

**B. Sc. DEGREE EXAMINATION, NOVEMBER 2019**  
**BRANCH V (a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY**  
**FIFTH SEMESTER**

**COURSE : MAJOR – CORE**  
**PAPER : CELL AND MOLECULAR BIOLOGY**  
**TIME : 3 HOURS** **MAX.MARKS:100**

**SECTION – A**

**ANSWER ALL QUESTIONS**

**(18 x 1=18 marks)**

**I. CHOOSE THE CORRECT ANSWER:**

1. The term cell was given by
  - a) Robert Hooke
  - b) Tatum
  - c) Schwann
  - d) De Bary
2. Glycolipids in the plasma membrane are located at the
  - a) Inner leaflet of the plasma membrane
  - b) Outer leaflet of the plasma membrane
  - c) Evenly distributed in the inner and outer leaflets
  - d) Varies according to cell types
3. Lysosomes are known as “suicidal bags” because of
  - a) parasitic activity
  - b) presence of food vacuole
  - c) hydrolytic activity
  - d) catalytic activity
4. Which cell organelle is involved in apoptosis?
  - a) Lysosome
  - b) ER
  - c) Golgi
  - d) Mitochondria
5. The function of Nucleolus is
  - a) RNA synthesis
  - b) DNA synthesis
  - c) Histone synthesis
  - d) Ribosomal subunit synthesis
6. The major amino acids in histones are
  - a) Gluatomate and aspartic acid
  - b) Lysine and arginine
  - c) Arginine, lysine and histidine
  - d) Histidine
7. Chromatin is composed of
  - a) DNA
  - b) DNA and proteins
  - c) DNA, RNA and proteins
  - d) None
8. Which of the following has beads on a string structure?
  - a) Chromosomes
  - b) Chromatin
  - c) Nucleosomes
  - d) Heterochromatin
9. DNA replicates during \_\_\_\_\_
  - a) G1 phase
  - b) G2 phase
  - c) S phase
  - d) Prophase
10. Which of the following enzymes remove supercoiling in replicating DNA ahead of the replication fork?
  - a) DNA polymerases
  - b) Helicases
  - c) Primases
  - d) Topoisomerases
11. DNA unwinding is done by
  - a) ligase
  - b) helicase
  - c) topoisomerase
  - d) hexonuclease

12. If the mutation has a negligible effect on the function of a gene, it is known as a
- |                          |                         |
|--------------------------|-------------------------|
| a) Silent mutation       | b) Frame shift mutation |
| c) Substitution mutation | d) Insertion mutation   |
13. The enzyme photolyase is used in what method of repair?
- |                        |                       |
|------------------------|-----------------------|
| a) Base excision       | b) Photo reactivation |
| c) Nucleotide excision | d) None of these      |
14. The process of formation of RNA is known as \_\_\_\_\_
- |                |                  |
|----------------|------------------|
| a) Replication | b) DNA repair    |
| c) Translation | d) Transcription |
15. Who discovered RNA polymerase?
- |                     |              |
|---------------------|--------------|
| a) Samuel B. Weiss  | b) Nirenberg |
| c) Watson and Crick | d) Darwin    |
16. Which of the following transcription termination technique has RNA dependent ATPase activity?
- |                         |                  |
|-------------------------|------------------|
| a) Intercalating agents | b) Rho dependent |
| c) Rho independent      | d) Rifampcin     |
17. Which of the following are non-sense codons?
- |        |
|--------|
| a) AUG |
| b) GUG |
| c) UAA |
| d) UCU |
18. Which of the following is responsible for the initiation of RNA polymerase activity?
- |                    |                    |
|--------------------|--------------------|
| a) initiation site | b) promoter region |
| c) sigma factor    | d) rho factor      |

**V. ANSWER ANY SIX QUESTIONS:**

**Each answer should not exceed 50 words.**

**(6x3=18 marks)**

19. Cell theory
20. Z DNA
21. Lampbrush chromosomes
22. Lagging strand
23. Central dogma
24. Polyadenylation
25. Replication fork
26. Triplet codon
27. Genetic imprinting

**SECTION B**

**ANSWER ANY FOUR QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 200 WORDS. DRAW DIAGRAMS WHEREVER NECESSARY.**

**(4x6=24 marks)**

28. Discuss the chemical composition of plasma membrane
29. Explain the structure of DNA
30. Comment on the semiconservative mode of DNA replication.

31. Expound Chargaff's rule
32. Write notes on the structure and functions of mRNA
33. Explain Operon concept

**SECTION C**

**ANSWER ANY TWO QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 1000 WORDS. DRAW DIAGRAMS WHEREVER NECESSARY. (2x20=40 marks)**

34. Describe the structure and functions of various organelles of the cell.
35. Explain in detail cell cycle.
36. Write a descriptive account on DNA repair mechanism.
37. Describe in detail the process of translation and transcription.

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