

Paper Code: MBBS 131

Enrollment No.

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M.B.B.S.

First Professional Examination, Jan 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. 13-year-old boy is brought with complaints of failure to gain weight. His parents are laborers, with low income. The child was born at home and has not received any healthcare till now. There is a history of recurrent infections in this child. On examination, child appears irritable. Both weight and height are lower than those expected for his age. The skin is dry, hair is brittle and muscle appears wasted. There is history of xerophthalmia and presence of bitots spot in both eyes.

(5+5=10)

- a) What is the probable diagnosis? Give reasons.
- b) Describe Wald's visual cycle

2. Describe briefly

(5x5=25)

- a) Chemiosmotic theory of ATP generation
- b) Chronic alcohol leads to liver failure
- c) myoglobin is not a suitable carrier of oxygen
- d) Intake of coffee causes alertness
- e) Cataract in patients suffering from galactosemia.

3. what is active methionine and discuss its biochemical significance?

(5)

[P.T.O.]

SECTION B

1. A senior executive working with a multinational company comes for routine health checkup. He travels almost three weeks in a month. He smokes cigarettes (ONE PACK) drinks alcohol occasionally, and is not physically very active. His BMI is 32kg/m^2 .
(2+2+6=10)

- a) Which lab tests will you perform in this person
- b) Describe the significance of assessing body mass index
- c) Describe, with diagram, the role of HDL in lipid metabolism

Q. 2. Write short note on

(5X5=25)

- a) Fatty liver
- b) Cyanide poisoning
- c) Reactive oxygen species
- d) Isoenzymes
- e) Xenobiotic

Q. 3. Define Glycemic index.

(5)

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M.B.B.S.-131

Invigilator's Signature

FIRST PROFESSIONAL EXAMINATION JANUARY 2023**Biochemistry - I****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 Glyceraldehyde 3 phosphate dehydrogenase is inhibited by
 - (a) ARSENATE
 - (b) arsenite
 - (c) fluoride
 - (d) Iron
- 2) Free radical with highest activity is:
 - (a) O₂
 - (b) OH•
 - (c) Hypochlorite
 - (d) Peroxynitrite
- 3) Iron absorption is promoted by?
 - (a) Vitamin C
 - (b) Caffeine
 - (c) Phytates
 - (d) Milk
- 4) A boy presents with staining of teeth, raised Coproporphyrin-I levels and increased risk of photosensitivity.
The enzyme deficient is:
 - (a) Uroporphyrinogen Synthase
 - (b) Uroporphyrinogen III Synthase
 - (c) Uroporphyrinogen Decarboxylase
 - (d) Coproporphyrinogen Oxidase
- 5) Which of the following is the major source of energy for cardiac myocytes?
 - (a) Amino acids
 - (b) Fatty acids
 - (c) Glucose
 - (d) Glycogen
- 6) Which of the following is a phase-II biotransformation reactions?
 - (a) Acetylation
 - (b) Hydrolysis
 - (c) Oxidation
 - (d) Reduction
- 7) Heparin is a
 - (a) GAG
 - (b) protein
 - (c) glycolipid
 - (d) polysacchride
- 8) Hormone sensitive lipase is not activated by-
 - (a) insulin
 - (b) glucagon
 - (c) catecholamine
 - (d) thyroid hormone
- 9) Anapleurotic reaction is catalyzed by
 - (a) pyruvate carboxylase
 - (b) enolase
 - (c) pyruvate kinas
 - (d) G6PD

[P.T.O.]

- 10) Sphingomyelinase Deficiency is seen in:
 (a) Niemann-Pick disease (b) Farber's disease
 (c) Tay-Sachs disease (d) Krabbe's disease
- 11) Deficiency of phosphorylating enzymes for the formation of which of the following recognition marker leads to I- cell disease?
 (a) GM2 ganglioside (b) Mannose 6-phosphate
 (c) Galactose (d) Globoside
- 12) Acetyl CoA does NOT act as a substrate for which of the following enzymes?
 (a) HMG-CoA synthase (b) Malic enzyme
 (c) Malonyl CoA synthetase (d) Fatty acid synthetase
- 13) Beta Oxidation in Peroxisome generate?
 (a) NADPH (b) H_2O_2
 (c) Long Chain Fatty Acids (d) $FADH_2$
- 14) Which of the following is a nonaromatic amino acid with a hydroxyl R-group?
 (a) Phenylalanine (b) Threonine
 (c) Lysine (d) Methionine
- 15) True about isoenzymes is:
 (a) Catalyse the same reaction (b) Same quaternary structure
 (c) Same distribution in different organs (d) Same enzyme classification with same number and name
- 16) ETC chain involves all EXCEPT:
 (a) NADP (b) NAD
 (c) CoQ (d) FAD
- 17) Which of the following is the major source of energy for cardiac myocytes?
 (a) Amino acids (b) Fatty acids
 (c) Glucose (d) Glycogen
- 18) Which of the following is a phase-II biotransformation reactions?
 (a) Acetylation (b) Hydrolysis
 (c) Oxidation (d) Reduction
- 19) Free radical with highest activity is:
 (a) O_2 (b) $OH\cdot$
 (c) Hypochlorite (d) Peroxynitrite
- 20) Insulin promote lipogenesis by all except
 (a) Decreasing CAMP (b) Increase glucose uptake
 (c) Inhibiting pyruvate dehydrogenase (d) Increasing acetyl coA.

780/

(5)

(9)

Enrollment No.

