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M.Sc. 3rd Semester Examination, 2024

PHYSIOLOGY

(*Human Physiology*)

PAPER – PHY-301.1 & 301.2

Full Marks : 50

Time : 2 hours

Answer all questions

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

PAPER : PHY-301.1

GROUP – A

Answer any **two** questions from the following :

$2 \times 2 = 4$

1. Mention the functions of mitral cells. 2

(Turn Over)

(2)

2. Write down the significance of horizontal cells present in retina. 2
3. Mention the functional importance of cochlear nucleus during sound transmission. 2
4. Define normal pacemaker and ectopic pacemaker. 1 + 1

GROUP – B

Answer any **two** questions from the following :

5. Briefly describe the mechanism of generation of receptor potential in rod cells. How authythmicity of heart is generated ? $4 \times 2 = 8$ 2 + 2
6. What are the montages used in EEG ? What are the factors affecting the mean electrical axis of human heart ? 2 + 2
7. Shearing forces are created between the hair cells and the tectorial membrane as a result of basilar membrane displacement—Explain. What types of membrane protein are found in hair cells ? 3 + 1

(3)

8. What is atrial flutter ? What is meant by cardiac arrest ? What is CPR ? $1 + 1 + 2$

GROUP – C

Answer any **one** question from the following :

$$8 \times 1 = 8$$

9. What is understood by visual interpretation ? Write down the hypothesis behind twin phenomenon. Write the difference between short term adaptation and desensitisation of olfaction. $2 + 4 + 2$
10. With a suitable diagram describe the flow of K^+ circulation through the Organ of Corti during the formation of endocochlear potential. How medial geniculate body (MGB) is responsible for sound transmission ? $4 + 4$

PAPER : PHY-301.2

GROUP – A

Answer any **two** questions from the following :

$$2 \times 2 = 4$$

11. What is metarteriole ? Mention its significance. 1 + 1
12. Define transmural pressure. What is vasomotion ? 1 + 1
13. What is Clara cell ? Mention its importance. 2
14. Mention the significance of FEV1/FVC ratio. 2

GROUP – B

Answer any two questions from the following :

$4 \times 2 = 8$

15. Describe the flow-limited and diffusion-limited transport from capillaries to tissue. 2 + 2
16. How heart rate is controlled by Bainbridge and Baroreceptor Reflexes ? 4
17. What is mucociliary clearance ? Mention the regulatory factors of it. 2 + 2

(5)

18. How the balance in the synthesis of prostacyclin and thromboxane A₂ is controlled by aspirin ? 4

GROUP – C

Answer any **one** question from the following :

8 × 1 = 8

19. Cardiac functions are controlled by parasympathetic, sympathetic autonomic divisions and various brain regions : Discuss critically. 3 + 3 + 2
20. Write a short note on thoraco-abdominal compression technique of estimation of lung function in neonates. Mention the causes of cystic fibrosis. 4 + 4

[Internal Assessment – 10 Marks]

