PR-4005

PR-4005
First Year M. B. B. S. Examination
June / July – 2014
Biochemistry : Paper - I

Time : 1 hour and 50 Minutes] [Total Marks : 40

Instructions :
(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :
☛ F. Y. M. B. B. S.

Name of the Subject :
☛ BIOCHEMISTRY - 1

☛ Subject Code No. : 4 0 0 5 ☛ Section No. (1, 2,.....) : 1&2

Seat No. :

Student's Signature

2) Write each section in separate answer books
3) Draw figures wherever possible

SECTION-I

1. Short notes : (2 out of 3) 8
   a) Digestion and absorption of disaccharides. What is lactose intolerance and explain the consequences of Malabsorption of lactose
   b) Metabolism of VLDL and LDL. Explain the mechanism of the role of LDL in the development of Atherosclerosis.
   c) Mention different forms of calcium present in plasma. Explain the various functions of calcium and regulation of serum calcium levels (role of PTH, calcitriol and calcitonin)
2. Describe in brief : (4 out of 6) 12
   a) Synthesis and oxidation of ketone bodies. Why ketosis causes metabolic acidosis and loss of sodium and potassium ions from the body?
   b) Factors affecting Basal Metabolic rate. Why hypothyroid patients put up increased body weight?
   c) HMP shunt pathway. Why this pathway is important in the maintenance of integrity of RBC membrane
   d) Components of respiratory chain. Explain why there is a development of tissue anoxia due to cyanide poisoning.
   e) Fluorine:
      -Biochemical functions and
      -Consequences of deficiency and excess of fluoride
   f) Renal regulation of blood pH

SECTION-II

3. Case with 5 questions 10

Mr. Anurag sharma 44 years old male was an executive and leading sedentary life style, marked obesity, diabetic and was hypertensive. He did not follow his doctor's advice with regard to dietary control and exercise program. He was 5.8 feet. His weight was 127 kg. His blood investigation reports was:

Parameter	Results	Reference range
Serum glucose	214 mg/dl	=<100 mg/dl
Serum total cholesterol	310 mg/dl	150-250 mg/dl
HDL cholesterol	24 mg/dl	≥ 40 mg/dl
Serum triacylglycerol	295 mg/dl	=< 150 mg
Calculated serum LDL cholesterol	231 mg/dl	=< 130 mg/dl

He informed the physician that this was the pattern of his blood report for the last few months. He was strictly told to maintain the dietary control and regular exercise. He was put on treatment to control the diabetes and decreasing of the lipid levels.

1) What is the basis of classifying that Mr. Anurag Sharma came under the category of obese individual? Due to deposition of which lipid he had become obese?
2) How the persistently higher glucose levels in this patient led to increase in the levels of serum total cholesterol and serum triacylglycerols?
3) Name two hypocholesterolaemic drugs and their mechanism of action of decreasing serum total cholesterol
4) Explain the mechanism of possibility of formation of atherosclerotic plaque if there are consistently higher LDL levels. Explain how increased free radical generation multiplies the risk of formation of this plaque?
5) Apart from undesirable effects due to excessive serum cholesterol there is an absolute requirement of cholesterol in our system. Justify

4. Answer in few lines : (5 out of 7) 10

1) Lead exposure leads to the development of anaemia
2) Malonyl COA inhibits oxidation of fatty acids in mitochondria
3) Choline is known as lipotropic agent
4) Dietary fiber consumption lowers the possibility of developing bowel cancer
5) Hyaluronidase is known as spreading factor and heparin is known as clearing factor
6) Regular usage of low dose of aspirin is advised after certain age for protection against cardiac complications
7) Glycated haemoglobin (Hb A_{1c}) is the best index to know the long term control of blood glucose level.

* P R - 4 0 0 6 *

PR-4006

First Year M. B. B. S. Examination

June / July – 2014

Biochemistry : Paper - II

Time : 1 Hour and 50 Minutes] [Total Marks : 40

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :
☛ F. Y. M.B.B.S.

Name of the Subject :
☛ BIOCHEMISTRY-2

☛ Subject Code No. : 4 0 0 6 ☛ Section No. (1, 2,.....) : 1&2

Seat No. :

Student's Signature

2) Write each section in separate answer books
3) Draw figures wherever possible

SECTION-I

1. Short notes : (2 out of 3) 8
   a) Mechanism of translation process (protein synthesis)
   b) Coenzyme functions and various applications of folate antagonists in clinical practice
   c) Formation of various biologically important products from tyrosine. Why administered dopamine is not effective in the treatment of Parkinsonism?

