

2016

PHYSIOLOGY

[Honours]

PAPER – II

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

(Turn Over)

Subgroup— A (a)

1. (a) Describe the EM structure of neuromuscular junction with a suitable diagram.
- (b) Discuss the mechanism of transmission of impulse through neuromuscular junction.
- (c) What do you mean by absolute refractory period? Differentiate between fast and slow twitch muscle fibres. (3 + 3) + 5 + (2 + 2)
2. (a) Mention the electro-physiological concept of generation of pacemaker potential.
- (b) Why artificial pacemaker is used ?
- (c) State the significance of different components of normal ECG.
- (d) What is Einthoven's triangle? 6 + 1 + 6 + 2
3. (a) What do you mean by high blood pressure ?

(b) Define pulse pressure.

(c) Describe the humoral regulation of blood pressure in man.

(d) Discuss the anatomical organization of coronary circulation. $2 + 1 + 6 + 6$

Subgroup— A(b)

4. (a) What is pleura ? State its role in respiration.

(b) Describe the mechanism of breathing mentioning the role of various receptors involved in it.

(c) Name the accessory muscles of respiration and state their functions.

$(2 + 2) + (4 + 2) + (2 + 3)$

5. (a) What do you mean by Peyer's patch and crypts of Leiberkuhn ? State their functions.

(b) Discuss the mechanism of secretion of bile in human.

- (c) Mention the differences between hepatic bile and gall bladder bile.
- (d) What is hyperchlorhydria ? $(2 + 3) + 6 + 2 + 2$
6. (a) State the location and function of Lacin cell.
- (b) Describe the physiological mechanism of urine formation in man.
- (c) Mention the principle of dialysis. What do you know about artificial kidney ?
 $2 + 8 + (2 + 3)$

GROUP - B

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

Subgroup - B (a)

7. (a) Differentiate between isometric and isotonic contractions.
- (b) Describe the role of various factors affecting smooth muscle contraction. $3 + 5$

8. (a) What is saltatory conduction ?
- (b) Discuss the electrophysiological process of propagation of nerve impulse in unmyelinated nerve fibre. 2 + 6
9. (a) How cardiac output is determined by Fick's method ?
- (b) Discuss the role of factors regulating cardiac output. 4 + 4
10. (a) Justify the role of cardiac muscle as electrical and functional syncytium.
- (b) Write down the peculiarities of cutaneous circulation. (2 + 2) + 4
11. (a) State the structure and distribution of acetylcholine receptor.
- (b) How degeneration and regeneration take place in peripheral nerve fibre due to injury? (1 + 2) + (3 + 2)

Subgroup— B (b)

12. Describe the role of respiratory centers and peripheral chemoreceptors in the regulation of respiration. 4 + 4
13. (a) Describe the mechanism of gaseous exchange between the blood and the tissues.
- (b) State the utilities of pulmonary function test. 4 + 4
14. (a) Mention the composition and functions of pancreatic juice.
- (b) State the functions of mastication. (2 + 4) + 2
15. (a) What is meant by renal threshold ?
- (b) Discuss the non-excretory functions of kidney. 2 + 6
16. (a) What is micturition ?
- (b) Mention with proper diagram the nerve supply of urinary bladder. 2 + 6

GROUP – C

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

Subgroup – C (a)

17. Briefly mention the electrical changes in striated muscle during contraction. 4
18. Write down the conduction velocity of nerve impulse in relation to the diameter of nerve fibres. 4
19. Mention the origin and significance of different heart sounds. 2 + 2
20. What is tetanus ? How does fatigue develop in the muscle fibre ? 1 + 3
21. What is meant by vasomotor reflex ? Briefly mention the role of VMC on regulation of blood pressure. 1 + 3

Subgroup— C (b)

22. Name the techniques of artificial respiration and discuss any one of the methods briefly. 2 + 2
23. Discuss the role of salivary juice on the digestion of food. 4
24. What is Pavlov's pouch ? Mention the importance of Pavlov's pouch. 2 + 2
25. State the significance of urea clearance test. 4
26. What are regulatory proteins ? Briefly mention the EM structure of myosin. 1 + 3
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