

2019

ZOOLOGY.

( Major )

Paper : 3.2

( Cell Biology )

Full Marks : 60

Time : 3 hours

*The figures in the margin indicate full marks  
for the questions*

1. Choose the correct answer (any seven) :  $1 \times 7 = 7$
- (a) Microtubules consist primarily of the actin/myosin/tubulin protein.
  - (b) Active transport moves the substances across the plasma membrane against/ along their concentration gradients using ATP/without ATP.
  - (c) During aerobic glycolysis 8/6/10 ATP molecules are produced.
  - (d) Oxidative phosphorylation takes place in ribosome/lysosome/cell membrane/ $F_1$  particle of mitochondria.
  - (e) Cell theory was put forwarded by Robert Hooke / Robert Brown / Leeuwenhoek/Schleiden and Schwann.

( 2 )

- (f) Naked DNAs are present in plant cell/  
animal cell/bacterial cell/protozoa.
- (g) The center of a cell is cilia/flagella/  
nucleus/centrioles.
- (h)  $G_0$  phase lies at the end of  
 $G_1/G_2/S$ -phase/ $M$ -phase.

2. Write short notes on the following (any four) :  
2×4=8

- (a) Elementary particle
- (b) Ultrastructure of Golgi bodies
- (c) Molecular structure of nucleosome
- (d) Facilitated diffusion
- (e) Plasmid DNA or extra-chromosomal  
DNA

3. Answer any three of the following : 5×3=15

- (a) Discuss the chemical properties of  
protoplasm.
- (b) Differentiate between salivary and  
lampbrush chromosomes.
- (c) Discuss the significance of mitotic and  
meiotic cell divisions.
- (d) Differentiate between prokaryotic cell  
and eukaryotic cell.
- (e) Why lysosomes are called 'suicide bag of  
the cell'?

( 3 )

4. Describe the electron transport system of  
mitochondria. 10

Or

Define endoplasmic reticulum. Write the  
functions of ER. Explain the significance of  
SER and RER. 1+6+3=10

5. Name the most popular two models of cell  
membrane. Write a note on the functions of  
plasma membrane with respect to transport  
of solutes. 2+8=10

Or

What is mitotic apparatus? Describe their  
structures, assembly and disassembly of the  
microtubules and functions of mitotic  
apparatus. 2+6+2=10

6. What is the natural recombination? When  
does it take place? What is the outcome of  
crossing-over? 2+4+4=10

Or

Why ribosomes are known as protein factory  
of the cell? Describe how ribosomes are  
involved in protein synthesis. 3+7=10

\*\*\*