2011

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 any *two* questions.

1. (a) Discuss in brief the structural details of parallel and anti-parallel β-pleated sheets.

(b) What are protein domains ?

(c) State the significance of Ramachandran Plot. 5+2+3

2. (a) Describe the role played by Cytochrome C oxidase in electron transport as well as proton-pumping in the mitochondrial membrane.

(b) Write down the chemiosmotic hypothesis of ATP synthesis.

(c) Discuss the mechanism of action of ATP synthase during oxidative phosphorylation including the free energy change. 4+2+4

3. (a) Aspartate transcarbamoylase (ATCase) Consists of separate catalytic and regulatory subunits — prove it.

(b) Discuss critically the role of CTP in the allosteric inhibition of ATCase in pyramidine synthesis. 5+5

4. (a) State with a suitable diagram the anaplerotic reactions of TCA cycle.

(b) Describe the mechanism of protein glycosylation in endoplasmic reticulum.

(c) State diagramatically the mechanism for delivery of a protein from the cytosol to the mitochondria. 3+4+3

Unit—02

Answer any *two* questions.

1. (a) State the different phases and importance of cell cycle?

(b) What is the role of 3'→5' exonuclease of DNA Polymerase I of *E. coli.*

(c) What is meant by the term "discontinuas DNA replication"? 4+4+2

2. (a) How is DNA organized in chromosome?

(b) Write the different types of DNA repair mechanism. 4+6

3. (a) Describe mechanism of RNA synthesis in *E. Coli.*

(b) Write the processing of t RNA & r RNA. 4+(3+3)

4. (a) What is wobble hypothesis?

(b) How is the genetic information in m RNAs translated into the amino acid sequences of polypeptide?

(c) How much energy is expended in the formation of one peptide bond? 2+7+1

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