

OLD

2015

Part I 3-Tier

PHYSIOLOGY

PAPER—I

(Honours)

Full Marks : 90

Time : 4 Hours

The figures in the right hand margin indicate full 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 Sub-group.

2×15

Subgroup—A(a)

1. (a) Describe the structure of Golgi-complex and state its role in storage and transport.

(Turn Over)

- (b) Mention in brief the sources and biological effects of reactive oxygen species (ROS).
- (c) Write short note on cell cycle. (3+4)+4+4
2. (a) What are colloids? What are their importance in physiological system?
- (b) Write down the properties of colloids.
- (c) What is reversible covalent modification? Describe with an example.
- (d) What are isozymes? (2+3)+4+(2+3)+1
3. (a) Describe the intrinsic mechanism of blood coagulation.
- (b) What is prothrombin time?
- (c) Discuss critically the role of Vit-B₁₂ and folic acid in erythropoiesis.
- (d) What is plasmapheresis? 5+1+(3+3)+3

Subgroup—A(b)

4. (a) Describe the origin and propagation of cardiac impulse.

- (b) Discuss the role of baroreceptors and chemoreceptors in the regulation of blood pressure. 7+8
5. (a) Discuss the process of determination of cardiac output by Fick's principle.
- (b) How venous return and peripheral resistance regulate the cardiac output?
- (c) Write in brief the role of renin-angiotensin system in controlling blood pressure.
- (d) What is Venous pulse? 4+6+4+1
6. (a) Mention the inspiratory and expiratory muscles. How they are involved in breathing?
- (b) What do you understand by lung compliance? Discuss the role of surfactant in maintaining lung compliances. (3+5)+(3+4)

Group—B

Answer any *five* questions, taking at least *two* questions
from each of the Sub-groups. 5×8

Subgroup—B(a)

7. Name the important characteristic features of epithelial and connective tissue. 4+4
8. (a) Write a brief note on conjugate acid-base pair.
(b) What is isoelectric precipitation? 4+4
9. What do you mean by entropy? How is physiological steady state maintained? 3+5
10. (a) What do you understand by feed back and feed forward regulations?
(b) What are rate limiting enzymes? 5+3
11. Describe the formation, composition, circulation and functions of lymph. 2+2+2+2

Subgroup—B(b)

12. Define Frank-Starling's law of heart. Write down the importance of first and second heart sounds. 3+5
13. Discuss in brief the role of respiratory centers in regulation of respiration. 8
14. Describe the carriage of carbon di oxide by the blood. 8
15. State Einthoven's law. Describe different leads used in recording ECG. What is P-R interval? 2+4+2
16. What is artificial respiration? Describe a method of artificial respiration. 3+5

Group—C

Answer any *five* questions, taking at least *two* from each Sub-groups. 5×4

Subgroup—C(a)

17. Write down the underlying reasons for development of pernicious and aplastic anemia. 2+2

18. Write down the structure of nuclear sheath. What is gap junction ? 2+2
19. Write short notes on Van der Waals forces and hydrophobic interactions. 4
20. Write Van't Hoff Laws of osmosis. 4
21. What are Rh-antigens ? 4

Subgroup—C(b)

22. What is vasomotor reflex ? 4
23. How pulmonary circulation varies with different phases of respiration. 4
24. Write the principle of sphygmomanometry. 4
25. Write short note on bronchial emphysema. 4
26. What is hypertension ? 4
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