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M.B.B.S.

First Professional Examination, Jan 2023

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

1. 35year-old male presented with severe pain, redness and swelling of the base of the first metatarsophalangeal joint in the night after a bout of alcohol consumption. The patient wake up early in morning with severe pain in right big toe. the patient denies any trauma to the toe. His uric acid level was 9.2 mg/dl.

Answer the following questions:

(2+5+3=10)

- What is the likely diagnosis?
- What is pathogenesis of this condition?
- What drugs will be prescribed in the above condition

2. Describe in brief

(5x5=25)

- DNA binding motifs
- Tumor marker and their significance
- Role of natural killer cell
- Role of retrovirus in gene therapy
- Mechanism of action of methotrexate

3. Enumerate DNA repair mechanism? Describe two of mechanism of DNA repair.

(5)

[P.T.O.]

Section B

Q. 1: 4-year-old male brought to the hospital with complaints of habit of biting of lips and fingers and involuntary movement of upper limb. On examination baby had multiple marks of biting on fingers and lips. mother gives history of orange discoloration of diaper when he was infant. Serum uric acid was found to be 9mg/dl.

Answer the following questions: (2+6+2=10)

- a What is the probable diagnosis in this disease?
- b- Which pathway is affected in this disease.
- c- What is reason of orange discoloration in this case.

Q. 2. write short notes on. (5x5=25)

- a) Molecular chaperons
- b) Renal function test
- c) C dna library
- d) Ion channels
- e) Marasmus and kwashiorkor

Q3. Define Cell cycle. (5)

Enrollment No.

M.B.B.S.-132

Invigilator's Signature

FIRST PROFESSIONAL EXAMINATION JANUARY 2023**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. The mechanism of action of Streptomycin is
 - (a) Binding to 60S ribosomal subunit.
 - (b) Inactivation of elongation factor-2.
 - (c) Binding to 30S ribosomal subunit.
 - (d) Inhibition of peptidyltransferase
2. HbA differs from HbF in that
 - (a) HbA has only alpha chains
 - (b) HbF cannot bind to 2-3 BPG
 - (c) HbF can bind only 2 molecules of oxygen
 - (d) HbA is alkali resistant
3. Which of the following types of vaccines would most likely evoke the best and most long-lasting protective immune response against measles?
 - (a) Attenuated vaccine
 - (b) DNA vaccine
 - (c) killed vaccine
 - (d) recombinant vaccine
4. One of the following is NOT a second messenger
 - (a) Camp
 - (b) cGMP
 - (c) IP3
 - (d) Calmodulin
5. Features of human mitochondrial DNA are all *EXCEPT*:
 - (a) Circular
 - (b) Single stranded
 - (c) High mutation rate
 - (d) Maternal inheritance
- 6 Structure of myoglobin and Hemoglobin are similar in
 - (a) Primary Structure
 - (b) Secondary Structure
 - (c) Tertiary Structure
 - (d) Both quaternary and tertiary structure
- 7 The most abundant protein in the human plasma is?
 - (a) Albumin
 - (b) Globulin
 - (c) transferrin
 - (d) Antithrombin
- 8 Enzyme deficiency in Lesch Nyhan Syndrome?
 - (a) HGPRTase
 - (b) APRTase
 - (c) Adenosine deaminase
 - (d) Purine Phosphorylase
- 9 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

[P.T.O.]

10) UV light damage to DNA leads to:

- (a) Formation of pyrimidine dimers
(b) No damage of DNA
(c) DNA hydrolysis
(d) Double stranded breaks
- 11) Proteoglycans are:
(a) Branched oligosaccharides covalently attached to core protein
(b) Sugar residues covalently attached to core protein
(c) Glycosaminoglycans non-covalently attached to core protein
(d) Glycosaminoglycans covalently attached to core protein
- 12) Which statement is FALSE about collagen?
(a) Vitamin C is required for the maturation of the collagen chain
(b) Alpha helix of collagen is right-handed
(c) Every 3rd amino acid of collagen is glycine
(d) Proline provides rigidity to collagen
- 13) Inhibition of which of the following enzyme is responsible for the anticancer action of 5-fluorouracil?
(a) Dihydrofolate reductase
(b) Thymidylate kinase
(c) Thymidylate reductase
(d) Thymidylate synthase
- 14) Urine of a patient with obstructive jaundice will give a positive test for all the following expect-
(a) Gmelin's test
(b) Hay's test
(c) Fouchet test
(d) Benzidine test
- 15) A 30-year-old female presents with fatigue, weight loss, arthritis of hands, malar (butterfly) rash. Blood tests reveal she has anti-nuclear antibodies. What is the most probable diagnosis?
(a) Graves disease
(b) Myasthenia gravis
(c) Rheumatoid arthritis
(d) Systemic lupus erythematosus
- 16) APO B 48 and APO B 100 are expressed as product of same gene but differ due to
(a) RNA splicing
(b) RNA editing
(c) Chromosomal loci
(d) Mutation
- 17) 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
- 18) Which of the following enzyme is NOT a protein?
(a) DNAase
(b) EcoRI
(c) Ribozyme
(d) Hexokinase
- 19) Lac operon transcription is induced by:
(a) Glucose
(b) Glucose with inducer
(c) Inducer without glucose
(d) Both lactose and glucose
- 20) The components of biological membrane are all EXCEPT
(a) Lecithin
(b) Cholesterol
(c) Protein
(d) Triglycerides
- *****

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