

M.Sc. 1st Semester Examination, 2014

HUMAN PHYSIOLOGY

PAPER — H.PHY- 104

Full Marks : 40

Time : 2 hours

*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 meant by "functional reorganization" of brain cells without repair ?
- (b) Write on *three* types of neuronal regeneration in damaged brain (not functional reorganization).

2 + 3

(Turn Over)

(2)

Or

(a) Discuss axoplasmic flow with special reference to anterograde transport and retrograde transport and their utility.

(b) What is Wallerian degeneration? 4 + 1

2. (a) Describe with a diagram how Ca^{2+} ions are released from the cisternae.

(b) What is calcium induced calcium release in EC coupling? 3 + 2

Or

(a) Describe how muscle fibres are shortened during contraction.

(b) Describe the properties of parallel and series elastic components in skeletal muscle.

3. (a) Describe the gating-spring model of hair cell transduction. $2\frac{1}{2} + 2\frac{1}{2}$

(3)

- (b) Discuss the role of basal ganglia in control of saccadic eye movement. 3 + 2

Or

- (a) What are meant by plate ending and trail ending?
- (b) Describe γ -loop and mention its physiological functions. 1 + 4
4. (a) Discuss the properties of electrical synapse.
- (b) What is the difference between a neuro-modulator and neurotransmitter?
- (c) Mention the difference between densecore vesicles and synaptic vesicles. 2 + 2 + 1

Or

- (a) What is end-plate potential? Mention the factors on which the end-plate current depends.

(4)

(b) Discuss the morphological abnormalities of the neuromuscular junction in myasthenia gravis?

(c) Discuss the treatment of myasthenia gravis.

2 + 2 + 1

UNIT –VIII

1. (a) What is homeostasis ?

(b) Describe the homeostatic regulation of body temperature through negative feedback.

What is human thermostat ? 2 + 2 + 1

Or

Briefly describe the role of ionotropic and metabotropic receptors in controlling the function of autonomic nervous system.

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

2. (a) Where in the kidney counter-current multiplier system is operated ?

(b) Describe the system with a model. 1 + 4

Or

"The gastrointestinal tract is a lymphoid organ"—justify it.

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(5)

3. (a) Briefly describe the cell-based model of coagulation.
- (b) Mention the genetic basis of thrombotic thrombocytopenic purpura. 3 + 2

Or

- (a) Write down the role of thrombomodulin during anticoagulation.
- (b) What is danaparoid? Mention its mechanism of action. 3 + 2

4. (a) Describe the endogenous and exogenous sources of reactive oxygen species.
- (b) Describe the role of glutathione in scavenging the oxidative stress. $2\frac{1}{2} + 2\frac{1}{2}$

Or

Describe the redox-mediated mechanisms that regulate protein functions through transcriptional regulation and direct oxidative modifications.

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