

Printing Pages:2
Enrollment No.

Paper Code: MBBS 131

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M.B.B.S.

First Professional Examination, 2023

BIOCHEMISTRY - I

[Time: Three Hours]

[Max. Marks: 100]

Note: Attempt all the questions. Use separate answer sheets for Section A & Section B. Parts of a question must be attempted in sequence. Draw well labeled diagrams wherever necessary.

MCQs (separate sheet will be provided) [01x20=20]

SECTION - A

1. A patient under the care of a psychiatrist came to the hospital repeatedly with complaints of abdominal pain. The pain was intermittent and vague. On investigation, aminolevulinic acid (ALA) and porphobilinogen (PBG) were found to be elevated in the patient's blood and urine. **[2+2+6=10]**

- What is the possible diagnosis of this case?
- What is the enzyme defect in this condition?
- What are the different types of porphyrias? Elaborate the steps in heme synthesis

2. Describe in brief:

[5x5=25]

- The terms isoenzyme, coenzyme, and cofactor
- Enzyme based assays
- Krebs cycle as a junction in metabolism
- Essential products of tyrosine metabolism
- Roles and responsibilities of a patient

3. Describe the various inborn errors of protein metabolism.

[5]

[P.T.O.]

SECTION - B

1. A 40-year-old woman attended a health camp. The lab reported a thick lipemic sample. Her fasting triglyceride was 1500mg/dL. History revealed she had repeated admission in the hospital from the age of 15 years for abdominal pain and acute pancreatitis. She is non-alcoholic, non-diabetic and her thyroid functions were normal. [2+2+6=10]

- a. What is the likely diagnosis?
- b. What are apolipoproteins?
- c. Discuss the lab diagnosis and treatment of various types of hyperlipoproteinemias.

2. Write short notes on:

[5x6=30]

- a. Lipids of plasma membrane
- b. Metabolic acidosis
- c. Inhibitors of electron transport chain
- d. Ketone body metabolism in human physiology
- e. Right shift of the oxygen dissociation curve
- f. Normal picture of serum electrophoresis of proteins

Enrollment No.

MBBS-131

Invigilator's Signature

M.B.B.S.
FIRST PROFESSIONAL EXAMINATION 2023
BIOCHEMISTRY -I
Multiple Choice Questions

Time: 15 Minutes

Max. Marks: 20
 Marks Obt.:

Note: Write your Enrollment Number on the question paper. Each MCQ carries 01 mark. Each question has only one best correct response. Encircle the correct answer letter. More than one encircle, or any overwriting, will be considered as a wrong answer. There is no negative marking. DO NOT use pencil for writing.

1. Milk is a good source of all of the following except:

(A) Essential amino acids	(B) Vitamin C
(C) Galactose	(D) Calcium and phosphorous
2. A/G ratio is:

(A) Strength of proteins	(B) Ratio of serum proteins
(C) Ratio of ceruloplasmin	(D) None of these
3. In the synthesis of glycogen from glucose the reversible step is:

(A) Glucose → glucose 6-phosphate
(B) Glucose 6-phosphate → glucose 1-phosphate
(C) Glucose 1-phosphate → UDP glucose
(D) UDP glucose → glycogen
4. Cori disease (Limit dextrinosis) is caused due to absence of:

(A) Branching enzyme	(B) Debranching enzyme
(C) Glycogen synthase	(D) Phosphorylase
5. A specific inhibitor for succinate dehydrogenase is:

(A) Arsenite	(B) Malonate
(C) Citrate	(D) Fluoride
6. After releasing O₂ at the tissues, hemoglobin transports:

(A) CO ₂ and protons to the lungs	(B) O ₂ to the lungs
(C) CO ₂ and protons to the tissue	(D) Nutrients
7. Tertiary structure of a protein describes:

(A) The order of amino acids	(B) Location of disulphide bonds
(C) Loop regions of proteins	(D) The ways of protein folding
8. Denaturation of proteins results in:

(A) Disruption of primary structure	(B) Breakdown of peptide bonds
(C) Destruction of hydrogen bonds	(D) Irreversible changes in the molecule
9. For synthesis of prostaglandins, the essential fatty acids give rise to a fatty acid containing:

