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PG/IIIS/H.PHY-301/15

M.Sc. 3rd Semester Examination, 2015

HUMAN PHYSIOLOGY

PAPER —H.PHY - 301(Unit- 25 & 26)

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

Write the answers to Questions of each Unit in separate books

UNIT— 25

1. Explain Hodgkin-Huxley equivalent circuit model for resting membrane potential. 5

Or

- (a) Why $\text{Na}^+ - \text{K}^+$ pump is called 'electrogenic pump'?

(Turn Over)

(2)

(b) What is Goldman equation ? 3 + 2

2. (a) How does adaptation take place in Pacinian corpuscle ?

(b) What do you mean by sensitivity of receptor ? 3 + 2

Or

(a) State the mechanism of formation of biphasic action potential.

(b) What is calcium dependent K^+ channel ? 4 + 1

3. What are augmented unipolar limb leads ? Why they are so called ? 4 + 1

Or

(a) State electrocardiographic manifestation of left ventricular hypertrophy.

(b) What is VAT ? 4 + 1

4. Write briefly the factors influencing EMG Signal. 5

(3)

Or

State the characteristics of Alpha rhythm of EEG. What is the significance of Alpha rhythm ?

4 + 1

UNIT – 26

1. "Intensity of sensation is determined by the stimulus amplitude" – Explain. What do you mean by 'multimodal perception' ? Why receptors are called "biological transducer" ? 3 + 1 + 1

Or

Briefly describe the distribution and functions of Rexed laminae of spinal cord. State the functions of intralaminar nuclei of thalamus.

(2 + 2) + 1

2. Write down the role of cochlear nucleus during hearing. With a suitable diagram describe the major descending auditory pathway. 2 + 3

Or

Describe schematically the cochlear K^+ circulation and formation of endocochlear

Explain the role of lateral geniculate body in the processing of visual information. Write down the basic principle of f-MRI technique to understand brain function.

3 + 2

Or

4. What do you understand by visual association area in cerebral cortex? State in brief the dorsal stream pathway in visual perception. What are simple cells?

2 + 2 + 1

With suitable diagram describe the structure of olfactory epithelium what is anosmia?

4 + 1

Or

3. Discuss the molecular mechanism of taste transduction for sweet stimuli. Briefly describe the neural organisation of taste pathway.

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

potential in the inner ear. Name the proteins present in the tip-links.

4 + 1