M.Sc. 3rd Semester Examination, 2018

PHYSIOLOGY

(*Human Physiology*)

PAPER – PHY-301(U-23 & 24)

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–23

1. (*a*) What do you mean by 'Einthoven's triangle of ECG' ?

   (*b*) Show the mathematical relationship between unipolar and bipolar ECG leads. 2 + 3

Or

(*a*) State the importance of ST segment of ECG.

(*b*) How heart rate can be recorded from ECG records ?

(*c*) What is secondary R-wave of ECG ?

(*d*) Why arterial repolarisation is usually not manifested in normal ECG records ?

1 + 1 + 1 + 2

2. (*a*) Discuss the source and mechanism of formation of rhythmic pattern of EEG waves.

(*b*) Describe details about bitter taste transduction.

(*c*) Write about mechanical papillae. 2 + 2 + 1

Or

(*a*) What do you understand by "Selective taste blindness" ?

(*b*) What is "taste reflex" ?

(*c*) Describe different factors that affect taste transduction process. 1 + 1 + 3

3. (*a*) Give a brief description of neuronal cell layers present in retina.

(*b*) How do the bipolar cells are involved in visual transmission ? 2 + 3

Or

(*a*) Write notes on primary visual area.

(*b*) What are color blobs ? 4 + 1

4. (*a*) Briefly describe role of superior olivary complex regarding auditory transduction.

(*b*) State the compositional difference between endolymph and perilymph.

(*c*) Describe shortly the temporal theory of hearing. 2 + 1 + 2

Or

(*a*) What is combinatorial receptor coding for odors ?

(*b*) What is UPSIT test and how it is used for rapid quantitative olfactory function test ?

(*c*) Discuss briefly the mechanism of olfactory adaptation. 2 + 1 + 2

UNIT--24

Answer **all** the questions :

1. (*a*) What do you know by 'System biology' ?

(*b*) Discuss 'The dynamic behaviour of metabolic network' in the light of system biology. $1\frac{1}{2} + 3\frac{1}{2}$

Or

(*a*) Give an idea about peripheral and central chemoreceptors.

(*b*) Describe chemoreceptor reflexes diagrammatically.

(*c*) State briefly about the cardiovascular response to hemorrhage. $1\frac{1}{2}+2+1\frac{1}{2}$

2. Discuss briefly the control of heart rate by autonomic nervous system citing the effect of sympathetic and parasympathe blockers. 5

Or

State the intrinsic regulation of myocardial performance with special reference to Frank-Starling mechanism. 5

3. (*a*) Define transnural pressure.

(*b*) Why thin-walled capillaries can withstand high internal pressure without bursting ?

(*c*) Mention the role of prostacyclins in endothelium mediated vasodilation. $1+2+2$

Or

(*a*) Discuss diagrammatically the flow and diffusion-limited transport from capillaries to tissues.

(*b*) Mention critically how albumin maintains oncotic pressure in our body. $\left(1\frac{1}{2}+1\frac{1}{2}\right)+2$

4. (*a*) What are clara cells ?

(*b*) Describe briefly the non-respiratory functions of lungs. 1 + 4

Or

(*a*) What are obstructive and restrictive lung disease ?

(*b*) What is a mucolytic agent ? Cite suitable examples.

(*c*) Discuss the role of CFTR protein in cystic fibrosis. 2 + 1 + 2