

**H. B. T. MEDICAL COLLEGE & Dr. R. N. COOPER MUNICIPAL  
GENERAL HOSPITAL**

**DEPARTMENT OF BIOCHEMISTRY**

**1<sup>st</sup> M.B.B.S. (Batch 2024 - 2025)**

**2<sup>nd</sup> INTERNAL ASSESSMENT EXAMINATION**

**Date: 17/04/2025**

**Time: 10.00 am to 01.00 pm**

**Total Marks: 100**

1. Use blue / Black ball point pen only.
2. Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.
3. All questions are compulsory.
4. The numbers to the right indicate full marks.
5. Draw diagrams wherever necessary.
6. Use a common answer book for all sections / questions.

**SECTION A**

**Q 1: M.C.Q.s**

**(1 x 20=20)**

**SECTION B**

**Que 2 : LAQ (No options)**

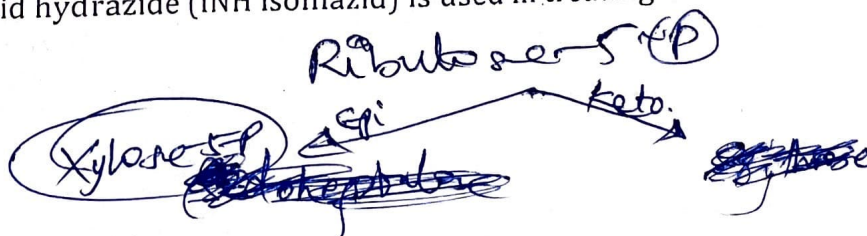
- 20
- a) Describe pentose phosphate pathway with its biological significance.  
Write a note on glucose 6 phosphate dehydrogenase deficiency.

**(6+3+3=12)**

**Que 3 : Give reasons of the following (No options)**

**(4 x 5=20)**

- 5
- (3) a) Sick cell trait protects from malaria.  
b) Exposure to sunlight is beneficial to the patient with rickets.  
c) Synthetic nucleotides are used in chemotherapy.  
d) Vitamin E protects low density lipoproteins (LDL) from oxidation.  
e) Isonicotinic acid hydrazide (INH isoniazid) is used in treating tuberculosis.





Que 4 : Write short notes on (Any four out of five)

(5 x 4 = 20)

- a) Explain the biochemical defects in orotic aciduria and Lesch-Nyhan syndrome. (3+2= 5)
- b) A 10 years old girl at neurology OPD presented with fits and pellagra like skin rashes from last 2 yrs. She has a history of psychotic behavior, ataxia and difficulty in walking. Also there is increased urinary excretion of indole acetic acid, indole Pyruvate and tryptophan along with neutral amino acids detected by the obermeyer test.
- What is your diagnosis and write its cause. (1)
  - Comment on biochemical basis of pellagra like symptoms. (2)
  - Explain the role of serotonin. (2)
- c) 40 years old female suffering from diabetes and hyperthyroidism visited hospital for a regular checkup. Lab investigation of lipid profile found following data.
- Total cholesterol - 400 mg/dL
  - VLDL cholesterol - 30 mg/dL
  - LDL cholesterol - 340 mg/dL
  - HDL cholesterol - 32 mg/dL
  - Triglycerides - 140 mg/dL
- What is your probable diagnosis? (1)
  - Write the normal ranges of above investigations. (2)
  - Explain the biochemical basis of dyslipidemia. (2)
- d) Describe the biochemical role and anticancer action of vitamin C. (3+2= 5)
- e) Comment on the role of a physician in health care system as
- Health care educator (3+2= 5)
  - Behavioral therapist in community

Que 5 : Give an account of the following (Any four out of five)

(7 x 4 = 28)

- Describe the normal types of hemoglobin and their functions. (2+2+2+1=7)
- Outline the metabolism of phenylalanine and explain the disorder of Phenylalanine metabolism. (4+3= 7)
- Enumerate liver function tests. Discuss any one LFT routinely done in clinical biochemistry lab. (2+5 = 7)
- Explain the metabolic adaptations in starvation. (4+3 = 7)
- Describe reactions of  $\beta$  oxidation in the mitochondrial matrix and overview of energetics of complete oxidation of palmitic acid. (4+3 = 7)

'ALL THE BEST'

Acetyl CoA  $\rightarrow$  80

7 FADH (IFADH = 1.5)  
NADH = 2.5

4 ATP

2P = used

2 BATP