2016

M.Sc.

1st Semester Examination

HUMAN PHYSIOLOGY

PAPER—PHY-101

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

(Unit—01)

Answer all questions from the following :

1. (a) Define oxidative phosphorylation. What is its importance ?

(b) Briefly mention the mechanism of action of cytochrome C oxidase in transport of electron.

(1+1)+3

Or

(a) Give a brief description of mechanism of action of ATP synthase.

(b) Name one uncoupler of oxidative phosphorylation.

$4\frac{1}{2}+\frac{1}{2}$

2. (a) Mention the types of carbonic anhydrase enzyme.

(b) Describe how Zinc plays a significant role in the catalysis of carbonic anhydrase enzyme. 1+4

Or

Define "turnover number". What do you understand by the Catalytic efficiency of an enzyme ? Name some allosteric enzymes. 1+3+2

3. (a) Write down the significance of primary structure of protein.

(b) Differentiate the structural basis of parallel and antiparallel β-pleated sheet.

(c) What are chaperons ? How do they function ?
1+2+(1+1)

Or

(a) Why proteolytic cleavage is an important post translational modification ?

(b) How does assembly of precursor oligosaccharide occur in ER membrane? 2+3

4. (a) Mention any two cataplerotic reactions of TCA cycle.

(b) Describe the cyclooxygenase pathway for prostaglandin synthesis. 2+3

Or

Write down the role of insulin in carbohydrate and lipid metabolisms. $2\frac{1}{2}+2\frac{1}{2}$

(Unit—02)

Answer all questions from the following :

1. (a) Distinguish between A, B and Z-DNA.

(b) What are the unique features of mRNA. 2+3

Or

(a) What do you mean by double helical structure of DNA?

(b) Briefly mention the model experiment to establish the double helical structure of DNA. 2+3

2. Describe in brief the events that occur during eukaryotic DNA replication. 5

Or

What is recessive epistasis ? Citing proper example write its molecular explanation. 1+4

3. Discuss the different sub units present in the enzyme RNA Polymerase and their role in prokaryotic transcription. 3+2

Or

Describe in brief the splicing mechanism of tRNA and rRNA with suitable diagram. $2\frac{1}{2}+2\frac{1}{2}$

4. (a) What do you mean by 'Shine-Dalgarno' sequence ?

(b) Write the difference between prokaryotic and eukaryotic protein bio-synthesis. 1+4

Or

How do transfer RNAs serves as the intermediate between mRNA codons and amino acids. 5

———