

# Question Paper

Exam Date & Time: 27-Jan-2024 (10:00 AM - 01:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD SEMESTER BSc. HEALTH SCIENCE DEGREE EXAMINATION - JANUARY 2024  
SUBJECT: BHS-205 CELL BIOLOGY  
(OLD SCHEME - MAKE-UP)

Marks: 50

Duration: 150 mins.

### SECTION A - ANATOMY (18 MARKS)

Answer all the questions.

- 2A) Define heterochromatin and euchromatin. (2)
- 2B) List ANY four functions of mitochondria. (2)
- 2C) Explain the structure of microtubules. (2)
- 2D) Explain the fluid mosaic model of biological membranes and mention two factors that affect fluidity. (2)
- 2E) With the help of a diagram, name the phases of the cell cycle and the most important events in each phase. (2)
- 3) Tabulate 3 points of comparison between Passive diffusion and Active transport. (3)
- 4) Explain the structure, protein composition and functions of adherence junctions. (5)

### SECTION A - BIOCHEMISTRY (32 MARKS)

Answer all the questions.

- 5A) List 4 differences between normal cells and cancerous cells. (2)
- 5B) What are the principal modifications the membrane proteins undergo before they reach their final destination? (2)
- 5C) Explain the phenomenon of lateral inhibition in developmental biology. (2)
- 5D) Explain the concept of positive control of transcription in lac operon. (2)
- 5E) Explain briefly two applications of polymerase chain reaction. (2)
- 5F) Describe the process of rho-independent termination in prokaryotic transcription. (2)
- 5G) Describe the activation of tRNA. (2)
- 5H) Describe the principle of non-maleficence and beneficence in bioethics. (2)
- 5I) Describe the properties of stem cells. (2)
- 6A) Explain the activity of caspases on cellular proteins mediating cellular death. (3)
- 6B) Explain with a suitable example the concept of gene amplification in regulation of eukaryotic gene expression. (3)
- 6C) Explain the process of elongation of prokaryotic translation. (3)
- 7) Describe the salient features of electron transport chain and their associated complexes. (5)

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