Attempt all questions.

1. What is DNA ? Explain the DNA damage and repair.
2. Explain the transcription.
3. Explain detailed account of nuclear DNA content.
4. Explain the flow cytometry.
5. What is gene expression ? Explain their regulation.
6. What is Mutation ? Describe their kinds.
7. General account of fine structure of gene.
8. What is transposons ? Explain detailed account.

**Section—D**

5 each

**(Long Answer Type Questions)**

**Note :** Attempt all questions in 150 words each.

1. Write the salient features of RNA and describe their kinds, structure, function.

*Or*

General account of translation.

2. What is Microscope ? Describes detailed account of confocal microscope.

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*Or*

General account of karyotype analysis.

3. What is Protein Sorting ? Describe in detail.

*Or*

General account of lac repressor gene.

4. What is Mutagen ? Describe physical mutagen.

*Or*

What is Translocation ? Describe detailed account of Robertsonian translocation.

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