



(A DEEMED TO BE UNIVERSITY)
B.Sc. Allied Health Sciences Second Year (Semester-III)
March 2024 Examination
B.Sc. Medical Laboratory Technology

Time : 2.30 Hrs.

[Max. Marks : 80]

SUBJECT : BIOCHEMISTRY - I

Q.P Code : J3031

Your answers should be specific to the questions asked.

Draw neat labeled diagrams wherever necessary.

Long Essay

2 X 10 = 20 Marks

1. Describe the chemistry, dietary sources, Recommended Daily Allowance, Biochemical functions and deficiency manifestations of Vitamin D (1+1+1+4+3).
2. Define Proteins. Classify them with suitable examples (2+8)

Short Essay (Answer any Six)

6 X 5 = 30 Marks

3. Describe the structure and functions of Mitochondria
4. Describe the Structure of DNA with neat labeled diagram
5. What are Phospholipids? Classify them with suitable examples and give their important functions(1+4) .
6. Briefly describe the Fluid Mosaic model of plasma membrane with a neat labelled diagram.
7. What are dietary fibers? Give examples. Describe the beneficiary effect & disadvantage of dietary fibers(1+1+2+1) .
8. Define lipoproteins. Classify lipoproteins with their functions.
9. What are Biologically Important Peptides? Give four examples and their biological roles(1+4) .
10. What are Mucopolysaccharides? List any four Mucopolysaccharides with their biological significance (1+4).

Short Answers (Answer any Ten)

10 X 3 = 30 Marks

11. Benedicts test – Principle & composition of Benedict reagent
12. What is coenzyme? Give two examples
13. Nutritional importance of Carbohydrates.
14. Folate Trap
15. Write the active form of : 1) Thiamine 2) Niacin 3) Pyridoxine
16. .Mention two therapeutic enzymes with their applications.
17. Define essential amino acids and name them.
18. What is Protein Energy Malnutrition (PEM)? Classify PEM.
19. Definition & types of Rancidity
20. Write the deficiency diseases of: i) Ascorbic acid ii) Thiamine iii) Vit A
21. List any three diagnostic enzymes and give their significance
22. Give any three functions of Albumin



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SUBJECT : BIOCHEMISTRY - II

Q.P Code : J3032

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Long Essay

2 X 10 = 20 Marks

1. Describe the steps of Citric Acid cycle, and add a note on its energetics(8+2).
2. Describe the dietary source, RDA, Biochemical functions & deficiency manifestations of Calcium
(2+2+4+2)

Short Essay (Answer any Six)

6 X 5 = 30 Marks

3. Glucose tolerance test (GTT): Indications for conducting it and Procedure for GTT
4. Differentiate between Oxidative and Substrate level phosphorylation with examples.
5. Describe the digestion & absorption of lipids.
6. Define Urea & write the steps of urea cycle.
7. What is Atherosclerosis? Explain pathogenesis and factors contributing to Atherosclerosis.
8. Explain the, sources & biochemical functions of Copper & zinc
9. What is porphyria? Classify them and explain acute intermittent porphyria.
10. Define Gluconeogenesis. Name the substrates for Gluconeogenesis.
Write briefly the steps for Gluconeogenesis.

Short Answers (Answer any Ten)

10 X 3 = 30 Marks

11. Define Fatty Liver. Mention the causes of fatty liver
12. Write the biomedical importance of HMP shunt
13. Write any three functions of iodine.
14. What is the normal serum cholesterol level? List the conditions which will cause hypercholesterolemia.
15. Homocystinuria : enzyme defect & biochemical parameters
16. Write the reference range for: (1) serum urea (2) serum uric acid (3) serum creatinine.
17. Mention any three uncouplers of oxidative phosphorylation.
18. Name the ketone bodies
19. Detoxification by conjugation with one example.
20. Write three glycogen storage disorders with enzyme defect
21. What are ketone bodies? Mention 2 causes for Ketoacidosis.
22. Mention two Zinc containing enzymes and deficiency disorder of Zinc

SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH



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SUBJECT : BIOCHEMISTRY - III

Q.P Code: J3033

Your answers should be specific to the questions asked.

Draw neat labeled diagrams wherever necessary

Long Essay

2 X 10 = 20 Marks

1. Describe in detail the quality control in terms of definition, types in detail, different types of errors & reconstitution procedure of the controls. List the types of plotting the QC chart(1+3+3+2+1).
2. Describe in detail the primary sample collection, transportation & storage(6+2+2)

Short Essay (Answer any Six)

6 X 5 = 30 Marks

3. Classify liver function tests and explain any one function
4. Define pH. Indicate with a diagram the different parts of pH meter add a note on preparation of buffer solution.
5. Write the principle, advantage and applications of spectrophotometer.
6. Benedict's test principle & composition of Benedict's reagent & significance.
7. Briefly explain Automation in a Clinical Laboratory
8. Mention the advantages and applications of ELISA.
9. Write the principle and applications of Electrophoresis.
10. Describe in detail Arterial Blood Gas analysis.

