2024

M.Sc. 2nd Semester Examination

HUMAN PHYSIOLOGY (New & Old)

PAPER : PHY-203

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. Illustrate the answers wherever necessary.

SECTION-A (New) PAPER : PHY-203.1 (Physiology of Excitable Cells and Higher Functions of Brain)

GROUP—A

Answer any **two** questions : $2 \times 2=4$

- **1.** Name two molecules which can inhibit the synaptic transmission. Specify it's action. 1+1
- **/974** (*Turn Over*)

- 2. With suitable example, differentiate between priming and conditioning. 1+1
- **3.** What is paradoxical sleep? Name the endogenous molecule that produces in the CSF of a prolonged awake individual. 1+1
- **4.** Define aversion learning with an example.1+1

GROUP—B

Answer *any* **two** questions : 4×2=8

- Write a brief note on the sources of energy in the skeletal muscle activity.
- 6. Discuss the cellular and molecular basis of long-term potentiation and long term depression.
- 7. What is Savant's syndrome? Discuss briefly about Karl Lashley's experiments on memory. 2+2
- 8. Briefly describe the 'septal rage'. How can you differentiate between the presynaptic and postsynaptic action potential? 2+2

(7) GROUP—B

Ans	swer any two questions : 4>	2=8
5.	Discuss about homeostatic regulation of a temperature.	oody 4
6.	What is thrombocytopenia? Mention causative factor responsible for this.	the 2+2
7.	State the functions of catalase and SOD.	2+2
8.	Write a note on osmoregulation.	4
	GROUP—C	

- **9.** What is intestinal microbiota? Discuss about Gut Associated Lymphoid Tissue (GALT). Write a note on Crohn's disease. 2+3+3
- 10. Write down the role of heparin in anticoagulation mechanism. How does plasmin-plasminogen complex maintain anticoagulation? Mention two drugs used in anticoagulation process.

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Answer *any* **one** question :

8×1=8

(6)

8. Name the nucleus which is responsible for the circadian rhythm. In which brain region this nucleus is present? What is jet lags? 1+1+2

GROUP-C

Answer any **one** question :

9. Describe the molecular mechanism of skeletal muscle contraction. Draw a diagram and define neuromuscular junction. 4+4

 $8 \times 1 = 8$

10. Classify memory. Which brain regions are involved in the learning and memory process? What is amnesia?

SECTION-B (Old) PAPER : PHY-203.2

(Integrated Physiology Homeostasis)

GROUP-A

Ans	swer any two questions :	2×2=4
1.	What is homeostasis?	2
2.	What is MALT?	2
3.	Mention the names of the reactive on itrogen species.	oxygen and 1+1
4.	What do you mean by secondary ho	omeostasis? 2
/97	74	(Continued)

(3) GROUP—C

Answer any **one** question :

8×1=8

9. Define synaptic plasticity. What are dendritic spines? Cite examples of two tight junction proteins. Discuss briefly about Skinner's experiments on operant conditioning.

2+2+1+3

10. With relevant diagram(s), elaborate the role of Ca²⁺ in muscle contraction and neurotransmission. Distinguish between Myasthenia gravis (MG) and Lambert-Eaton Myasthenic Syndrome (LEMS). (3+3)+2

SECTION-B (New)

PAPER : PHY-203.2

(Integrated Physiology Homeostasis)

GROUP-A

Ans	swer any two questions :	2×2=4
1.	What is Homeostasis? What do you negative feedback in homeostasis?	mean by 1+1
2.	Mention the types of MALT.	2
3.	Write down different isoforms of gluperoxidase.	itathione 2
4.	What is TTP? Mention any two medicities for its treatment.	ines used 1+1
/97	4 (Turn Over)

(4) GROUP—B

Answer *any* **two** questions :

- Discuss the homeostatic regulation of body temperature.
- **6.** What do you know about thioredoxin and glutaredoxin system? 2+2
- 7. What are commensal bacteria? Why does immune system ignore commensal bacteria? 1+3
- 8. Describe briefly the anticoagulation mechanism through thrombomodulin-thrombin complex. What is protein Z? 3+1

GROUP-C

Answer *any* **one** question : 8×1=8

- **9.** Describe the process of formation of free radicals in mammalian cell. Discuss critically how alterations in ROS levels can modulate 'Direct oxidative modification'. 4+4
- 10. Describe the step-wise cell based model of blood coagulation. Write down the types of homeostasis process used in emergency medicine. What is Von-Willebrand disease? 3+3+2

(5) SECTION-A (Old) PAPER : PHY-203.1 (Physiology of Excitable Cells and Higher Functions of Brain)

GROUP—A

Ans	swer any two questions :	2×2=4
1.	What is axoplasmic flow?	2
2.	Define sarcomere.	2

- **3.** Name two excitatory neurotransmitters. 2
- **4.** Mention two nuclei present in the brain stem region. 2

GROUP-B

Answer	any	two	questions :	4>	<2=8
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- **5.** What is muscle dystrophy? What is the end plate potential? 2+2
- 6. Name one flexor and one extensor skeletal muscle. Mention the differences and similarities among the skeletal, cardiac and smooth muscles.
- 7. What is operant conditioning? Give examples of conditional stimulus and unconditional stimulus in classical conditioning. 2+2

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