# 2016

## M.Sc.

## 1st Semester Examination

## HUMAN PHYSIOLOGY

**PAPER—PHY-104**

*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—07 )**

Answer all questions from the following :

**1.** (a) Discuss the differences between synaptic vesicles and dense-core vesicles.

(b) Discuss the symptoms and management of myasthenia gravis. 2+3

*Or*

(a) Mention the molecular structure of dihydropyridine receptor.

(b) Discuss the difference in dihydropyridine receptor mediated activation of the ryanodine receptor between skeletal and cardiac muscle. 2+3

**2.** (a) Describe the basal ganglia circuits involved in regulation of eye movements.

(b) Discuss the role of basal ganglia disinhibition in the generation of saccadic eye movements.

(c) What is hemiballismus? 2+2+1

*Or*

(a) What is cupula?

(b) "The vestibulo-ocular reflex is adaptable" — Explain.

(c) Discuss the clinical conditions associated with unilateral and bilateral vestibular hypofunction. 1+2+2

**3.** (a) What are declarative and non-declarative memory ?

(b) Discuss the cellular and molecular basis of sensitization in Aplysia. 2+3

*Or*

(a) Why is operant conditioning known as instrumental conditioning ?

(b) What are the symptoms associated with narcolepsy ? 3+2

**4.** (a) What are zeitgebers ?

(b) Discuss briefly the role of neuroglia in the regulation of internal environment of CNS. 2+3

*Or*

(a) Describe the different transport mechanisms associated with blood-brain barrier.

(b) Mention the function of tight junction proteins. 3+2

## ( Unit—08 )

Answer all questions from the following :

1. (a) Mentin the components of homeostatic regulation.

   (b) Describe the mechanism of temperature homeostasis in human body. 2+3

*Or*

   (a) Elaborate the molecular mechanism of systemic iron homeostasis in human body. 5

2. With proper diagrams state the $Na^+$-ion transport mechanisms in the proximal renal tubule and thick ascending limb of Henle. 2+3

*Or*

   (a) What are gut microbiota ?

   (b) Discuss the cross-talk between mucosal innate immune system and gut endogenons microflora. 1+4

3. (a) Decsribe the mechanism of platelet plug formation during hemostasis.

   (b) State the role of fibroblasts and monocytes during secondary hemostasis. 3+2

*Or*

   (a) State the mechanism of anticoagulating function of antithrombin.

   (b) What is the role of thrombin-thrombomodulin complex in anticoagulation ? $2\frac{1}{2}+2\frac{1}{2}$

4. (a) What is artificial gravity ?

   (b) Discuss the effect of transverse G-forces on human physiological system.

   (c) What is the principle used in designing of antigravity suits ? 1+3+1

*Or*

(a) What is Fenton-Haber-Weiss reaction ?

(b) How are the expression of transcription factors influenced by ROS ? 2+3

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