

M.Sc. 2nd Semester Examination, 2023

HUMAN PHYSIOLOGY

PAPER – PHY-203.1 & 203.2

Full Marks : 40

Time : 2 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

PHY-203.1

(Physiology of Excitable Cells and Higher Functions of Brain)

[Marks : 20]

GROUP – A

Answer any two questions from the following :

2 × 2

1. What are the sources of energy during skeletal muscle contraction ?

2

(Turn Over)

2. What are declarative and non-declarative memory? 1 + 1
3. What is sleep spindle? 2
4. What is brainstem reticular formation? Mention the names of reticular nuclei. 1 + 1

GROUP – B

Answer any two questions from the following : 4 × 2

5. What are neurotrophins? Describe the cellular and molecular mechanisms of the functions of neurotrophin in the nervous system. 1 + 3
6. Write about the role of melatonin on circadian rhythm? Briefly write down the functions of dorsolateral nuclei of spinal cord. 2 + 2
7. Write a short note on Parkinson's disease. 4
8. Briefly describe the mechanism of quantal release following presynaptic neuron stimulation. 4

GROUP – C

Answer any one question from the following : 8×1

9. What is aversion learning ? Mention the difference between Aversion learning and Operant conditioning. Define reinforcement and extinction in operant conditioning. $2+3+3$
10. Describe the molecular mechanism of skeletal muscle contraction with relevant diagram(s). What are the basic difference(s) in action potential(s) of different class of muscle cells ? $5 + 3$

PHY-203.2

[Marks : 20]

(Human Physiology)

GROUP – A

Answer any two questions from the following : 2×2

1. What are positive and negative feedback mechanisms operating in homeostasis ? 2

2. What do you mean by secondary hemostasis ? 2
3. Mention the name of the reactive oxygen and nitrogen species. 2
4. What are the important major changes occurring at the cellular level during the acclimatization of humans to low PO_2 ? 2

GROUP – B

Answer any two questions from the following : 4×2

5. Write a short note on homeostatic regulation of body temperature. 4
6. Define thrombocytopenia. What are the causative factors responsible for this condition ? 1 + 3
7. What is centrifugal acceleatory force ? What is decompression sickness ? 2 + 2
8. How can the alterations in ROS/RNS levels be modulated by 'Transcriptional regulation' ? 4

GROUP – C

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

8 × 1

9. What is intestinal microbiota? Discuss the crosstalk between the mucosal innate immune system and gut microbiota. What is GALT?

2 + 4 + 2

10. Describe the mechanism of anticoagulation through antithrombin. State the role of protein C in anticoagulation. What is protein 'Z'? 4 + 3 + 1
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