PG/IS/PHY-104/15

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

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

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. $1\frac{1}{2}+3\frac{1}{2}$

3. (*a*) 'Homeostasis is maintained in our body via plalete plus formation."– Explain.

(*b*) What do you mean by secondary homeostasis ? 3+2

Or

(*a*) Classify endogenous inhibitors of clotting.

(*b*) How antithrombin is responsible for anticoagulation action ?

(*c*) What is fouda parinux ? 2+2+1

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. 2+1+2

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