

2017

**PHYSIOLOGY**

[ Honours ]

PAPER – III

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*

[ OLD SYLLABUS ]

GROUP – A

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

Subgroup – A (a)

1. (a) What is neurotrophin ?

( Turn Over )

( 2 )

- (b) Explain how conduction of nerve impulse is related to myelination and diameter of nerve fiber.
- (c) Discuss the ionic basis of resting membrane potential. 2 + 6 + 7
2. (a) Discuss the molecular mechanism of acetylcholine release in the neuromuscular junction.
- (b) What is motor unit ?
- (c) Discuss the process of degeneration of nerve fibre. 6 + 2 + 7
3. (a) State the mechanism of sound frequency discrimination in human auditory system.
- (b) State the functional significance of middle ear in hearing.
- (c) Discuss the process of transmission of olfactory impulses. 6 + 3 + 6

Subgroup – A(b)

4. (a) Name the nuclei of cerebellum.
- (b) Discuss the role of cerebellum in goal oriented voluntary motor activity.
- (c) What is dysmetria ?
- (d) Write the functions of flocculonodular lobe. 2 + 7 + 2 + 4
5. (a) How does sweat secretion influence our body temperature in hot climate ?
- (b) What is hypothermia ? Describe the physiological changes that occur during extreme cold condition. 8 + (3 + 4)
6. (a) State the role of counter current multipleir mechanism in the formation of hypertonic urine.
- (b) Discuss the role of kidney in regulation of acid base balance. 8 + 7

( 4 )

GROUP – B

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

Subgroup – B (a)

7. What are injury current, EPP and EPSP?  $3 + 2 + 3$
8. (a) What is saltatory conduction ?
- (b) Discuss the differences between fast twitch and slow twitch skeletal muscle fibers.  $2 + 6$
9. (a) State the mechanism of accommodation of eye in brief.
- (b) What is Argyll-Robertson pupil?  $6 + 2$
10. What is tetanic contraction of skeletal muscle ?  
Write down the role of calcium ion in it.  $4 + 4$
11. (a) Mention different papillae present on tongue surface.

( 5 )

(b) Discuss the histology of taste bud with a diagram.

(c) Elucidate your idea on basic taste modalities. 2 + 4 + 2

**Subgroup – B (b)**

12. Discuss in brief the origin, course, termination and functions of tract of Goll and Burdach. 8

13. (a) Discuss the functional changes that take place after hemisection of spinal cord.

(b) What is Brown-Sequard syndrome? 6 + 2

14. (a) What is EEG? What are the waves of EEG?

(b) What is alpha block? (2 + 4) + 2

15. State the role of higher centers in the regulation of body temperature in homeothermic animals. 8

16. (a) Name four abnormal constituents of urine.

(b) Classify mictaration reflexes mentioning their regulatory centers. 2 + 6

( 6 )

**GROUP – C**

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

**Subgroup – C (a)**

- 17. Briefly state the process of myelinogenesis. 4**
- 18. Differentiate isotonic and isometric contraction. 4**
- 19. (a) What is Weber-Fechner law ?**
- (b) Name the middle ear muscles and mention  
their functions. 2 + 2**
- 20. (a) What is protanopia ?**
- (b) What is olfactory adaptation ? 2 + 2**
- 21. What are single unit and multi-unit smooth  
muscle ? 4**

**Subgroup – C (b)**

- 22. Write the features of Parkinson's disease. 4**

( 7 )

23. Write a note on urea clearance test. 4
24. (a) State the functions of blood brain barrier (BBB).  
(b) What is hydrocephalus? 2 + 2
25. What are long term and short term memory? 2 + 2
26. Briefly state the non-excretory functions of kidney. 4
-

**Total Pages—6**

**UG/II/PHY/H/IV/17(Old)**

**2017**

**PHYSIOLOGY**

**[ Honours ]**

**PAPER – IV**

*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*

**[ OLD SYLLABUS ]**

**GROUP – A**

**Answer any two questions taking at least one  
from each Subgroup**

**Subgroup—A(a)**

- 1. (a) Discuss the histological structure of Thyroid gland with neat diagram.**

*( Turn Over )*

- (b) How iodine is trapped by the follicular cell ?
- (c) Mention the genomic actions of Thyroxine.  $(4 + 3) + 4 + 4$
2. (a) Discuss with diagram, the structure of a graafian follicle.
- (b) What are the non-sexual actions of testosterone ?
- (c) Enumerate the functions of Sertoli cell.  $5 + 5 + 5$
3. (a) What is puberty ? Describe the hormonal control of puberty.
- (b) What is LH surge ? Describe its physiological significance.
- (c) What is galactokinesis ?  $(2 + 5) + (1 + 5) + 2$

Subgroup—A(b)

4. (a) What are the characters of acquired immunity ?

- (b) Discuss the molecular structure of MHC-II.
- (c) "Humoral immunity depends on T-cell activity" – Justify. 5 + 6 + 4
5. (a) Discuss the neural basis of biological clock in human.
- (b) How secretion of LH and FSH are controlled rhythmically?
- (c) Describe the fate of ACTH biorhythm in case of night workers. 5 + 5 + 5
6. (a) Discuss the dietary management of marasmus and rickets.
- (b) Mention the composition and function of ORS.
- (c) What is nutritional anaemia? (3 + 3) + (3 + 3) + 3

GROUP – B

Answer any **five** questions taking at least **two** from each Subgroup

Subgroup B(a)

7. (a) Discuss the mechanism of action of JAK-STAT pathway.
- (b) Why aldosterone is essential for life ? 5 + 3
8. Describe the development of cardiovascular system in a fetus. 8
9. Briefly discuss the physiological actions of gastrin and oxytocin. 4 + 4
10. What is corpus luteum ? Draw a flowchart of spermatogenesis. 3 + 5
11. How blastula is formed during pregnancy ? Describe the uterine implantation of fertilized ovum. 2 + 6

Subgroup--B(b)

12. Write the name of four macrophages with their location. How does agglutination reaction occur in immunity ? 4 + 4
13. Describe the process of type I hypersensitivity with a suitable diagram. 8

14. Define autoimmunity with example. What are primary lymphoid organs? 5 + 3
15. Describe the causes and clinical features of Xerophthalmia. 3 + 5
16. Discuss the role of suprachiasmatic nuclei as a biological clock. What is jet lag? 6 + 2

GROUP – C

Answer any five questions taking at least two from each Subgroup

Subgroup--C(a)

17. Define Group I and Group II hormones. 2 + 2
18. Mention the mechanism of action of insulin. 4
19. What are meant by primary and secondary sex organs? Name them. 4
20. Mention the principles of Gravidex test. 4
21. What are functions of hCG and hCS? 2 + 2

( 6 )

Subgroup—C(b)

22. What are haptens and adjuvants? 2 + 2
23. Classify lymphoid organs and write the functions of each. 4
24. What is attenuated vaccine? Define anaphylaxis. 2 + 2
25. Mention two food pollutants and two food adulterants. 2 + 2
26. How overpopulation can be controlled chemically? 4
-