

**SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION AND RESEARCH**

MBBS PHASE - I SUPPLEMENTARY EXAMINATION MAY 2022

Time : 150 Minutes

MaxMarks : 80 Marks

Date : 12-05-2022

**BIOCHEMISTRY PAPER - I QP CODE:- C1031**

Your answer should be specific to the question asked

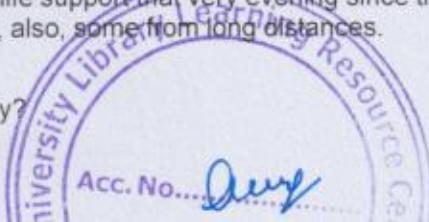
Draw neat labeled diagrams wherever necessary

**Long Essay** **$10 \times 2 = 20 \text{ Marks}$** 

1. List the sources of ammonia. Explain how ammonia is detoxified in the body. Add a note on disorders of urea cycle. (2+5+3)
2. A 35 year old African man was suffering from fever and shortness of breath. Shortly afterwards he developed pancreatitis and was treated with an antibiotic, clindamycin and primaquine. After four days of treatment, onset of hematuria was noted. The patient's haemoglobin (Hb) fell from 11.0 g/dL to 7.4 g/dL. The total bilirubin increased from 1.2 mg/dL to 4.3 mg/dL and his LDH level rose to 600 IU/L.
  - a) What is the probable diagnosis?
  - b) What could be the triggering factor for development of haemolytic anaemia?
  - c) List the laboratory diagnostic tests to be done.
  - d) What are the other precipitating factors in this disorder?
  - e) Give the pathophysiology of the disorder(1+1+2+3+3)

**Short Essay** **$5 \times 12 = 60 \text{ Marks}$** 

3. Define & Classify Polysaccharides. Write the composition and function of
  - a) Chondroitin sulphate
  - b) Dermatan Sulphate(1+2+2)
4. List the sources and coenzyme forms of Niacin. Write three reactions utilizing NADPH as coenzyme. (1+1+3)
5. What are reactive oxygen species? Name them and describe their sources. (1+1+3)
6. What is conjugation? Describe the steps of detoxification of bilirubin in the body? (1+4)
7. Mention any three functions of peroxisomes and name any two clinical conditions where defects in peroxisomes are implicated. (3+2)
8. A 45 year old man presented with severe back pain and weakness. He had lost 7 Kg in the last 3 months. Loss of appetite is present. No history of fever. He reports extreme fatigue, body pain and complains that he is unable to do any work. X-ray of skull revealed punched out lesions. Bone marrow biopsy was done and it showed plasma cells in excess. Serum electrophoresis was ordered on the basis of clinical features. It showed an abnormal band between beta globulin and gamma globulin. Urine was positive for Bence Jones Proteins.
  - a) What is the probable diagnosis?
  - b) What are Bence Jones Proteins. Explain the test procedure
  - c) Write the findings observed in electrophoresis band.(1+2+2)
9. What is Respiratory Quotient (RQ)? Give RQ value for carbohydrates, proteins, lipids and a mixed diet. (1+4)
10. Define dipeptide and tripeptide. Give suitable examples for each. (2.5+2.5)
11. What is Extracellular Matrix? Write the components and functions of Extracellular Matrix. (1+2+2)
12. What is allosteric regulation? Describe the allosteric regulation of heme biosynthesis. (1+4)
13. Explain the role of liver in integration metabolism.
14. XYZ a 25 year male patient who sustained massive head trauma and neurological injury in a motorcycle accident. After 5 weeks in the Critical Care Unit he does not show any improvement continued to require ventilator support. His parents are attentive and religious. After consulting with their priest and their son's doctors, including palliative care specialists and a hospital ethicist, they decide to withdraw ventilator support and tube feedings, and "to allow whatever happens to happen." The parents say they are "placing XYZ in God's hands now." A decision is made to withdraw life support that very evening since the priest is there with them and extended family members have gathered, also, some from long distances.
  - a) Define autonomy.
  - b) Which ethical model is most appropriate and why?
  - c) List the four pillars of medical ethics.(1+2+2)