(A) 12 carbon atoms	(B) 16 carbon atoms
(C) 20 carbon atoms	(D) 24 carbon atoms

10. An important reaction for the synthesis of amino acid from carbohydrate intermediates is transamination, which requires the cofactor:
 (A) Thiamine pyrophosphate (B) Riboflavin
 (C) Niacin (D) Pyridoxal phosphate
11. At isoelectric pH, an amino acid exists as:
 (A) Anion (B) Cation
 (C) Zwitterion (D) None of these
12. Apolipoprotein B-48 is present in:
 (A) Chylomicrons (B) VLDL
 (C) LDL (D) HDL
13. Cytosolic and mitochondrial carbamoylphosphate synthetase have the following similarity:
 (A) Both use ammonia as a substance
 (B) Both provide carbamoyl phosphate for urea synthesis
 (C) Both require N-acetylglutamate as an activator
 (D) Both are allosteric enzymes
14. The greatest buffering capacity at physiologic pH would be provided by a protein rich in which of the following amino acids?
 (A) Lysine (B) Histidine
 (C) Aspartic acid (D) Valine
15. The normal range of total serum bilirubin is:
 (A) 0.2–1.2 mg/100 mL (B) 1.5–1.8 mg/100 mL
 (C) 2.0–4.0 mg/100 mL (D) Above 7.0 mg/100 mL
16. A jaundice in which serum alanine transaminase and alkaline phosphatase are normal is:
 (A) Hepatic jaundice (B) Hemolytic jaundice
 (C) Parenchymatous jaundice (D) Obstructive jaundice
17. Acyl Carrier Protein (ACP) contains the vitamin:
 (A) Biotin (B) Lipoic acid
 (C) Pantothenic acid (D) Folic acid
18. Ketone bodies are synthesized in the:
 (A) Adipose tissue (B) Liver
 (C) Muscles (D) Brain
19. Niemann-Pick disease results from deficiency of:
 (A) Ceramidase (B) Sphingomyelinase
 (C) Arylsulphatase A (D) Hexosaminidase A
20. The principal action of insulin in adipose tissue is to inhibit the activity of:
 (A) Hormone sensitive lipoprotein lipase (B) Glycerol phosphate acyltransferase
 (C) Acetyl-CoA carboxylase (D) Pyruvate dehydrogenase

18/10/2024

SVSU/R/3

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M.B.B.S.

First Professional Examination,

Biochemistry – II

[Time: Three Hours]

[Max.Marks:100]

Note : Attempt all the questions. Use separate answer sheets for Section A & Section B. Parts of a question must be attempted in sequence. Draw well labeled diagrams wherever necessary.

MCQs (separate sheet will be provided)

[01x20=20]

SECTION - A

Q1. A 30-year-old male presented with chief complaints of fever(104°F), and history of diarrhea off and on for last 3-4 months. He has lost 10-12 kg of weight. He has cough with difficulty in breathing. His chest radiograph shows pneumonia. On general examination, he was pale & had acute respiratory distress. Sputum was positive for *Pneumocystis*. His blood examination showed reduced count of CD4 and CD8 cells.

Answer the following questions:

(2+2+6=10)

- What is your provisional diagnosis?
- What investigations will you perform to confirm the diagnosis?
- Why vaccine for this disease is difficult to develop?

Q 2. Describe in briefly

(5x5=25)

- Role of RFLP in diagnosis of disease
- Non coding RNA and its function
- Signal peptide in protein targeting
- Class switching of immune-globulins
- Separation of plasma proteins

Q3. What is delayed type hypersensitivity? Discuss the mechanism of its development?

(5)

[P.T.O.]

SECTION B

Q. 1. 14-year-old female is admitted with complaints of loss of appetite, weakness, jaundice and malaise. On examination, yellow discoloration of skin and sclera was observed and the liver was enlarged. In blood tests, total bilirubin was 6.0 mg%, Indirect bilirubin 1.4mg%, ALT 1000 IU/L, AST 1400 IU/L, ALP 190 U/L. Urine was positive for bile pigments but negative for bile salts.

Answer the following questions:

(2+2+6=10)

- What is the probable cause of jaundice in this patient
- Why urine is positive for bile pigments in this case
- Explain, with diagram, the metabolism of bilirubin

Q. 2. write short notes on

(5x5=25)

- SCID
- Creatinine clearance
- Blood buffer
- Anion gap
- Histones

Q. 3. Define Telomeres

(5)

Enrollment No.

