U.G. 1st Semester Examination - 2020 Molecular Biology & Biotechnology [HONOURS]

Course Code: MBBT-H-102-T-CCR-2 (Cell Biology)

Full Marks: 40 Time: $2\frac{1}{2}$ Hours The figures in the right-hand margin indicate marks. Candidates are required to give their answers in their own words as far as practicable.

- 1. Answer any **five** questions: $2 \times 5 = 10$
 - a) What is the significance of membrane fluidity?
 - b) What is carcinogenesis? Name one carcinogen that has been classified as group I carcinogen by IARC.
 - c) Why lysosome is called the suicidal bag of the cell?
 - d) What do you mean by 'close desensitized' ion channels?
 - e) Differentiate between 70S and 80S ribosome.

- f) Write any two properties of elastin fibers.
- g) Which regions of chloroplast participate in photosynthesis?
- h) Define the cell theory of life.
- 2. Answer any **two** of the following: $5 \times 2 = 10$
 - a) Draw and explain the ultra structure of nucleus.
 - b) Differentiate between microtubule, microfilament and intermediate filament with a labeled diagram.
 - Describe the structure and function of sodium potassium ATPase pump in maintenance of cell membrane potential.
 - d) Describe the structure of collagen fiber and proteoglycan. $2\frac{1}{2}+2\frac{1}{2}$
- 3. Answer any **two** of the following: $10 \times 2 = 20$
 - a) Write the salient features and differences between mitochondria and chloroplast DNA.
 State the role of mitochondria in cellular respiration.
 - b) Describe in detail the role of endoplasmic reticulum and golgi apparatus in protein synthesis, modification, packaging and transport.

- c) Metastasis is a multistep process. Explain the steps involved in it with diagram. How integrins perform outside and inside cell signaling?

 Describe the role of p53 as tumor suppressor gene.

 5+3+2
- d) Explain the fluid mosaic model of Singer and Nicolson. How fibronectin and lamin mediate cell adhesion? Differentiate between sarcoma and carcinoma with examples. 4+3+3
