

U.G. 4th Semester Examination-2025

PHYSIOLOGY

[MAJOR]

Course Code : PHY-MJ-T-4

(Metabolic Physiology)

[NEP-2020]

Full Marks : 40

Time : 2½ 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.

GROUP-A

1. Answer any **five** questions from the following:

2×5=10

- a) What is deamination?
- b) Name the rate limiting steps of glycolysis.
- c) How does insulin affect cholesterol biosynthesis?
- d) Give example of one glycogenic and one ketogenic amino acid.
- e) Write the difference between oxidative phosphorylation and substrate level phosphorylation.

[Turn Over]

- f) What do you mean by abzymes?
- g) What is glycosylated haemoglobin?
- h) What is carnitine shuttle?

GROUP - B

2. Answer any two questions from the following:

$$5 \times 2 = 10$$

- a) Describe the anabolic role of TCA cycle. 5
- b) Discuss briefly about the importance of lipoproteins in human body. 5
- c) Describe the process of β -oxidation of palmitic acid. 5
- d) Describe the effect of temperature and pH on enzyme activity. $2\frac{1}{2} + 2\frac{1}{2} = 5$

GROUP - C

3. Answer any two questions from the following:

$$10 \times 2 = 20$$

- a) i) Describe the biosynthetic pathway for the production of serotonin and melatonin.
- ii) What is Hartnup disease? 8+2=10
- b) i) What are allosteric enzymes? How do they kinetically differ from Michaelis-Menten Kinetics?

- ii) Describe K_m value mentioning its physiological significance.

$$(2+4)+4=10$$

- c) i) Describe the oxidative steps of Pentose Phosphate Pathway?
- ii) What is von-Gierke's disease? 8+2=10
- d) i) Describe the process of fatty acid biosynthesis from acetyl CoA.
- ii) What is multienzyme complex?

$$8+2=10$$