M.B.B.S.-132

Invigilator's Signature

FIRST PROFESSIONAL EXAMINATION**Biochemistry - II****Multiple Choice Questions**

Time : 15 Minutes

Max. Marks : 20

Marks Obt. :

Note : Write your Enroll. Number on Question paper. Each MCQ carries 01 mark. Each Question has only one best correct response. Encircle the correct answer letter. More than one encircle or any over writing will be considered as wrong answer. There is no negative marking. DO NOT use pencil for writing.

1. Structure of myoglobin and Hemoglobin are similar in
 - (a) Primary Structure
 - (b) Secondary Structure
 - (c) Tertiary Structure
 - (d) Both quaternary and tertiary structure
2. No loss of genetic material occurs in?
 - (a) Deletion
 - (b) Insertion
 - (c) Substitution
 - (d) Inversion
3. Enzyme deficiency in Lesch Nyhan Syndrome?
 - (a) HGPRTase
 - (b) APRTase
 - (c) Adenosine deaminase
 - (d) Purine Phosphorylase
4. Analyzed DNA was found to contain 32% adenine, 18% guanine, 17% cytosine and 33% thymine. The nucleic acid must be:
 - (a) Single strand RNA
 - (b) Single Stranded DNA
 - (c) Double Stranded RNA
 - (d) Double Stranded DNA
5. UV light damage to DNA leads to:
 - (a) Formation of pyrimidine dimers
 - (b) No damage of DNA
 - (c) DNA hydrolysis
 - (d) Double stranded breaks
6. Introns are excised by
 - (a) RNA Splicing
 - (b) RNA editing
 - (c) Restriction Endonuclease
 - (d) DNAase
7. Lac operon transcription is induced by:
 - (a) Glucose
 - (b) Glucose with inducer
 - (c) Inducer without glucose
 - (d) Both lactose and glucose
8. Which of the following technique is used to detect specific proteins in a tissue sample extract?
 - (a) Southern blot
 - (b) Western blot
 - (c) Northern blot
 - (d) Eastern blot
9. Which of the following enzyme is NOT a protein?
 - (a) DNAase
 - (b) EcoRI
 - (c) Ribozyme
 - (d) Hexokinase

[PTO]

10. Which enzyme protects DNA from ageing?

- (a) DNA polymerase
- (b) Topoisomerase
- (c) Deoxyribonuclease
- (d) Telomerase

11. Restriction endonuclease breaks

- (a) Single stranded DNA
- (b) Double stranded DNA
- (c) RNA
- (d) Peptide chain

12. The components of biological membrane are all EXCEPT

- (a) Lecithin
- (b) Cholesterol
- (c) Protein
- (d) Triglycerides

13. Methotrexate acts by

- (a) Non-competitive inhibition
- (b) Feed-back inhibition
- (c) Competitive Inhibition
- (d) Increasing V_{max} of reaction

14. Which of the following indicates an abnormal renal function?

- (a) Blood urea 30mg/dl
- (b) GFR = 125 ml/min
- (c) Serum creatinine 8 mg/dl
- (d) Urine pH = 6.8

15. All are features of obstructive jaundice, EXCEPT:

- (a) Increased level of conjugated bilirubin in blood
- (b) Clay coloured stools
- (c) Presence of bile salts in urine
- (d) Increased excretion of urobilinogen in urine

16. Hyponatremia is seen in?

- (a) Alkalosis
- (b) Diabetes insipidus
- (c) Addison's disease
- (d) Leukemia

17. Oncogenic virus associated with cancer of the cervix is

- (a) Epstein barr virus
- (b) HIV
- (c) Human papilloma virus
- (d) HTLV

18) Na-K pump is an example of:

- (a) Simple diffusion
- (b) Facilitated diffusion
- (c) Secondary active transport
- (d) Primary active transport

19) Normal maximum urea clearance in an adult averages about:

- (a) 60 ml/min
- (b) 65 ml/min
- (c) 85 ml/min
- (d) 75 ml/min

20-Lead poisoning is expected to result in increased level of

- (a) ALA
- (b) PBG
- (c) Heme
- (d) Bilirubin
