

**PARUL UNIVERSITY**  
**FACULTY OF MEDICINE**  
**M.B.B.S OCT/ NOV 2020 EXAMINATION**

**Year: 1****Subject Code: 19100186****Subject Name: Biochemistry Paper-II****Date: 03-11-2020****Time: 10:00 am to 01: 00 pm****Total Marks: 100****Instructions:**

1. Attempt all questions from each section.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.

**SECTION – A****Q.1 Structured Essay question (No choice) 2x10 (20)**

**a A 38 year old man complained of severe joint pain especially in the big toes in the early morning hours. His joints were swollen. The consultant decided to get his uric acid level in serum to be estimated which was 12.0 mg/dl. The case was diagnosed as gout and the doctor advised the patient to consume a lot of fluids, avoid alcohol & non vegetarian diet. He was also prescribed to take allopurinol.**

1. What is the normal level of serum uric acid?(1)
2. Differentiate primary and secondary gout.(4)
3. What is Lesch-Nyhan syndrome?(2)
4. Why the consultant advised the patient not to take alcohol?(2)
5. How allopurinol is helpful?(1)

**b A 40 year old woman visited OPD of Parul Seva Ashram Hospital for excessive menstrual bleeding. She complained of lethargy, giddiness, excessive tiredness and breathlessness on walking. Since past few months her physical performance had significantly decreased. She was pure vegetarian. Based on clinical history and blood reports, diagnosis of iron deficiency anaemia was made and treatment started with ferrous sulphate and vitamin "C".**

1. What are the dietary sources of iron? Give daily requirements of iron (RDA) for adults. (2)
2. What are the causes of iron deficiency anaemia? (2)
3. Why vitamin C is given in this patient? Explain the role of vitamin C in Iron Metabolism.(2)
4. Why iron metabolism is called as one way metabolism? (2)
5. What is the biochemical role (functions) of Iron. Give two examples of iron containing enzymes.(2)

**Q.2 Write short notes on : (Any Four out of Five) 4x5 (20)**

- 1 Classes and structure of immunoglobulin's and their functions
- 2 What is clearance? Name various clearance tests available in RFT, Describe inulin clearance test & its advantage.
- 3 Urea cycle
- 4 Discuss the significance of plasma albumin levels in health and disease.
- 5 Role of Cytochrome P450 in detoxification reaction

**SECTION – B****Q.3 Explain briefly on: (any Three out of Four) 3x6 (18)**

- 1 Antioxidant vitamins
- 2 A woman of 40 years old, who suffered from cholelithiasis, experienced acute pain in the right hypochondrium. After 2 days, jaundice appeared, urine - the color was "Dark yellow", & the feces was gray-white. The total serum bilirubin is 100  $\mu\text{mol} / \text{l}$ , the Florence test (urine urobilin) is negative.
  - a) What type of jaundice does the patient have? (2)
  - b) What fraction of blood bilirubin is increased in this condition? (2)
  - c) What is the normal level of total bilirubin? (2)

- 3 Tumor markers – definition, examples and diagnostic significance
- 4 Renal regulation of blood PH

**Q.4 Write short notes on: (any Three out of Four) 3x4 (12)**

- 1 Phenylalanine metabolism. Biochemical pathogenesis & investigation of phenylketonuria & alkaptonuria.
- 2 Write molecular explanation and pathogenesis of sickle cell disease
- 3 Biochemical explanation of different type of jaundice. Explain biochemical test to differentiate type of jaundice
- 4 Draw neat diagram of Watson crick model of DNA, explain its characteristics and the bonds that play a role in the stability of DNA structure

**SECTION – C**

**Q.5 Write short notes on: (Any Five out of Six) 5x5 (25)**

- 1 Explain difference between induction – repression and activation – inhibition of enzyme with examples.
- 2 Post-translation modification. Give any two examples to explain it's significant
- 3 RNA structure and function
- 4 Primary structure and it's relation with function of protein. Give three example
- 5 Protein energy malnutrition (PEM). What are the different types of PEM. Write the important features
- 6 Lac operon

**Q.6 MCQs 5x1 (5)**

- 1. **Blood of a 12-year-old boy presents low concentration of uric acid and accumulation of xanthine and hypoxanthine. This child has genetic defect of the following enzyme:**
  - (a) Xanthine oxidase
  - (b) Arginase
  - (c) Urease
  - (d) Ornithine carbamoyl transferase
- 2. **A 4 year old child with signs of durative proteinic starvation was admitted to the hospital. The signs were as follows: growth inhibition, anemia, edemata, mental deficiency. Choose a cause of oedema development:**
  - (a) Reduced synthesis of globulin
  - (b) Reduced synthesis of albumins
  - (c) Reduced synthesis of lipoprotein
  - (d) Reduced synthesis of hemoglobin
- 3. **A 20-year-old patient complains of general weakness, dizziness, quick fatigability. Blood analysis results: Hb- 80 g/l. Microscopical examination results: erythrocytes are of modified form. This condition might be caused by:**
  - (a) Acute intermittent porphyria
  - (b) Hepatocellular jaundice
  - (c) Sickle-cell anemia
  - (d) Obstructive jaundice
- 4. **In albinism the following substance is either absent or defective**
  - (a) Noradrenalin
  - (b) Biopterin
  - (c) Dopamine
  - (d) Melanin
- 5. **The levels of ALT and AST are elevated in**
  - (a) Hepatocellular jaundice
  - (b) Hemolytic jaundice
  - (c) Obstructive jaundice
  - (d) none of the above