PG/IS/H.PHY-101/14

M.Sc. 1st Semester Examination, 2014

HUMAN PHYSIOLOGY

PAPER – H.PHY- 101

Full Marks : 40

Time : 2 hours

The figures in the right hand margin indicate marks

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

Illustrate the answers wherever necessary

UNIT –I

1. (*a*) Discuss in brief the underlying mechanism of action of complex III in Oxidative Phosphorylation.

   (*b*) What is meant by Q cycle ? 4 + 1

   Or

   (*a*) Mention the basic principle of ATP synthesis.

(*b*) How does differential binding of β chain of ATP synthase take part in ATP synthesis ? 1 + 4

2. (*a*) Citing any two chemical reactions, state their transition state diagrams.

(*b*) Describe the effect of an enzyme on the stabilization of transition state.

(*c*) What do you mean by the term 'Isoenzyme' ?

(1 + 1) + 2 + 1

Or

(*a*) Describe how 1, 6-Dihydroinosine is better competitive inhibitor for adenosine deaminase than its product.

(*b*) "AΓ Case consists of separable catalytic and regulatory subunits"—Justify it. $2\frac{1}{2} + 2\frac{1}{2}$

3. (*a*) What are chaperone proteins ? Mention their importance in protein folding.

(*b*) Describe in brief the role played by Hsp60 as molecular Chaperone.

(*c*) Why do proteins aggregate ? (1 + 1) + 2 + 1

Or

(*a*) During *N*-glycosylation how dolichol pyrophosphate linked oligosaccharide precursor is synthesized and transferred to the nascent chain ?

(*b*) Name two glucose-binding chaperones. 4 + 1

4. Elaborate the cataplerotic reactions of TCA cycle. 5

Or

"Insulin promotes glucose utilization"– Justify the statement in terms of glucose uptake in physiological system. 5

UNIT –II

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

(*b*) Describe the structure of t-RNA. 2 + 3

Or

(*a*) Define hypochromicity and hyperchromicity.

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

2. (*a*) Define the importance of cell cycle.

(*b*) Describe the function of eukaryotic DNA polymerase. 2 + 3

Or

Discuss the mechanism of action of DNA gyrase. State the importance of SSB protein in DNA replication in prokaryotes. 3 + 2

3. Discuss the mechanism of RNA synthesis in prokaryotes. 5

Or

How does a t-RNA molecule function as adapter between a codon and amino acid ? 5

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

(*b*) "Protein biosynthesis is a energy consuming process."– Illustrate your answer. $2\frac{1}{2} + 2\frac{1}{2}$

Or

(*a*) What do you know about 'incomplete dominance' and 'co-dominance' ?

(*b*) What is a Karyotype? $2 + 2 + 1$