

**RAN-2006000101030002****1st M.B.B.S. Examination April - 2023****Biochemistry - Paper - II (New CBME Pattern)****સૂચના : / Instructions**

(૧)

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

Name of the Examination:

1st M.B.B.S.

Name of the Subject :

Biochemistry - Paper - II (New CBME Pattern)

Subject Code No.: 2006000101030002

Seat No.:

Student's Signature

SET-2**Section A: MCQ****(20 Marks)**

- (2) All questions are compulsory
(3) Each MCQ has only one correct answer
(4) One mark for correct answer. No negative marking.

- Severe Combined Immunodeficiency could be due to deficiency of?
a) Adenosine Deaminase b) Xanthine Oxidase
c) Dihydrofolate Reductase d) Carbamoyl Phosphate Synthetase
- Molybdenum containing enzyme of purine catabolism is
a) Guanine Deaminase b) Nucleotidase
c) Xanthine Oxidase d) Purine Nucleotide Phosphorylase
- Gene cloning largest fragment can be incorporated in?
a) Plasmid b) Bacteriophage
c) Cosmid d) YAC
- FIGLU Test is done to detect deficiency of
a) Cobalamin b) Folate
c) Thiamine d) PLP
- Cystinuria is associated with excretion of which group of amino acids:
a) Cystine, Ornithine, Arginine and Leucine
b) Cystine, Ornithine, Arginine and Lysine
c) Cystine, Ornithine, Alanine and Leucine
d) Cystine, Tyrosine, Alanine and Leucine

RAN-2006000101030002]

[1]

[P.T.O.]

P1881

6. Which of the following is NOT True about PCR?
- a) Thermostable enzyme Taq Polymerase is used
 - b) Annealing comes after denaturation
 - c) Specific primers are required
 - d) Taq Polymerase is added at each cycle of PCR Reaction
7. Which of the following amino acid is seen being excreted in Maple Syrup Urine Disease?
- a) Tyrosine
 - b) Tryptophan
 - c) Leucine
 - d) Glycine
8. Vitamin B₁₂ and folate supplementation in megaloblastic anemia leads to improvement of anemia due to
- a) Increased DNA synthesis in bone marrow
 - b) Increased Heme synthesis
 - c) Erythroid Hyperplasia
 - d) Increased iron absorption
9. Which of the following is True regarding silent mutation
- a) No change in mRNA
 - b) Change in Amino acid Sequence
 - c) Altered Gene Expression
 - d) No change in Protein Expression
10. Which of the following blocks DNA Replication with getting incorporated in DNA strands
- a) Cytarabine
 - b) Nalidixic Acid
 - c) Paclitaxel
 - d) Ciprofloxacin
11. All of the following aminoacids are used for synthesis of purine nucleotides, EXCEPT
- a) Glycine
 - b) Alanine
 - c) Aspartate
 - d) Glutamine
12. PLP is required for all of the following reactions EXCEPT
- a) Trans-sulfuration Reactions
 - b) Heme Synthesis
 - c) Transamination Reactions
 - d) Carboxylation Reactions
13. Buffering action of hemoglobin is seen due to which Amino Acid?
- a) Histidine
 - b) Tryptophan
 - c) Aspartate
 - d) Arginine
14. Which of the following is competitive inhibitor of Dihydrofolate reductase?
- a) Aminopterin
 - b) Flurouracil
 - c) Allopurinol
 - d) Para aminobenzoic Acid
15. Which of the following is plasma functional enzyme
- a) Alkaline Phosphatase
 - b) Acid Phosphatase
 - c) Lipoprotein Lipase
 - d) Gamma Glutamyl Transpeptidase

