QP Code : 75463

PAPER – I

(3 Hours) (Total Marks: 75)

Instructions:

N.B. (1) All questions are **compulsory**.
(2) All questions carry **equal marks**.
(3) Attempt any **two** questions from **a**.
(4) Attempt ant **one** questions from **b & c** and ant one question from **d & e**.
(5) Draw **neat** labeled **diagram** wherever necessary.

1. (a) Attempt any **TWO** of the following:- 4
(i) Explain the sites of ATP synthesis in electron transport chain.
(ii) Describe the structure and functions of endoplasmic reticulum and golgi apparatus.
(iii) Explain in brief the role of ribozyme in evolution.
(iv) Explain the significance of formaldehyde in the process of evolution.

(b) Explain compartmentalization is the key to eukaryotic cell function. 5

OR

(c) Name different cell organelles with their structure and functions. 5

(d) Explain the role of cytochromes in the respiratory chain. 6

OR

(e) Discuss inhibitors and uncouplers of ETC. 6

2. (a) Attempt any **two** of the following:- 4
(i) Explain TIM barrel in protein.
(ii) Why is the conformational freedom of peptide bond limited?
(iii) Why is protein folding considered highly co-operative.?
(iv) Explain the phenomenon of salting in and salting out.

(b) What is genetic engineering? Give its applications. 5

OR

(c) Enumerate the proteins which have structure function relationship and explain one of them. 5

(d) Discuss two methods of protein purification on the basis of any three characteristics. 6

OR

(e) Explain active and facilitated transport with examples. 6

(TURN OVER)

3. (a) Attempt any **two** of the following:-
   (i) What is the significance of FRAP, in membrane studies? 4
   (ii) Define ionophores giving examples.
   (iii) What are membrane proteins.
   (iv) How are action potential and ion channel function measured.

   (b) Explain with suitable examples different types of transport mechanisms. 5

   OR

   (c) What are artificial membranes? Discuss their role in drug research. 5

   (d) With the help of fluid mosaic model of cell membrane discuss the functions. 6

   OR

   (e) What are liposomes? Give the uses of liposomes in drug targeting. 6

4. (a) Attempt any **two** of the following:-
   (i) Explain the role of calcium as an intracellular signal. 4
   (ii) What are aquaporins?
   (iii) What are G Proteins? Give examples.
   (iv) What are agonists? Give suitable examples.

   (b) Write a note on membrane assembly. 5

   OR

   (c) Explain the role of protein kinases in signaling pathway. 5

   (d) Discuss the role of any two second messengers. 6

   OR

   (e) Describe the role of c GMP, Ca+2 and Calmodulin as second messenger. 6

5. (a) Attempt any **two** of the following:-
   (i) What is enzyme specificity? Give examples. 4
   (ii) What factors influence enzyme activity?
   (iii) What are allosteric modulators? Give two examples.
   (iv) What is zymogen? Give two examples.

   (b) Discuss various factors affecting enzyme catalysis. 5

   OR

   (c) Explain with examples various types of enzyme inhibitions. 5

   (d) Derive double reciprocal equation. Discuss the effects of different types of inhibitions on this plot. 6

   OR

   (e) Describe the mechanism of enzyme action and mention the role of coenzymes if required. 6