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SARDAR PATEL UNIVERSITY
M.Sc. IVth semester Biochemistry Examination
Tuesday, 5th April, 2016
Time: 2.30 p.m. to 5.30 p.m.
PS 04 CBIC02 Nutritional and Clinical Biochemistry

Note: Numbers in parenthesis indicate marks

Max marks: 70
(08 marks)

Q.1 Choose the correct options for the following questions.

1. An adult in 24 hrs uses 800 litres of O₂ and gives out 560 liters of CO₂. What kind of physiological status of the person can be anticipated?
(a) Normal (b) Diabetic (c) Obese (d) None of the above
2. Which of the following lipoproteins has least amount of triacylglycerol (TG) levels
(a) LDL (b) IDL (c) VLDL (d) Chylomicron
3. Synthesis of TG and secretion of VLDL by the liver is affected by
(a) Well-fed state (b) High carbohydrate diet (c) High circulating FFA (d) All of the above
4. Alcoholism leads to fatty liver condition because
(a) Alcohol is converted into fat (b) Alcohol changes [NADH]/[NAD⁺] ratio
(c) Alcohol activates Fatty acid transport (d) None of the above
5. Plasma glucose concentration doesn't reduce further to 3.5 mM/L in prolonged starvation because
(a) Glycolysis is inhibited in the surrounding tissues (b) Glucose transport is inhibited
(c) Glycolysis is never inhibited (d) None of the above
6. Treatment of Gout with Allopurinol
(a) Causes accumulation of xanthine (b) Reduces uric acid levels
(c) Control urate nephropathy (d) All of the above
7. An acute form of childhood protein malnutrition characterized by edema, irritability, anorexia, ulcerating dermatoses and an enlarged liver is known as
(a) Kwashiorkar (b) Marasmus (c) Marasmic kwashiorkor (d) Kwashiorkoric marasmus
8. Familial juvenile hyperuricaemic nephropathy is caused by
(a) Mutations in the uromodulin gene (b) Hyper excretion of Xanthine
(c) Hyper excretion of uric acid (d) All of the above

Q.2 Answer **any seven** of the following questions in brief: (14 marks)

1. Define reference man and reference woman.
2. What is glycemic index of sugar?
3. What is BMI? Write WHO classification of body weight based on BMI.
4. List four hypothesis explaining diabetes-specific complications.
5. What is the action of insulin on lipase?
6. What is the cause of hyperlipidaemia in diabetes mellitus?
7. List acute and chronic complications of diabetes mellitus.
8. Define digestibility coefficient. Write its formula.
9. Write the name of limiting amino acids in cereals and in legumes.

Q3 A. Define BMR and explain factors affecting it. (06 marks)

B. What is the energy value of food? How can we determine it? (06 marks)

OR

Q3 B. What will be the energy value of 2gm of wheat when combusted in bomb calorimeter, raised the temperature of 3kg of water from 23° C to 26° C. The water equivalent of calorimeter was about 500gm. (06 marks)

Q4 A. Write the four major groups of lipoprotein and describe the metabolic fate of Chylomicrons and VLDL from blood. (06 marks)

B. Briefly explain these terms:

(i) Digestibility coefficient (ii) Nitrogen balance (iii) Essential amino acids (06 marks)

OR

Q4 B. Explain the metabolic adaptation in prolonged starvation. (06 marks)

Q5 A Explain the adaptation of metabolism in excess carbohydrate diet. (06 marks)

B. Explain the causes and mechanism of development of obesity. (06 marks)

OR

B. Explain the effects of various hormones on lipase. (06 marks)

Q6 A Explain protein-energy malnutrition. (06 marks)

B Describe the factors regulating water in the body. (06 marks)

OR

B Explain how abnormal activity of phosphoribosyl pyrophosphate (PRPP) synthetase leads to disorder of purine metabolism. (06 marks)