

2015

PHYSIOLOGY

[Honours]

PAPER – II (New)

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

[NEW SYLLABUS]

GROUP – A

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

Subgroup – A (a)

1. (a) Describe the organization of sarcotubular system of skeletal muscle.

- (b) State briefly the sliding theory of skeletal muscle contraction.
- (c) What is end plate potential? Describe the mechanism of generation of end plate potential.
- (d) What is motor point? $3 + 5 + (1 + 4) + 2$
2. (a) Describe the mechanism of transmission of cardiac impulse through the special junctional tissues of heart.
- (b) What is Starling's law of heart? Mention its physiological importance.
- (c) Discuss the role of baroreceptor and chemoreceptor in blood pressure regulation. $5 + (2 + 3) + 5$
3. (a) Describe the role of Ca^{++} in synaptic transmission.
- (b) What are EPSP and IPSP? Mention the ionic basis of their development.
- (c) State the importance of myelination. $(4 + 2) + (3 + 3) + 3$

Subgroup – A (b)

4. (a) Mention the names of the respiratory muscles.
- (b) How is CO_2 transported from tissues to lungs?
- (c) What is Hering-Breuer reflex? State its significance.
- (d) Mention the non-respiratory functions of lung. 2 + 6 + (1 + 2) + 4
5. (a) Describe the innervation of alimentary canal.
- (b) Describe the mechanism of secretion of HCl in stomach.
- (c) Why stomach wall is insensitive to HCl in normal condition?
- (d) State the significance of entero-hepatic circulation. 4 + 6 + 3 + 2
6. (a) What is JG apparatus? Mention its function.

- (b) Describe the counter-current mechanism in hypertonic urine formation.
- (c) Describe the micturation reflex. $(2 + 2) + 5 + 6$

GROUP – B

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

Subgroup – B (a)

7. (a) Describe the thermal changes occurring during skeletal muscle contraction.
- (b) Distinguish between single unit and multiunit smooth muscles. $4 + 4$
8. (a) State the relation between chronaxie and rheobase.
- (b) How is action potential developed? $4 + 4$
9. (a) What are central, peripheral and venous pulses?
- (b) State the relationship between minute volume and heart rate. $4 + 4$

10. (a) Write down the principles of echocardiogram.
(b) What are the different leads used in ECG ? 4 + 4
11. (a) Describe the anatomical organization and peculiarities of pulmonary circulation.
(b) What is portal circulation ? $2\frac{1}{2} + 2\frac{1}{2} + 3$

Subgroup – B (b)

12. (a) What is GFR ? How is it measured by inulin clearance test ?
(b) What are the abnormal constituents of urine ? (2 + 4) + 2
13. (a) State the composition of salivary juice.
(b) Describe the regulation of salivary juice secretion. 3 + 5
14. (a) Describe the different types of intestinal movements.
(b) Give brief idea about gall stones and peptic ulcer. 4 + (2 + 2)

15. (a) What is oxygen dissociation curve ?
- (b) Mention the role of 2, 3 BPG and pH on oxygen dissociation curve. $3 + (3 + 2)$
16. (a) What is lung compliance ? Mention the factors affecting lung compliance.
- (b) What is coughing reflex ? $(3 + 3) + 2$

GROUP – C

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

Subgroup – C (a)

17. State the length-tension relationship of skeletal muscle. 4
18. Mention the location and functions of cardiac valves. 4
19. How is cardiac output measured by isotopic method ? 4

20. State the effects of neurotrophins on nerve growth. 4
21. Distinguish between red and white muscles. 4

Subgroup – C (b)

22. Write short note on pancreatitis. 4
23. Mention the causes of different types of hypoxia. 4
24. Distinguish between medullary nephron and cortical nephron. 4
25. What do you understand by 'chloride shift' and 'cyanosis'? 2 + 2
26. (a) Define lung surfactants.
- (b) State the significance of vital capacity. 2 + 2
-