Reg. No…….. Name…… **20U548**

B. Sc. DEGREE END SEMESTER EXAMINATION – OCT. 2020: JANUARY 2021

SEMESTER **– 5: BOTANY (CORE COURSE)**

COURSE: **15U5CRBOT8, CELL, MOLECULAR BIOLOGY AND EVOLUTION**

(Common for Regular 2018 admission and Improvement 2017/ Supplementary 2017/2016/2015 admissions)

Time: Three Hours Max. Marks: 60

PART A

I. ***Answer ALL questions; each question carries 1 mark.***

1. What is a cell cycle?
2. What is meant by founder effect?
3. Define mutation.
4. What are lysosomes?
5. Define karyokinesis.
6. What are proto-oncogenes?
7. What is convergent evolution?
8. Define metastasis. (1 x 8 = 8)

PART B

II. ***Answer ANY SIX questions; each question carries 2 marks***

9. State cell theory.
10. Distinguish between transition and transversion.
11. Write a short note on histones.
12. What is a karyotype? Give the importance of karyotyping.
13. Differentiate eukaryotic cell from prokaryotic cell.
14. Mention any four features of Z-DNA.
15. What is meant by crossing over? Give its significance.
16. Briefly explain RNA splicing.
17. Draw a labelled diagrammatic sketch of tRNA.
18. What is anaphase lag? What is its consequence? (2 x 6 = 12)

PART C

III. ***Answer ANY FOUR questions; each question carries 4 marks.***

19. Discuss the theory of evolution proposed by Lamarck and Charles Darwin.
20. Give the salient features of stem cells and mention any two applications in medical field.
21. What is meant by aneuploidy? Describe the different types of aneuploidy.
22. Write a note on lampbrush chromosomes.
23. Define codon. Enumerate the features of genetic code.
24. Draw a labelled diagram of mitochondria and explain its parts. (4 x 4 = 16)

PART D

IV. ***Answer ANY TWO questions; each question carries 12 marks.***

25. Describe the mechanism of DNA replication. Explain the experiment conducted by Meselson and Stahl to prove the semiconservative mode of DNA replication.

OR

26. Give a description on the various structural changes in chromosomes and their meiotic behaviour.
27. Write an essay on the regulation mechanism of gene expression in lactose operon and tryptophan operon.

OR

28. Describe the different stages of meiosis. (12 x 2 = 24)

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