2. Describe in brief : (4 out of 6) 12
   a) Phase II reactions for the elimination of various metabolites
   b) Deficiency manifestations of Vitamin A
   c) Explain the importance of any four tumor markers
   d) Haem synthesis and explain at which step of the metabolic pathway the synthesis of haem is regulated
   e) Causes of primary and secondary Gout
   f) Mechanism of competitive inhibition and give importance of four competitive inhibitors in clinical practice

SECTION-II

3. Case with 5 questions 10

Mrs. Patel who was Rh negative (Mr. Patel was Rh positive) had given birth to a baby boy. This was her second pregnancy. This baby boy had developed haemolytic jaundice of new born with a high serum bilirubin levels of 21 mg/dl. Most of the bilirubin was in "indirect" form. The child was given exchange transfusion followed by phototherapy. The condition was improved.

1) Where bilirubin formed in our body and what do you understand by direct & indirect bilirubin?
2) Why most of the bilirubin in the serum of this baby was in indirect form?
3) How bilirubin is transported in the plasma. Why caution needs to be exercised while administering aspirin like drugs to the children
4) Looking into the case history explain the basis for the development of haemolytic jaundice of new born in this patient.
5) Why exchange transfusion and phototherapy was given to this child.

4. Answer in few lines : (5 out of 7) 10

1) In strict sense genetic code is not universal
2) Drugs based on (in the mode of action) the principle of suicide inhibition of enzymes has wide application in clinical medicine
3) Plasmids play essential role in DNA recombinant technology and presence plasmids in bacteria pose a great challenge in modern medical practice
4) The nature of defect in haemoglobin in diseases like sickle cell anaemia is different from thalassemia
5) Most of human cancers show the emergence of oncofetal antigens. Explain with examples
6) Vitamin D deficiency is seen in liver and renal disorders
7) About 40 g of carbohydrate diet will induce sleep, while protein rich food will cause alertness. Explain.

* P R - 4 0 0 6 - O *

Date of issue : Centre :

Sup. Sign. : Seat No. :

PR-4006-O

First Year M. B. B. S. Examination

June / July – 2014

Biochemistry : Paper - II

Time : 10 Minutes] [Total Marks : 10

OBJECTIVE QUESTIONS

Instruction :

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ F. Y. M.B.B.S.

Name of the Subject :

☛ Biochemistry-2

☛ Subject Code No. : 4 0 0 6 ☛ Section No. (1, 2,.....) : Nil

Seat No. :

Student's Signature

5. Multiple Choice Questions:
   - Choose single best answer
   - Each question carries one mark
   - No negative marking
   - Answer shall be written on the OMR sheet

1. Alzheimer's disease is due to the excessive deposition of
   a) β-pleated sheet
   b) α- helix
   c) collagen
   d) globulins
2. For thrombolytic therapy in myocardial infarction, the enzyme used is
   a) Papain
   b) Trypsin
   c) Asparaginase
   d) Streptokinase
3. Oxidation of LDL is protected by the vitamin
   a) D
   b) K
   c) E
   d) A

4. In haemolytic anaemia decreased level of which acute phase protein is observed?
    a) α1-antitrypsin
    b) Orosomucoid
    c) Ceruloplasmin
    d) Haptoglobin

5. Vitamin required for the maturation of procollagen to collagen is
    a) Ascorbic acid
    b) Thiamine
    c) Riboflavin
    d) Folic acid

6. Uremia is used to refer elevated blood levels of
    a) Ammonia
    b) Urea
    c) Uric acid
    d) creatinine

7. Glutathione is
    a) γ- glutamyl –cysteinyl-glycine
    b) Glycinyl-cysteinyl- γ- glutamic acid
    c) Cysteinyl- γ- glutamyl-glycine
    d) γ- glutamyl-glycinyl-cysteine

8. All of the below are oncofetal antigens ***except***
    a) Alpha fetoprotein
    b) Carcinoembryogenic antigen
    c) CA-125
    d) Human chorionic gonadotropin (hcG)

9. Synthesis of DNA from RNA is catalyzed by
    a) RNA polymerase
    b) DNA polymerase
    c) Reverse transcriptase
    d) Histone –acyl transferase

10. Acetyl serotonin is methylated to form
    a) anserine
    b) metanephrine
    c) carnosine
    d) melatonin