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## MBBS PHASE - I SUPPLEMENTARY EXAMINATION MAY 2022

Time : 150 Minutes

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Date : 13-05-2022

### BIOCHEMISTRY - PAPER - II QP CODE:- C1032

Your answer should be specific to the question asked

Draw neat labeled diagrams wherever necessary

#### Long Essay

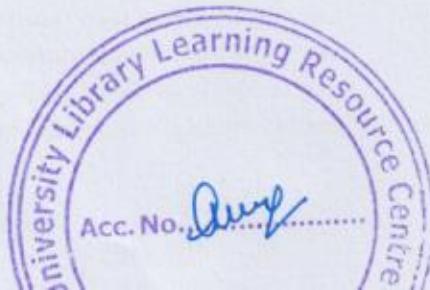
$10 \times 2 = 20$  Marks

1. An eighteen year old girl consulted her family physician because of tiredness and weight loss. On interrogation, she admitted of feeling thirsty and passing more urine than normal. Next day her physician examined and found that she had deep, sighing respiration (Kussmaul's respiration) and her breath had fruity odor. Blood sample was collected and sent to laboratory for investigations which concurred with the diagnosis of diabetes mellitus. She was started on injection recombinant human insulin.
  - a. Define recombinant DNA technology
  - b. What are molecular scissors?
  - c. Describe the steps in recombinant DNA technology.
  - d. List any six proteins produced by recombinant DNA technology other than human insulin. (1+2+4+3)
2. Explain various mechanisms by which Acid- Base balance is maintained in the body.

#### Short Essay

$5 \times 12 = 60$  Marks

3. Name any two inorganic and three organic constituents of normal urine and add a note on their normal excretion and clinical significance
4. What are high energy compounds? Classify and enumerate the high energy compounds.
5. What is Hemoglobin? Describe in detail the Heme Biosynthesis. (1+4)
6. Explain how uric acid is formed in the body.
7. Describe the De-novo synthesis of purine nucleotides. Add a note on salvage pathway. (3+2)
8. Describe the modifiable and non-modifiable risk factors for atherosclerosis. (2.5 + 2.5)
9. Describe the reactions of triacylglycerol synthesis. How is triacylglycerol synthesis regulated?
10. Classify fatty acids with examples. Explain the biomedical importance of PUFA. (3+2)
11. Explain the mechanism of packaging of DNA in eukaryotic cell.
12. What is the Biological reference range of Sodium? List two conditions each for hyponatremia and hypernatremia. (1+4)
13. What are tumor suppressor genes? Give two examples and write its biomedical importance. (1+2+2)
14. List the functions and toxicity manifestations of Fluoride. (2+3)





Question Paper Code: U1032

SRI DEVARAJ URUS ACADEMY OF HIGHER EDUCATION & RESEARCH  
(A DEEMED TO BE UNIVERSITY)

M.B.B.S Phase-I Supplementary Examination May 2022

Max Marks: 100

Time: 3 hours

BIOCHEMISTRY- PAPER 2

Your answer should be specific to the question asked  
Draw neat and labeled diagrams wherever necessary

$2 \times 10 = 20$  Marks

LONG ESSAY

- Define transcription. Describe in detail the steps involved in transcription. Explain the post transcriptional modifications. (1+6+3)
- Write the reference values for Fasting and Post Prandial blood glucose. Explain the hormonal regulation of blood sugar. (2+8)

