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C 23310 (Pages : 2) Name.....

Reg. No.....

# SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2022

(CBCSS)

Botany

BOT 2C 04—CELL BIOLOGY, MOLECULAR BIOLOGY, AND BIOPHYSICS

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

## General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each section.*
2. *The minimum number of questions to be attended from the Section / Part shall remain the same.*
3. *The instruction if any, to attend a minimum number of questions from each sub section / sub part / sub division may be ignored.*
4. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

## Part A

*Answer any* **four** *questions.*

1. Explain the role of cyclins and cyclin dependent kinases in cell cycle.
2. Describe the cellular changes during aging.
3. Explain the structure and role of sigma factor and rho factor in transcription.
4. Write notes on repetitive DNA and the significance.
5. Describe excision repair mechanisms in prokaryotes.
6. Write notes on RIA and ELISA.
7. Explain the principle of PAGE and its applications.

(4 × 2 = 8 weightage)

## Part B

*Answer any* **four** *questions.*

8. Explain the molecular processes of apoptosis and the proteins regulating apoptosis.
9. Correlate genes and cancer. Add a note on the role of carcinogens.

**Turn over**

10. Write notes on : a) gene expression during cell cycle and b) mitotic inducers.

11. Explain DNA replication in prokaryotes.

12. Describe post transcriptional events.

13. Describe charging of tRNA and the formation of initiation complex in prokaryotes and eu during translation.

14. Describe the promoter sites for initiation of transcription in prokaryotes and eukaryotes. the promoter sites with enhancer and silencer sites in eukayotes, using suitable example

(4 × 3 = 12 we

## Part C

*Answer any* **two** *questions.*

15. Write an essay on cellular differentiation and the molecular mechanisms of cellular differe

16. Write a detailed account of chromatin organization from DNA to chromosome. Add a euchromatin and heterochromatin.

17. Write an essay on different methods of gene regulation in eukaryotes.

18. Explain the basic principle of colorimetry and spectrophotometry and its application in b research. Make a comparison between the two.

(2 × 5 = 10 we