

Total Pages – 4

M.Sc. RNLK-/PHY101/22

2022

Human Physiology

[First Semester]

Paper - PHY 101 (U1+U2)

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.

Unit - 01, 20 Marks

SYSTEMS PHYSIOLOGY

1. Answer any two questions from the following : 2×2=4

- a) What is GPCR? Mention its importance. 1+1
- b) What are the two types of cell death? 2
- c) How is Cardiac Index related to normal Physiology? 2
- d) What are baroreceptors and chemoreceptors? 1+1

(Turn Over)

(2)

2. Answer any two questions from the following : $4 \times 2 = 8$

- a) Describe briefly the process of protein-tyrosine phosphorylation. 4
- b) How Starling's law of Heart influencing the Cardiac Output?
- c) Briefly describe the Gut Brain axis physiology? 4
- d) Why pancreatic juice is necessary for digestive activity in the intestine? Mention the function of Paneth Cells. 3+1

3. Answer any one question from the following : $8 \times 1 = 8$

- a) (i) Write a short note on signaling through G-Protein coupled receptors.
- (ii) How does Kidney regulates the human blood pressure homeostasis. 4+4
- b) (i) Discuss the interplay of Calcium as intracellular messenger.
- (ii) What is cardiac reserve?
- (iii) Role of ANF. 4+(2+2)

(3)

Unit - 02, 20 Marks

PHYSIOLOGICAL CHEMISTRY AND METABOLISM

1. Answer any two questions from the following : $2 \times 2 = 4$

- a) What is Redox potential and why is it important?
1+1
- b) Mention the function of proteasome.
- c) Write down the importance of Ramachandran Plot. 2
- d) What are the functions of prostaglandins and leukotrienes?
1+1

2. Answer any two questions from the following : $4 \times 2 = 8$

- a) Describe the role of Clathrin in vesicular transport mechanism with a suitable diagram. 3+1
- b) Schematically discuss the folding funnel hypothesis. 4
- c) Define Q cycle. How is it operated during oxidative phosphorylation.
- d) Differentiate between competitive, noncompetitive and uncompetitive inhibition kinetics. 4

(4)

3. Answer any one question from the following : 8×1=8

a) Describe the physiological importance of TCA Cycle.
Write down the enzymatic steps of TCA cycle.
Mention the role of carnitine in fatty acid metabolism.

2+5+1

b) Describe the misfolding of proteins and the role of Chaperone proteins in protein folding. Name two diseases caused due to misfolded proteins. Define autoprolysis.

2+1+1+1