M.Sc. 1st Semester Examination, 2015

HUMAN PHYSIOLOGY

PAPER – PHY-104 (Unit-VII & VIII)

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 – VII

1. (a) What is sensory threshold? Why it is a useful diagnostic index for determining sensory function of individual modalities?

(b) What is meant by population coding of sensory information?  

(1+2)+2

(Turn Over)
(2)

Or

(a) What is a growth cone? Discuss the molecular basis of growth cone motility.

(b) What are neurotrophins? (1+2)+2

2. Discuss the structure of troponin C of skeletal muscle in resting condition and the alteration of this structure in presence of Ca$^{2+}$. 2+3

Or

(a) Describe the structure of dystrophin-glycoprotein complex and mention its pathological importance.

(b) What is sarcoglycan complex? (3+1)+1

3. (a) Explain the pathophysiological basis of hypokinetic and hyperkinetic movement disorders due to lesion of neural pathways within basal ganglia.

(b) What are medium spiny neurones? 4+1

PGISPHY-104/15 (Continued)
(3)

Or

(a) What is striola?

(b) Discuss the mechanism of adaptation and tuning of vestibular hair cells. 1 + 4

4. (a) Describe the ultrastructure of gap junction channel in electrical synapses.

(b) Distinguish between electrical and chemical synapses. 2 + 3

Or

(a) What are the identifying characteristics of a chemical substance that must be met to establish it as a neurotransmitter?

(b) What is Lambert-Eaton syndrome? 3 + 2

UNIT - VIII

1. (a) State the principles of homeostasis control by a suitable diagram.
(b) Briefly describe the physiological basis of positive feedback and negative feedback system with suitable example. $2 \frac{1}{2} + 2 \frac{1}{2}$  

Or

(a) With suitable diagram describe the physiological control mechanism in hyper and hypoglycemic state.

(b) Briefly point out the mechanistic role of ADH in osmoregulation of our body. $3 + 2$

2. (a) What is effective circulating volume (ECV)?

(b) Discuss the role of 'Hepatic sensors' and 'Central nervous system Na⁺ sensors' in maintaining the ECF volume. $1 \frac{1}{2} + (1 \frac{1}{2} + 2)$  

Or

(a) What is GALT?

(b) Write briefly about the structural and functional aspects of intestinal fluid immunoglobulins. $\frac{1}{2} + 3 \frac{1}{2}$
3. (a) 'Homeostasis is maintained in our body via platelet plus formation.'— Explain.

(b) What do you mean by secondary homeostasis?

Or

(a) Classify endogenous inhibitors of clotting.

(b) How antithrombin is responsible for anticoagulation action?

(c) What is fouda parinux?

4. (a) What is orthostatic or postural hypotension?

(b) What is zero gravity?

(c) Briefly describe the effects of \((-G)\) forces on human physiological system.

Or

(a) Describe diagramically the production of oxygen and nitrogen free radicals in mammalian cells.
(b) Discuss the redox system mediated mechanisms regulating protein functions with suitable diagram.

\[ \frac{2}{2} + \frac{1}{2} \]