

**2017**

**M.Sc.**

**3rd Semester Examination**

**HUMAN PHYSIOLOGY**

**PAPER—PHY-301**

*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—23 )**

Answer all questions from the following :

1. (a) What do you mean by augmented unipolar limb lead of ECG ?

*(Turn Over)*

- (b) How can you prove that  $a V_R = \frac{3}{2} V_R$  ? 3+2

Or

- (a) State the main features of action potential.
- (b) Discuss the mechanism of spontaneous activation of action potential in pace maker cells. 2+3
2. (a) What is evoked potential ?
- (b) What are the extracerebral artifacts in EEG ?
- (c) Briefly describe about the characteristics of normal EEG waves. 1+2+2

Or

- (a) Describe the molecular transduction of sweet and salt taste. 3+2
- (b) What is papillae ? Classify the papillae on the basis on their distribution over the human tongue. 2+3

3. (a) Write in brief the activities of retinal receptor cells under dark and light.
- (b) Mention the importance of X ganglionic cells. 3+2

Or

- (a) Why primary visual area is known as striate cortex?
- (b) Write down the localization and function of visual association areas in cerebral cortex.
- (c) Mention the stream hypothesis for visual signal transmission in brain. 1+2+2
4. (a) Describe briefly the molecular mechanism of olfactory transduction.
- (b) What is anosmia? 4+1

Or

- (a) Schematically describe the cochlear  $K^+$  circulation and formation of endocochlear potential in the inner ear.

- (b) Discuss on the mechanical aspect and behavior of cochlea. 3+2

**( Unit—24 )**

Answer all questions from the following :

1. (a) What is meant by 'Biochemical system theory'?
- (b) State briefly the body's response to stress.
- (c) How the immune system is induced by stress.

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

Or

- (a) Discuss the role of baroreceptor reflex for the regulation of cardio-vascular control.
- (b) What is buffer nerves activity? 4+1
2. (a) What is intrinsic heart rate ?
- (b) Write on the parasympathetic control of heart rate ?

(c) What is Bainbridge reflex? 1+3+1

Or

(a) What is Sinus arrhythmia? Describe its generation with proper diagram. 2+3

3. (a) Discuss briefly the synthesis and mode of action of nitric oxide (NO) as a vasodilating agent mentioning the different isoforms of NOS.

(b) Mention the role of aspirin in the prevention of clot formation. 3+2

Or

(a) Discuss with diagram the pressure-flow relationship in the skeletal muscle vascular bed.

(b) What do you know about reactive hyperemia? 3+2

4. (a) Discuss the role of lungs in muco-ciliary clearance.

(b) Describe briefly the different stages of lung development in utero.

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

*Or*

(a) Describe the routine infant pulmonary function tests.

(b) What are obstructive and restrictive lung disorders?

2+(1½+1½)

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