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PG CBCS
M.SC. Semester-III Examination, 2021
BOTANY
PAPER: BOT 301
(CELL BIOLOGY, GENETICS & BIOTECHNOLOGY)

Full Marks: 40**Time: 2 Hours**

Write the answer for each unit in separate sheet

BOT 301.1

CELL BIOLOGY & GENETICS

Answer any TWO questions from the following: **2X10 = 20**

1. Explain briefly the mechanism of Crossing Over. Distinguish between the dominant and recessive epistasis? Explain the Hardy-Weinberg equation? 3+4+3
2. Write the general features of transposable elements. Give a short note on IS element. Represent diagrammatically the Ac transposition mechanism. 2+3+5
3. Write a short note on chromosome packaging. Mention the molecular basis of histone modification and its importance in transcription. 5+5
4. What is Kornberg enzyme? Write a short note on Okazaki fragment. Mention the molecular structure of telomere. Describe and schematically represent the telomerase activity. 2+2+2+4
5. Write short notes of the following topics: 2 X 5
 - (a) Endoplasmic reticulum
 - (b) Deciphering of genetic code

BOT 301.2

BIOTECHNOLOGY

Answer any TWO questions from the following: **2X10 = 20**

1. How recombinant DNA is formed? What are the two enzymes needed to produce recombinant DNA? Briefly discuss about the vectors used in recombinant DNA experiments? 3+2+5
2. Why did restriction enzymes evolve in bacteria? How does a bacterial cell protect its DNA from restriction enzymes? How does restriction enzyme work on DNA molecules? 3+3+4

(P.T.O.)

(2)

3. Write down the process of PCR? Which enzyme removes primers? Compare real-time PCR with PCR? 6+1+3
4. How does Southern blotting differ from northern and western blotting? Mention different application of Southern blotting. Why blocking is done in western blotting? 5+3+2
5. Write down the transcription mechanism as found in prokaryotic cells? Compare the initiation of transcription in prokaryotes and eukaryotes? What are different consensus sequences? 3+4+3
