

ZO-502**Cell and Molecular Biology**

M. Sc. ZOOLOGY (MSCZO-12)

First Year, Examination, 2018

Time : 3 Hours**Max. Marks : 80**

Note : This paper is of **eighty (80)** marks containing **three (03)** Sections A, B and C. Learners are required to attempt the questions contained in these Sections according to the detailed instructions given therein.

Section-A**(Long Answer Type Questions)**

Note : Section 'A' contains four (04) long answer type questions of nineteen (19) marks each. Learners are required to answer *two* (02) questions only.

1. Differentiate between mitotic and meiotic cell division. In detail discuss different phases of meiotic cell division.
2. In detail explain DNA replication in prokaryotes. Differentiate between replication in prokaryotes and eukaryotes ?
3. Explain the mechanism and regulation of Lactose and Tryptophan operon.
4. Compare the structure of DNA and RNA. Explain the Watson and Crick model of DNA structure.

Section–B**(Short Answer Type Questions)**

Note : Section ‘B’ contains eight (08) short answer type questions of eight (08) marks each. Learners are required to answer *four* (04) questions only.

1. What are oncogenes ? Explain their salient features and functions.
2. Explain the structure of t-RNA and its role in the process of translation.
3. What is genetic code ? Explain different characters of genetic code.
4. What are mobile gene elements ?
5. Differentiate in between negative and positive mode of gene regulation.
6. Explain different methods of gene transfer in prokaryotes.
7. What are signalling molecules. Explain with examples.
8. Discuss the structure of DNA and RNA polymerase.

Section–C**(Objective Type Questions)**

Note : Section ‘C’ contains ten (10) objective type questions of one (01) mark each. All the questions of this Section are compulsory.

1. Which of the following nitrogenous base is found in DNA not in RNA ?
 - (a) Adenine
 - (b) Guanine
 - (c) Cytosine
 - (d) Thymine

2. The largest 'cell' in human body is :
 - (a) Nerve cell
 - (b) Muscle cell
 - (c) Liver cell
 - (d) Kidney cell
3. The term cell was given by :
 - (a) Leeuwenhoek
 - (b) Robert Hooke
 - (c) Fleming
 - (d) Robert Brown
4. During mitosis, ER and nucleolus begin to disappear at :
 - (a) Late prophase
 - (b) Early prophase
 - (c) Late metaphase
 - (d) Early metaphase
5. Which enzyme removes supercoiling in replicating DNA ahead of the replication fork ?
 - (a) Helicases
 - (b) DNA polymerases
 - (c) Primases
 - (d) Topoisomerases
6. During which phase of the cell cycle is DNA replicated ?
 - (a) G1 phase
 - (b) S phase
 - (c) G2 phase
 - (d) M phase

7. Which of the following is not a type of signalling molecule ?
- (a) Testosterone
 - (b) Insuline
 - (c) Thyroxine
 - (d) Adenylate cyclase
8. Which of the following is believed to be a key cause of immortalization of cancer cells in many tuniours ?
- (a) Complete loss of telonieres
 - (b) Inactivation of telomerase enzyme
 - (c) Reactivation of telom erase enzymes
 - (d) Shortening of telomers
9. Which of the following is characterstic of malignant rather than being tumour ?
- (a) Undergoes metastatis
 - (b) Devlops a blood supply
 - (c) Cell divides an unlimited number of times
 - (d) Grows without needing a growth signal
10. The role of the sigma factor in bacterial dna polymerase is :
- (a) To catalyse RNA synthesis
 - (b) To position RNA polymerase correctly on the template DNA
 - (c) To terminate RNA synthesis
 - (d) To unwind DNA template