$10 \times 5 = 50$  Marks

SHORT ESSAY

- Describe the salient features & components of Fatty acid synthase complex. (2+3)
- Write the different DNA repair mechanisms. Add a note on diseases associated with DNA repair mechanism. (3+2)
- Define Oxidative Phosphorylation. Explain the role of cytochromes in Electron Transport Chain. (1+4)
- Describe the biochemical functions of calcium. Add a note on the clinical disorders related to it. (2.5+2.5)
- Write Henderson Hasselbach's equation. Explain its significance. (2+3)
- Describe the reactions catalyzed by Pyruvate Dehydrogenase (PDH) complex. Write the significance of this complex. (3+2)
- Describe the pathway of pyrimidine synthesis.
- Briefly explain the synthesis of Creatinine. Mention the biological reference range of serum creatinine and list any two causes for increased serum levels of creatinine. (3+1+1)
- What are porphyrias? How are they classified? Name the enzyme defect and biochemical findings in any one of the porphyrias. (1+2+2)
- Explain the various factors involved in causation of cancer.

$10 \times 3 = 30$  Marks

SHORT ANSWERS

- Name any four electrolytes and compare the composition of electrolytes in the extracellular and intracellular fluids.
- What is glucose-alanine cycle? Mention its significance?
- What is the effect of the following molecules on Electron Transport Chain  
a) Atractyloside b) Thermogenin
- Name three Branched chain amino acids. Write the inborn error of metabolism associated with them.
- List any three functions of Phosphorus.
- What is wobble hypothesis?
- What are Chylomicrons? Mention its functions.
- Define anion gap. Mention the normal anion gap.
- What is Methemoglobin? Write its significance.
- What is conjugation? Give three examples of conjugation reaction



Question Paper Code U1031

SRI DEVARAJ URUS ACADEMY OF HIGHER EDUCATION & RESEARCH

M.B.B.S Phase-I Supplementary Examination MAY 2022

Time:3 hours

Max Marks:100

### BIOCHEMISTRY- PAPER 1

Your answer should be specific to the question asked.  
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#### LONG ESSAY

**$2 \times 10 = 20$  Marks**

1. Name the provitamin form of Vit A. Describe the sources, RDA, biochemical functions and deficiency manifestations of Vit A. (1+1+1+4+3)
2. Define Enzymes. Classify enzymes. Give two examples for each class and the reaction catalyzed by them. (1+5+4)

#### SHORT ESSAY

**$10 \times 5 = 50$  Marks**

3. What are the different types of enzyme inhibition? Mention any five differences between the competitive and non - competitive types of enzymes inhibition. (1+4)
4. Enumerate the biochemical functions of Vitamin D.
5. Describe the structure, function and clinical significance of Golgi apparatus. (2+2+1)
6. Define lipoproteins. Classify lipoproteins with their functions. (1+2+2)
7. Name nucleoside and nucleotides of adenine and cytosine. Write their importance.
8. How do you classify amino acids based on their metabolic fate? Give suitable examples for each (3+2)
9. What are radioactive isotopes? Describe the role of radioactive isotopes in the diagnosis and treatment of diseases in medicine. (1+2+2)
10. Define Basal Metabolic Rate. Mention the normal levels of BMR. Explain briefly the measurement of BMR. (1+2+2)
11. Define proenzyme. Name 2 proteolytic proenzymes of pancreatic juice, their activation and biological role. (1+1+2+1)
12. Write the principle of serum proteins by electrophoresis. Describe the electrophoretic pattern in liver diseases. (2+3)

#### SHORT ANSWERS

**$10 \times 3 = 30$  Marks**

13. Define essential fatty acids. Give any 3 examples.
14. What are reducing sugars? How do you test this property?
15. List any THREE enzymes having therapeutic and diagnostic use and indicate their specific applications in medicine.
16. List any two synthetic analogues of purine bases and mention its clinical application.
17. What is Levy- Jenning's Chart? Mention its applications.
18. Define creatinine clearance test. Write the clinical significance of the test. (2+1)
19. What is Denaturation? List two factors causing Denaturation.
20. What is biological value of protein? Mention its significance
21. Mention the antagonists of folic acid with their biomedical importance.
22. Define jaundice. Add a note on Van den Berg reaction (1+2)