Short Answers (Answer any Ten)

10 X 3 = 30 Marks

11. Give the Biological reference range of (1)Total Bilirubin (2) Direct Bilirubin (3) Indirect Bilirubin
12. Define Precision
13. Define Beer- Lambert's law.
14. Define Metabolic acidosis & give two examples
15. Define Sensitivity & specificity
16. Mention the causes of obstructive jaundice
17. Give the Biological reference range of (1)SGOT (2) SGPT (3)Alkaline Phosphatase
18. Benedict test- principle & importance
19. RIA Principle
20. List the various types of errors in the laboratory with an example each.
21. What is anion gap? Mention 2 causes for increased anion gap.
22. Define A: G ratio. Mention the biological reference range of A:G ratio

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B.Sc. Allied Health Sciences Second Year (Semester-III)

March 2024 Examination

B.Sc. Medical Laboratory Technology (MLT)

Time : 2.30 Hrs.

[Max. Marks : 80]

Subject : BIOCHEMISTRY - I

Q.P Code: K3031

Your answers should be specific to the questions asked.

Draw neat labeled diagrams wherever necessary.

Long Essay

2x10=20

1. Define Carbohydrates. Classify them with suitable examples & write their biomedical importance. **(1+7+2)**
2. Describe the chemistry, dietary sources, Recommended Daily Allowance, Biochemical functions and deficiency manifestations of Vitamin D. **(1+1+1+4+3)**

Short Essay

6X5=30

- 3 Write any five differences between DNA & RNA
- 4 Describe the difference between active & passive transport with suitable examples. (2.5+2.5)
- 5 Define lipoproteins. Classify lipoproteins with their functions. **(1+2+2)**
- 6 What are dietary fibers? Give examples. Describe the beneficiary effect & disadvantage of dietary fibers. **(1+1+2+1)**
- 7 List the Plasma proteins with their reference range. Write the various functions of Albumin **(1+4)**
- 8 What are Biologically Important Peptides? Give four examples and their biological roles. **(1+4)**

Short Answers

10X3=30

- 9 What is competitive inhibition? Give two examples
- 10 Rancidity: Definition & types.
- 11 Define essential amino acids and Name them
- 12 Name the abnormal constituents of Urine
- 13 Deficiency manifestation of (1) Vitamin C (2) Vitamin A (3) Vitamin D
- 14 Define Essential fatty acids with Examples.
- 15 Mention two Diagnostic enzymes with their applications
- 16 What is Nitrogen balance? Mention two conditions with positive Nitrogen balance.
- 17 What is Denaturation? List two factors causing Denaturation.
- 18 What is SDA? Mention its significance

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B.Sc. Medical Laboratory Technology (MLT)

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[Max. Marks : 80]

Subject : BIOCHEMISTRY - II

Q.P Code : K3032

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Long Essay

2X10=20 Marks

1. Name the ketone bodies. Describe the formation and breakdown of ketone bodies.
Write any two conditions where ketone bodies are elevated
2. Define Glycolysis. Describe the various steps of Anaerobic Glycolysis & add a note on its energetics.

Short Essay

6X5=30 Marks

3. What is detoxification? Give an account of various detoxification processes.
4. Glucose tolerance test (GTT): Indications, contraindications, Procedure for GTT
5. Define Urea & write the steps of urea cycle.
6. Explain digestion and absorption of Carbohydrates
7. Describe the role of Carnitine in oxidation of fatty acid.
8. What is Atherosclerosis? Explain pathogenesis and factors contributing to Atherosclerosis.

Short Answers

10X3=30 Marks

- 9 Give the normal serum level and 2 functions of Magnesium
- 10 Define uncouplers. Give two examples of uncouplers
- 11 Name two iron storage disorders.
- 12 Write the enzyme defect and any 2 clinical features of Phenylketonuria
- 13 Define clearance test. List the various clearance test
- 14 What is Hartnups disease? Mention two clinical features
- 15 What are Macrominerals and Microminerals? Give two examples for each
- 16 Write the reference range for: (1) serum Sodium (2) serum Calcium (3) serum Potassium
- 17 Wilson's Disease
- 18 What are Chylomicrons? Mention its functions

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Long Essay

2X10=20 Marks

1. What are the various pre analytical , analytical and post analytical errors. Add a note on Internal quality control.
2. What is chromatography? Write different types of chromatography. Explain any one type of chromatography in detail.

Short Essay

6X5=30 Marks

3. pH meter – Principle, instrumentation & application
4. Explain sample transport and storage.
5. Classify Liver function test & add a note on the synthetic function of Liver
6. Define & explain Mean, Median & Mode with an example
7. What is Vandenberg reaction? Explain the principle write its significance
8. Explain any two methods of protein purification

Short Answers

10X3=30 Marks

- 9 Principle of ISE.
- 10 Define pH. Write the normal pH of blood.
- 11 Coefficient of Variation (% CV).
- 12 Define Accuracy and precision.
- 13 Mention any two applications of ECLIA.
- 14 Mention the composition of Gastric Juice.
- 15 Write the principle of Colorimeter.
- 16 ELISA – Principle.
- 17 Write the reference range for (1) Albumin (2)Globulin (3)A:G Ratio
- 18 Define Metabolic alkalosis and mention any two causes

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