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SEAT No. _____

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SARDAR PATEL UNIVERSITY

M.Sc. IVth semester Zoology Examination (CBCS)

Saturday, 23rd March, 2019, 10.00 a.m. to 1.00 p.m.

Subject: PS 04 EZOO 23 Nutritional and Clinical Biochemistry

Max marks: 70

Q.1 Write the most correct options of the following multiple choice questions. (08)

1. During prolonged fasting conditions, which enzyme of glycolysis is inhibited by FFAs?
(a) Glycolysis is never inhibited (c) PFK
(b) Glucokinase (d) PK
2. Why glycolysis is halted and triose phosphates gets accumulated in insulin independent tissues in chronic type 2 diabetics?
(a) Excess glucose inhibits glycolysis (c) due to lack of glucose in cells
(b) Polyol pathway increases NADH/NAD⁺ ratio (d) glycolysis is never halted
3. An adult in 24 hrs uses 700 litres of O₂ and gives out 490 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
4. What will be heat output per liter of oxygen of an adult weighing 70 kg consumes 500 liter of oxygen and heat output measured in direct calorimeter is 2400 Kcal
(a) 0.20 Kcal (b) 4.8 Kcal (c) 34.28 Kcal (d) none of the above
5. Which of the following condition could be the reason for diminished uptake of glucose by muscle cells?
(a) Insufficient insulin (c) Insulin resistance
(b) Lack of sensitivity of Insulin (d) all of the above
6. Activated lecithin cholesterol acyl transferase is essential for the conversion of the
(a) VLDL remnant to HDL (c) HDL₂ to HDL₃
(b) Nascent HDL to HDL (d) HDL₃ to HDL₂
7. Choose the combination of largest and smallest sized lipoproteins.
(a) VLDL, HDL (c) Chylomicron, HDL
(b) LDL, HDL (d) none of the above
8. Which lipoprotein is lower in the serum of an obese?
(a) VLDL (b) IDL (c) LDL (d) HDL

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

1. What is the normal blood glucose level in mM? How is it maintained?
2. Narrate in brief adaptation of metabolism in liver in starvation condition.
3. Why Physiological energy values of food stuff differ from calorific values obtained by bomb calorimeter?
4. If wheat protein is deficient in lysine, how can we find out chemical score of wheat protein?
5. Define digestibility coefficient. Write its formula.
6. Accumulation of which lipoprotein is play major role in atherosclerosis, and why it get accumulated?

(1)

(P.T.O.)

7. What ratio of omega-3 and Omega-6 ratio is healthy for the human body?
8. Describe functions of adiponectin.
9. List out vitamin loss during the food processing, and mentioned preventive measures to retain.

Q3 (a) Define kilocalorie and explain determination of energy value of foods using Bomb calorimeter. (06)

(b) Explain the relation between oxygen required and calorific values of different biomolecules. Also describe respiratory quotient values and its importance. (06)

OR

(b) Explain activation of aldose reductase and the derangement caused by it in chronic hyperglycaemia. (06)

Q.4 (a) Discuss nutritional quality of animal proteins and plant proteins. Why protein efficiency ratio (PER) determined using growth bioassay of rats do not reflect the protein quality for humans? (06)

(b) Explain about following in brief: (06)

- i. In vitro digestibility of proteins
- ii. Enzymes in food
- iii. Bioactive peptides

OR

(b) What is protein calorie malnutrition? Explain any one of them. (06)

Q.5 (a) What is BMI? Write role of leptin and ghrelin in maintaining normal BMI. (06)

(b) Explain the effect of AMPK on normal body metabolism? (06)

OR

(b) Write the site of synthesis of major lipoproteins and explain the transport of lipid by Chylomicron. (06)

Q.6 (a) Explain the regulation of electrolyte balance in the human body. Add a note on clinical abnormalities associated with electrolyte imbalance. (06)

(b) Explain following terms: (06)

1. Natural anti-nutrients
2. Hyponatremia
3. Hypokalaemia

OR

(b) Why we need to process food? Explain various heat treatments used in food processing. (06)

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