

2015

PHYSIOLOGY

[ Honours ]

PAPER – VI

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** question from each Subgroup : 15 × 2

Subgroup – A(a)

1. (a) Define  $VO_2$  max. How is it expressed in absolute and relative rate? 2 + 2

- (b) Describe briefly a method for measurement of  $\text{VO}_2$  max of an individual. 5
- (c) State the factors regulating  $\text{VO}_2$  max. 4
- (d) What do you mean by isokinetic work ? 2
2. (a) Classify variables with examples. 4
- (b) How do you differentiate between one tail and two tail 't' test ? 2
- (c) State the assumptions for 't' test. 4
- (d) How 't' test is performed for estimating the significance of difference between sample means ? 5
3. (a) State the basic principle and application of ion-exchange chromatography. 3 + 2
- (b) State the principle and uses of CT-scan. 3 + 2
- (c) Describe briefly the principle of ELISA for hormone assay. 5

## Subgroup – A(b)

4. (a) Define G-force. State the effects of Negative G-force on different organs and systems in human body. 2 + 5
- (b) Describe briefly the effects of vibration on human body. 4
- (c) Compare and contrast “mountain sickness” and “blue-baby syndrome”. 2 + 2
5. (a) Classify bacteria on the basis of morphology. Discuss four important physical conditions required for bacterial growth. 3 + 4
- (b) What do you know about glyoxalate cycle? 2
- (c) Describe briefly the production and utility of “Monoclonal Antibody”. 4 + 2
6. (a) Critically discuss about the characteristics of dose response curve of drug in human body with suitable diagram. 4
- (b) Distinguish between ED50 and LD 50. 3

- (c) Briefly describe the chemistry and physiological effects of phenoxybenzamine. 2 + 3
- (d) What do you mean by "Drug Biotransformation"? 3

GROUP – B

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

Subgroup – B(a)

7. (a) What is anthropometry? State, in brief, the application of anthropometry in nutritional assessment. 1 + 3
- (b) Outline the relevance of industrial safety citing suitable examples. 4
8. (a) Distinguish between "Hardware" and "Software". 3
- (b) What do you mean by computer networking? Briefly describe about WAN and LAN. 1 + 4

9. (a) Define Linear Corrélation. How do you compute product moment correlation coefficient ? 1 + 4
- (b) What do you mean by 'Skewness' ? 3
10. (a) State the basic principle and use of flame photometer. 2 + 3
- (b) What is SDS-PAGE ? 3
11. Write short notes on : 4 + 4
- (i) GLC
- (ii) Ergogenic aids.

Subgroup – B(b)

12. (a) Classify Pesticide. Briefly describe the mechanism of action of organo-phosphorus pesticides in human body. 2 + 3
- (b) Write briefly on "Eutrophication". 3
13. (a) State the different types of culture media. 3

(b) Describe briefly the chemical structure of peptidoglycan layer of bacterial cell wall. 5

14. (a) What is downstream process ? Mention its applications. 2 + 2

(b) Clarify the elementary concept of "genomics". 4

15. (a) Briefly describe the mechanism of action of Barbiturates on human body. 4

(b) State the pharmacological actions of 'Reserpine' and "Physostigmine". 2 + 2

16. Write short notes on : 4 + 4

(i) Intellectual property rights

(ii) Proteomics.

GROUP – C

Answer any **five** questions taking at least **two** questions from each Subgroup :  $4 \times 5$

Subgroup – C(a)

17. Mention the role of bioenergetics in aerobic and anaerobic exercise. 4
18. Distinguish mean and mode. How will you prepare your college routine using “MS-WORD”?  $2 + 2$
19. State the principle and use of scintillation counter. 4
20. Write a note on density-gradient ultracentrifugation. 4
21. Discuss the respiratory changes during graded exercise. 4

Subgroup – C(b)

22. State changes in environment due to overgrowth of biomass and population.  $2 + 2$

23. Outline briefly the causes and preventive measures of heat disorder. 4
24. State the differences between : 2 + 2
- (a) Sterilization and Pasteurization
- (b) Bacteriostatic and Bactericidal agents
25. State the pharmacological actions of tubocurarine.  
What are nerve gases? 2 + 2
26. (a) What is the generation time of a bacterial population that increases from 10,000 to 10,000,000 in 4 hrs? 3
- (b) 15 KB = \_\_\_\_\_ Bytes. 1
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