

2015

PHYSIOLOGY

[Honours]

PAPER – III

Full Marks : 90

Time : 4 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

GROUP – A

Answer any **two** questions, taking
one from each Subgroup : 15 × 2

Subgroup – A(a)

1. (a) Discuss the ionic basis of the resting membrane potential.

(b) Discuss the molecular mechanism of release of acetylcholine in neuro-muscular junction. 7 + 8

2. (a) Compare the physiological mechanisms of isotonic and isometric muscle contractions.

(b) Give a brief account of the morphological and functional classification of neuronal synapse. 8 + 7

3. (a) Describe the visual pathway and mention the effects of lesion in different locations of this pathway.

(b) Describe the origin, cause and termination of auditory pathway. 8 + 7

Subgroup – A (b)

4. (a) Describe the receptors, origin, course and termination of tract of Goll and Burdach.

(b) Schematically draw the human cerebral hemispheres and label its different lobes. Mention the important functions of these lobes. 8 + 7

5. (a) Discuss the role of hypothalamus in body temperature regulation.
- (b) Discuss the physiological changes during heat stroke. State the management of heat stroke. 8 + (4 + 3)
6. (a) Describe the micturition reflexes and comment on the regulation of these reflexes by higher neural areas.
- (b) Discuss the regulation of acid base balance of body fluids by kidney. 7 + 8

GROUP – B

Answer any **five** questions, taking
at least **two** from each Subgroup : 8 × 5

Subgroup – B(a)

7. Describe briefly the chemical changes that occur in skeletal muscles during its activity. 8
8. What is activation heat ? Discuss the thermal changes in skeletal muscles during its contraction and relaxation. 2 + 6

9. Describe the neural pathways carrying olfactory signals to brain. 8
10. Trace the nerve pathways for taste impulse with a neat, self explanatory diagram. 8
11. Describe with a diagram the structure of retina. 8

Subgroup – B(b)

12. What do you mean by Gray Ramus and White Ramus communications ? Describe the general plan of organization of sympathetic nervous system. 2 + 6
13. Describe the diffuse thalamocortical system and discuss its role in sleep and wakefulness. 8
14. What is triple response ? What is the physiological basis of high temperature in fever ? 4 + 4

15. Describe the role of counter current multiplier and exchanger mechanisms in formation of hypertonic urine. 8
16. What are the abnormal constituents of urine ? Discuss briefly their clinical significances. 3 + 5

GROUP – C

Answer any **five** questions, taking at least **two** from each Subgroup : 4 × 5

Subgroup – C (a)

17. What do you mean by single unit and multiunit smooth muscles ? 2 + 2
18. What are the differences between "motor point" and "motor unit" ? 2 + 2
19. What are meant by EPP and MEPP ? 2 + 2
20. Describe the structure of olfactory receptor. 4
21. Briefly describe the process of myelogenesis. 4

Subgroup – C (b)

22. What do you mean by hyperthermia and hypothermia? 2 + 2
23. How GFR can be measured by clearance test? 4
24. What is Brown-Sequard syndrome? 4
25. Describe Papez circuit. 4
26. Why REM sleep is called paradoxical sleep? 4
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