

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(First Semester)

Branch – BIOCHEMISTRY

CELLULAR BIOCHEMISTRY

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 What type of pump is the Na⁺-K⁺ ATPase?
(i) Cation exchange pump (ii) Proton pump
(iii) Cation ATPase (iv) Uniport pump
- 2 The Cytochrome oxidase complex that is prominent in the ETC is
(i) a₃ (ii) aa₃
(iii) a (iv) None of these
- 3 What is CREB?
(i) transcription factor (ii) primary messenger
(iii) secondary messenger (iv) surface receptor
- 4 Identify the inhibitor of apoptosis from the following.
(i) Ras (ii) C.Myc
(iii) D.Bcl-2 (iv) p53
- 5 Indicate the shape of the TMV.
(i) Cuboidal shaped (ii) Oval shaped
(iii) Rod-shaped (iv) Spherical shaped

SECTION - B (15 Marks)

Answer ALL Questions

ALL questions carry EQUAL marks

(5 x 3 = 15)

- 6 a Compare and contrast between Passive diffusion and facilitated diffusion.
OR
b What do you understand by Ionophores.
- 7 a State the laws of thermodynamics.
OR
b Illustrate the electron carrier complexes in electron transport chain.
- 8 a Analyze the functions of cell surface receptors.
OR
b Explain the importance of CREB in the pathogenesis and therapy of neurodegenerative Disorders.
- 9 a Evaluate the various inhibitors of apoptosis.
OR
b What happens when cells lose control of the cell cycle?
- 10 a Analyze the main characteristics of cancer cells.
OR
b What are tumor suppressor genes and how do they work?

Cont...

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(5 x 6 = 30)

11 a Briefly discuss about membrane lipids. How is the bilayer important for membrane activities?

OR

b Appraise the mechanism of active transport by $\text{Na}^+ - \text{K}^+$ ATPase.

12 a What is Oxidative phosphorylation? Explain the concept of Chemiosmotic theory with suitable illustration.

OR

b With a neat sketch explain how does the glycerol-3-phosphate shuttle work?

13 a Enumerate the events associated with G-protein coupled receptors and cell signalling.

OR

b Elaborate the mode of events associated with NF-KB Intracellular signalling pathway.

14 a What is cell cycle? Summarize the events taking place in cell cycle.

OR

b Analyze the biochemical studies carried out with Oocytes, eggs and embryos.

15 a Assess and describe the characteristic features of RNA Viruses with examples.

OR

b Categorize the various molecular methods used for early detection of cancer.

Z-Z-Z

END