2016

M.Sc.

3rd Semester Examination

HUMAN PHYSIOLOGY

PAPER—PHY-303

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—29)

Answer all questions from the following :

1. (a) What do you mean by "Biochemical systems theory" ?

(b) Write brief notes on 'hybrid' and 'positive' systems.

$2+(1\frac{1}{2}+1\frac{1}{2})$

Or

(a) How metabolism is considered significant in system biology ?

(b) What do you know about the 'Reaction Kinetics' in the mathematical modelling of metabolism ?

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

2. (a) What is Bainbridge reflex ?

(b) How does it help to control heart rate in coordination with baroreceptor reflex ? 2+3

Or

State critically the effects of stimulation of Chemoreceptors on Cardio-respiratory system. 5

3. (a) What is oncotic pressure and how it can be measured ?

(b) Elaborate the role of albumin to maintain the oncotic pressure. $(1+1\frac{1}{2})+2\frac{1}{2}$

Or

State the auto and myogenic mechanism behind the control of peripheral blood flow. 5

4. (a) Discuss the role of lungs as a lymphoid tissue.

(b) What is BALT ? 4+1

Or

(a) Briefly state the role of lungs in muco-ciliary clearance.

(b) What are Clara cells ? 3+2

(Unit—30)

Answer all questions from the following :

1. (a) Define Operant conditioning.

   (b) Discuss the differences between classical conditioning and operant conditioning.

   (c) "Dendritic Spine changes are associated with hippocampal long term synaptic plasticity" — Explain. 1+2+2

   Or

   (a) Write short note on (any *two*) : $2\frac{1}{2}+2\frac{1}{2}$

   (i) Maza learning ;

   (ii) Silent Synapses ;

   (iii) Korsakoff's Syndrome ;

   (iv) Priming.

2. (a) Define entrainment of biorhythms with suitable examples.

(b) What do you understand by free running shythm ?

(c) Describe the pathways involved in control of circadian rhythm in vertebrates. 1+1+3

Or

(a) Discuss briefly the neural and biochemical basis of sleep-wakefulness cycle.

(b) What are parasomnias ? 4+1

3. (a) What is Indusium griseum ?

(b) Describe the "Papez Circuit" and discuss its physiological importance.

(c) Discuss the behavioral manifestations associated with the electrical stimulation of amygdaloid body in animals. 1+2+2

Or

(a) Discuss the causes of hydrocephalus.

(b) Give an example of a disorder associated with blood brain barrier transport defect.

(c) What are Virchow-Robin spaces? 3+1+1

4. (a) "Long term depression of synaptic input from parallel fibres to Purkinje cells is one plausible mechanism of cerebellar learning"— Explain.

(b) Discuss briefly about the typical defects observed in cerebellar discuses. 3+2

Or

(a) Mention the name of the nuclear group present in lateral column of reticular formation.

(b) Briefly write the caudal (Reticulospinal) projections of raphe nuclei. 2+3