**UG/I/PHY/H/II/18**

**2018**

**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*

GROUP – A

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

Subgroup – A (a)

1. (*a*) Write the EM structure of neuromuscular junction with proper diagram.

(*b*) How nerve impulse is propagated through neuromuscular junction ?

(*c*) Why isometric contraction is more fatigued than isotonic contraction ? 6 + 7 + 2

**2.** (*a*) Give a brief account on the relation between conduction velocity and diameter of nerve fibre.

(*b*) What do you mean by relative and absolute refractory periods ?

(*c*) How Wallerian degeneration takes place ? Mention the ionic basis of resting membrane potential. 4 + 2 + 4 + 5

**3.** (*a*) Define Cardiac index. Discuss the role of various factors regulating Cardiac output.

(*b*) How Cardiac output is determined by Fick method ? Why pulmonary circulation is called lesser circulation ? (2 + 6) + (5 + 2)

## Subgroup – A(b)

**4.** (*a*) Name the muscles responsible for inspiration and state their specific roles.

(*b*) Discuss the avenues of entry of oxygen into the blood.

(*c*) What is Bohr effect ? Mention the graphical relation between saturation percentage and partial pressure of Oxygen. 6 + 4 + 5

5. (*a*) Discuss the mechanism of secretion and regulation of saliva.

(*b*) State the role of saliva in digestion.

(*c*) What is Pavlov's pouch ? Mention the significance of such pouch preparation. (4 + 3) + 3 + (2 + 3)

6. (*a*) Write the structural differences between cortical and juxtamedullary nephrons.

(*b*) Mention the non-excretory junction of kidney.

(*c*) Describe the mechanism of formation of urine in man. 2 + 5 + 8

## GROUP – B

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

## Subgroup – B (a)

7. (*a*) How Cardiac muscle behave as mechanical and electrical syncytium ?

   (*b*) What is sarcotubular system ? State its importance in muscle contraction. 4 + 4

8. (*a*) Discuss the role of chemoreceptors in the regulation of blood pressure.

   (*b*) Mention any two peculiarities of cutaneous circulation. 6 + 2

9. (*a*) What do you mean by adrenergic receptor ?

   (*b*) Mention the structure and distribution of acetyl choline receptor in man. 2 + (4 + 2)

10. (*a*) What is circle of Willis ?

    (*b*) State the anatomical organization of Coronary circulation. 2 + 6

11. (*a*) Mention the origin and significance of various heart sounds.

    (*b*) What is Einthoven's law ? 6 + 2

## Subgroup – B (b)

12. (*a*) Describe the modern concept of regulation of respiration in man.

    (*b*) What is MBC ? 6 + 2

13. (*a*) Discuss the mechanism of secretion of bile.

    (*b*) State the functions of gall bladder. 6 + 2

14. (*a*) Name the renal function tests and mention the significance of each test.

    (*b*) What is the function of erythropoeitin ? 6 + 2

15. (*a*) What do you mean by artificial kidney ?

    (*b*) Mention the principle and significance of dialysis. 3 + (2 + 3)

16. (*a*) Write a brief note on gall stone.

    (*b*) Mention the histoarchitecture of taste bud.

    (*c*) What is papillae ? 4 + 3 + 1

## GROUP – C

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

### Subgroup – C (a)

**17.** Name the regulatory proteins and mention their role in muscle contraction. 2 + 2

**18.** Differentiate between slow and fast twitch muscle fibres. What is End-Plate potential ? 3 + 1

**19.** What are neurotrophins ? Mention their role on nerve growth. 2 + 2

**20.** Define venous pulse. Why SA node is called pacemaker of the heart ? 2 + 2

**21.** What is saltatory conduction ? Mention the role of subsynaptic web in impulse propagation. 3 + 1

### Subgroup – C (b)

**22.** Define hypoxia. Mention the reasons of hypoxia. 1 + 3

23. How will you differentiate the duodenum from jejunum on the basis of their histological characteristics ? What is deglutition ? 2 + 2

24. State the role of intrathoracic and intrapleural pressures in respiration. 2 + 2

25. What is autiperistalsis ? Define achlorhydria. 2 + 2

26. Which nerve fibre is called 'nerve of filling' ? What is Ludwig shunt ? 2 + 2

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