

MANIPAL ACADEMY OF HIGHER EDUCATION**MELAKA MANIPAL MEDICAL COLLEGE (MANIPAL CAMPUS)****MBBS PHASE - I STAGE - I DEGREE EXAMINATION – NOVEMBER 2020****SUBJECT: BIOCHEMISTRY - PART - II (ESSAY)**

Thursday, November 05, 2020

Duration : 120 minutes

Max. marks : 60

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- ✓ **Answer all the questions**
 - ✓ **Draw diagrams wherever appropriate**
- 1. Describe the salient features of competitive enzyme inhibition. Show its effects on K_m and V_{max} of the enzyme using Michaelis-Menten plot.
(5 marks)**

 - 2. Rajan presented with yellowish discoloration of sclera. History revealed that he had been consuming fava beans in his diet for the past few weeks. Laboratory tests revealed hemolysis and presence of Heinz bodies in erythrocytes. What is the likely diagnosis? Mention the enzyme defect in Rajan. Explain the biochemical basis for the various findings.
(5 marks)**

 - 3. Illustrate the transport of activated fatty acid into mitochondria and describe the reactions of beta oxidation of fatty acids in the mitochondria. Summarize the scheme of energetics of complete oxidation of palmitic acid.
(8 marks)**

- 4. Describe the process of emulsification of dietary lipids with a diagram and explain its digestion in the small intestine**
(5 marks)
- 5. Explain how chronic alcoholism leads to lactic acidosis, fasting hypoglycemia and fatty liver.**
(5 marks)
- 6. Describe the reactions of ketogenesis.**
(5 marks)
- 7. Explain with illustrations the synthesis and release of thyroid hormones.**
(5 marks)
- 8. Seventy five year old Ratnamma lived alone and rarely went out of her house. Her intake of dairy products was poor and she was hardly exposed to sunlight. When she was taken to the hospital for a check-up, she complained of pain in the bone of her right upper limb and X-ray revealed hairline fracture of her right humerus.**
- 8A. Name the nutrients, deficiency of which is responsible for her condition.**
- 8B. Explain the synthesis and activation of the nutrient which is not produced in Ratnamma.**
- 8C. Explain the action of the deficient nutrient in different tissues.**

(1+3+3=7 marks)

9. Write the Henderson-Hasselbalch equation for the bicarbonate buffer system. Explain how kidneys reclaim bicarbonate using an illustration.

(5 marks)

10. Outline the steps of purine catabolism. Explain the biochemical basis for the use of allopurinol in the treatment of gout.

(5 marks)

11. Describe the process of absorption, transport and storage of vitamin A.

(5 marks)

