2012

HUMAN PHYSIOLOGY

PAPER—PHY-301

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 – 25

Answer any *two* questions

1. (*a*) What is the source of EEG potential ?

(*b*) Discuss how rhythmic EEG patterns are generated ?

(*c*) Discuss the principle of electrode placement for recording EEG. 3 + 4 + 3

2. (*a*) How do you determine projected heart vector in different limb lead axes ?

(*b*) Explain the vectorial analysis of QRS complex during ventricular depolarization.

(*c*) Mention the ECG changes in myocardial ischemia. $3+5+2$

3. (*a*) What is Nernst potential ? How do you deduce Nernst equation from the diffusion process in the cell membrane ?

(*b*) What is biphasic action potential ? $(2+5)+3$

4. Write the answer of the following : $2\frac{1}{2}\times 4$

(*a*) How do you express the sensitivity of receptors ?

(*b*) What do you mean by delayed rectifier (I_{DR}) K^+ channel ? Mention its blocking agent.

(*c*) Explain with diagram (*i*) secondary R wave of ECG (*ii*) VAT in ECG.

(*d*) How does action potential differ from generator potential ?

UNIT – 26

Answer any *two* questions

1. (*a*) What are retinal "bipolar cells" ? Describe their role in visual signal transmission.

   (*b*) Discuss in brief the organization of "striate cortex" including its role played in visual perception.

   (*c*) What are simple cells ? (2 + 2) + (3 + 2) + 1

2. (*a*) The auditory fibre of basilar membrane vibrate "placewise not fibre wise" during auditory process. Explain it.

   (*b*) Briefly write the basic features of sound perceptions.

   (*c*) With suitable diagram explain the auditory pathway. 3 + 2 + 5

3. (*a*) Write the basic differences between epicritic and protopathic sensation.

   (*b*) Briefly describe the functions of somatosensory area of cerebral cortex.

(*c*) Describe the mechanism of dual pathway of pain sensation, with suitable diagram. 2 + 3 + 5

4. (*a*) Describe the mechanism of gustatory transduction with respect to salt and sour tastes.

(*b*) With suitable diagram explain the taste pathway. 5 + 5