16. All are true regarding Cushing's syndrome EXCEPT:
- Serum electrolytes reveal hyperkalemia and hyponatremia
 - Due to hyper function of the adrenal cortex
 - It is characterized by muscle weakness and fatigue
 - Blood glucose levels reveal hyperglycemia
17. Which of the following is not an enzymatic marker for diagnosis of Acute MI
- SGOT
 - CPK-MB
 - LDH
 - Troponin T
18. Which of the following is true about Hemoglobin?
- Parabolic curve of dissociation
 - Co-operative effect in binding of O_2
 - Dimer Protein
 - Store O_2 in muscle
19. Enzyme deficient in erythropoietic porphyria is
- PBG deaminase
 - Uroporphyrinogen III Cosynthase
 - Coproporphyrin Oxidase
 - Ferrochelatase
20. Which plasma protein prevents excretion of Haemoglobin in urine?
- Haptoglobin
 - Hemopexin
 - Albumin
 - Transferrin

Section B:**40 Marks****Instructions for section B & C:**

- Use blue/black ball point pen only.
- The numbers to the right indicates full marks.
- Draw diagrams wherever necessary

Q 2: Long Answer Questions (ANY TWO)**(2 x 10 = 20).**

- Describe in detail the process of protein synthesis? Add a note on various drugs affecting the process of protein synthesis. (7+3).
- Describe the metabolism of Tyrosine. Enumerate important biological product synthesized from tyrosine. Add a note on various inborn error of metabolism related to tyrosine (3+2+5)
- Describe source, RDA, biochemical role of Thiamine. Add a note on various disorders related to thiamine (1+1+4+4)

Q 3: Write Brief Answer / Justifications/ Biochemical basis (ANY TEN)

(10 x 2 = 20)

- a) Vitamin B12 deficiency is associated with increased risk of myocardial infarction.
- b) Genetic code is universal with few exceptions.
- c) Enzyme has a role in diagnosis of a disease.
- d) Vitamin C deficiency is associated with anemia.
- e) Restriction enzymes are used in recombinant DNA technology.
- f) DNA replication is called semi conservative & semi discontinuous.
- g) Difference between CPS-I & CPS-II enzymes.
- h) α -1 antitrypsin deficiency leads to development of emphysema.
- i) Adenosine deaminase (ADA) enzyme deficiency is associated with Severe Combined Immune Deficiency (SCID).
- j) Methotrexate is used as an anticancer drug,
- k) Warfarin is used as an oral anticoagulant.

Section C:

40 Marks

Q 4: Short Answer Questions (ANY FOUR)

(2 X 10 = 20)

- A. Biologically important peptides and their clinical significance.
- B. Allosteric enzyme inhibition.
- C. Describe the various types of DNA repairs & related disorders.
- D. Describe the role of vitamin D in regulating blood calcium levels. Add a note on disorders related to vitamin D deficiency. (3+2)
- E. PCR and its applications.

Q 5: Clinical Cases (ALL COMPULSORY)

(2 X 10 = 20)

Case 1:

A pediatrician was called to attend a 3 days old neonate as the baby's skin had become yellowish in color. Pediatrician found the icterus was present. Lab investigation showed: Serum Total Bilirubin = 14 mg/dl, Direct Bilirubin = 0.8 mg/dL, Indirect Bilirubin = 13.2 mg/dl. He advised phototherapy to baby & drug phenobarbitone. Daily monitoring of serum Bilirubin level was advised.

1. What is the diagnosis? Why do many neonates suffer from jaundice?
2. Enumerate the site & steps of bilirubin synthesis in the body.
3. Differentiate between direct & indirect bilirubin.
4. How is phototherapy helpful in this condition?

5. Explain the biochemical role of phenobarbitone as a treatment modality in this patient.

Case 2:

A 60-year-old alcoholic male with preferential non vegetarian diet suddenly wakes up at night with excruciating pain in great toe. He was admitted in the hospital, on examination, on examination he had fever & his great toe was swollen and red, felt hot to touch. Routine peripheral smear revealed mild leucocytosis. The laboratory data revealed following. Blood Urea: 38 mg/dl; Serum Creatinine 1.5 mg/dl; Serum Uric Acid: 12 mg/dl. A diagnosis of gouty arthritis was made. Patient was started on Allopurinol & anti inflammatory drugs.

1. What is gout? Explain its pathophysiology.
2. What is role of Allopurinol in patients suffering from gout?
3. Enumerate the causes of Primary gout?
4. What is Normal range of Uric acid?
5. Alcohol tends to precipitate the acute attack of gout.