Q.P Code **Reg. No.**

PG Degree Regular/Supplementary Examinations in Biochemistry (M.D)

Paper II – Enzymes, Bioenergetics, Biological oxidation, Intermediary metabolism and inborn errors of metabolism, Nutrition, Vitamins and Minerals, Detoxification and metabolism of xenobiotics, Free radicals, and anti-oxidant defense systems

Time : Three Hours **Maximum : 100 Marks**

Essay: **(20)**

1. Discuss how lipoproteins function in lipid delivery to tissues and in reverse cholesterol transport

Short Essays **(8 x10 = 80)**

2. Discuss the biochemical principles underlying the management of diabetes mellitus, including dietary, pharmacological, and lifestyle intervention
3. Enzymes are desirable targets for drug development – comment on
4. Enumerate and briefly explain the protein quality indices used to evaluate the nutritional value of dietary proteins
5. Define metabolons and discuss their significance in cellular metabolism
6. List the uncouplers of oxidative phosphorylation and discuss their mechanism of action and physiological effects
7. Mention the neurotransmitters derived from amino acids and briefly describe their biosynthesis and physiological functions
8. A 3-month-old male infant presents to the Pediatric OPD with blisters on the hands, feet and face. The mother reports that the blisters appeared suddenly after sun exposure during a family event. She also mentions that the baby's diapers are occasionally stained red.
   a) Discuss the differential diagnosis for this presentation
   b) Outline the complete laboratory investigations required for a confirmatory diagnosis
   c) Add a note on precautions to be taken during specimen collection and storage in this case
9. A 17-year-old boy complains of muscle cramps and fatigue during exercise. Urine becomes dark after physical exertion. Laboratory investigations: Myoglobinuria **,** ↑ CK **,** Forearm exercise test : ↑ ammonia **,** No lactate rise**.**

a) What is the likely diagnosis and give the reason ?

b) Explain the biochemical defect

c) Explain why lactate levels are not elevated ?

d) Give the biochemical principles of management of this condition ?