PG/IIIS/H.PHY-303/14

M.Sc. 3rd Semester Examination, 2014

HUMAN PHYSIOLOGY

PAPER – PHY-303

Full Marks : 40

Time : 2 hours

Answer all questions

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 – 29

1. (*a*) What is physiome project ?

   (*b*) Discuss the computational tools for system biology. 2 + 3

Or

(*a*) What is biochemical systems theory ?

(*b*) Mention any one special system structure of system biology. $2\frac{1}{2}+2\frac{1}{2}$

2. (*a*) State how heart rate and myocardial contractility are regulated by autonomic nervous system ?

(*b*) What is Myocardial Ischemia ? 4 + 1

Or

"Nitric oxide is a unique bio-active signaling messenger in hypertension." — Justify it. 5

3. (*a*) What is flow and diffusion limited transport from capillaries to tissues ?

(*b*) Define reflection co-efficient. 4 + 1

Or

(*a*) What do you know about chemoreceptor reflex ?

(*b*) How does Frank-Starling mechanism enable the myocardium to adapt hemodynamic changes ? $2\frac{1}{2}+2\frac{1}{2}$

4. (*a*) Write a note on surfactant proteins.

(*b*) Explain the importance of surfactant in breathing. 2 + 3

Or

(*a*) What is COPD ?

(*b*) Write on the pathogenesis and probable treatment of one of the prevalent COPD in India. 1 + 4

UNIT – 30

1. What is sensitization ? Discuss the molecular basis of sensitization ? 1 + 4

Or

"Long term memory could be prevented by interfering with protein synthesis." – Explain it. Discuss the dual track processing of memory. $2\frac{1}{2}+2\frac{1}{2}$

2. "Sleep is not a passive process." – Explain it. Describe the flip-flop mechanism of sleep-wakefullness cycle. 2 + 3

Or

Describe the role of locus coerulus during sleep. Write the neural control of REM sleep. 2 + 3

3. (*a*) What is Limbic system ? Mention the subcortical structures of CNS included in it.

(*b*) Mention the emotional behaviors evoked through stimulation of amygdala.

(*c*) Mention two hypolimbic clinical syndromes. 1 + 1 + 2 + 1

Or

(*a*) Discuss the role of neuroglia in the regulation of internal environment of CNS.

(*b*) What is replacement gliosis ? 3 + 2

4. (*a*) Write the anatomical organization of the reticular formation.

(*b*) Discuss the functions of RF with special connection to caudal projections. $2\frac{1}{2}+2\frac{1}{2}$

Or

(*a*) Discuss the role of cerebellum in the regulation of voluntary movement.

(*b*) Comment on α-γ switch on cerebellar function. What is effect of cerebellar stimulation on muscle tone, in decerebrate animal. 3 + 2
