SECTION "B" (80 Marks)

Q.2 Long Answer Question (Compulsory) - **(12m X 1 = 12)**

a) Discuss the metabolism of Cholesterol under the following -

i)	Biosynthesis	(5)
ii)	Degradation	(3)
iii)	Regulation	(2)
iv)	Role in atherosclerosis	(2)

Q.3 Short Answer Questions (All Compulsory) - **(4m X 5 = 20)**

Give reasons for the following -

a) i) Iron is a one-way element.
ii) Patients of iron deficiency anaemia show apathy (disinterest in surrounding) as a common symptom.

b) i) Lp(a) is associated with heart attacks.
ii) SR-B1 has dual role in HDL metabolism.

c) i) B12 deficiency is manifested as demyelination.
ii) B12 deficiency is also associated with homocystinuria.

d) i) Excessive ingestion of alcohol leads to hypoglycemia.
ii) Alcohol intake is the most common cause of fatty liver.

e) i) Creatine supplementation during intense exercise requires increase fluid intake.
ii) Niacin deficiency may also be seen in carcinoid syndrome.

Q.4 Short Answer Questions (Any 4 out of 5) - **(5m X 4 = 20)**

a) Discuss the important specialized products from tyrosine.

b) Describe and discuss commitment to lifelong learning as an important part of physician growth.

c) A 5-day-old male neonate presented with convulsions. Clinical evaluation revealed a characteristic burnt sugar odor in the urine. Rothera's test was positive. On further inquiry, the mother reported that a previous sibling had died on the 15th day of life under similar circumstances.
i) What is the probable diagnosis? (1)
ii) Name the enzyme that is deficient in this condition. (1)
iii) Explain why the milder variant of this disorder responds to thiamine supplementation. (2)
iv) What causes the characteristic burnt sugar odor in the urine? (1)

d) A 11-year-old boy presented to the OPD with complaints of abdominal pain and generalized tiredness. Clinical examination revealed yellowish discoloration of the sclera and dark-colored urine. Moderate hepatomegaly was noted on abdominal palpation. Ophthalmic examination showed a greenish-brown ring at the corneal margins.
Blood investigations revealed –
Bilirubin -3.5mg/dl (n=0.1 to 1.0 mg/dl; Serum copper -90µg/100ml(n=100-128 µg/100ml)
Serum ceruloplasmin 18mg/100ml 25-45 mg/100ml
i) What is the probable diagnosis? (1)
ii) Describe the biochemical defect in this disorder (1)
iii) What is the therapy administered in this disorder & why? (2)
iv) The greenish brown discoloration of the corneal margin is referred to as. (1)

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e) Describe the biochemical functions of Vitamin C.Biochemically explain why hemorrhagic tendency and anemia are deficiency manifestations of it. (2.5 +2.5)

Q.5 Short Answer Questions (Any 4 out of 5) - (7m X 4 = 28)

a) Discuss the biochemical pathway of ketogenesis. Add a note on the regulation. (5+2)
b) Describe the Hexose Monophosphate Shunt pathway. Add a note on the physiological & clinical significance of the pathway (5+2)
c) Discuss the homeostasis of blood calcium levels.
d) What is transamination. Give one suitable example. What is the biological significance of transamination? Explain the clinical application of transamination estimation (1+1+3+2)
e) Describe the hormonal regulation of plasma glucose. Give the American Diabetic Association diagnostic criteria for the metabolic disease due to the deficiency of insulin. Add a note on modern GTT. (3+2+2)

Insulin Glucagon Epinephrine ACTH Cortisol Thyroid hormones.