KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
(Declared as Deemed-to-be-University u/s 3 of the UGC Act, 1956)

Accredited A^{+} Grade by NAAC (3rd Cycle) **Placed in 'A' Category by MoE (GoI)**

MBBS PHASE – I
(CBME)
DEGREE EXAMINATION – FEBRUARY 2023

Time: 3 Hours **Max. Marks: 100**

BIOCHEMISTRY
PAPER-I

Q.P. Code: A005

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.
All questions are compulsory.

Question Number **Marks**

1. M.C.Q. **20 X 1 = 20**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

2. List the different lipoproteins with their functions. Discuss the metabolism of VLDL and LDL. Add a note on hyperlipoproteinemia type 2A. (4+4+2)

3. Describe the sources, transport, detoxification and excretion of Ammonia. Add a note on hyperammonaemia. (1+2+3+1+3)

SHORT ESSAY QUESTIONS: **9 X 5 = 45**

4. Define Isoenzyme. Explain the clinical utility of isoenzymes of Lactate dehydrogenase and Creatine kinase. (1+2+2)

5. Discuss the analytical use of enzymes in laboratory investigations.

6. A 53-year-old man met a physician with the complaints saying that he was feeling weak and getting tired more rapidly than usual. On questioning, he admitted to getting up 2-3 times at night to urinate & often felt thirsty too. He also complained of burning pain in his feet and sometimes felt his toes numb. His laboratory findings were: Random blood glucose >200 mg/dL (<200> 5.5% <5%) Urinalysis glucose 4+, ketones present and proteins negative.
   a) What is the probable diagnosis?
   b) What is ADA criteria to diagnose the above disease?
   c) What is the reason for polyuria & polydipsia?
   d) Discuss the changes in carbohydrate & lipid metabolism in the given disease. (1+1+1+2)

7. Describe glycogenolysis. Add a note on regulation of glycogenolysis in muscles.

8. Discuss the energy yield from aerobic and anaerobic glycolysis. Add a note on its regulation.

9. Uncontrolled diabetes mellitus and starvation presents with ketoacidosis. Justify.

10. Describe the Inborn errors associated with Sulphur containing amino acids.

11. Describe transamination reaction. Mention the clinical significance of serum transaminases. (3+2)

12. Calculate energy requirement for a 40-year-old male having a sedentary life style weighing 70 kgs.

SHORT ANSWER QUESTIONS: **5 X 3 = 15**

13. Explain how the cholesterol and Trans fatty acids affect the fluidity of membrane.

14. Describe the glucose-alanine cycle.

15. Define quaternary structure of protein. List the bonds stabilizing quaternary structure of proteins.

16. Describe the classification of amino acids based on nutritional significance.

17. Enumerate any three hormones secreted by adipose tissue.

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MULTIPLE CHOICE QUESTIONS

Course:	**MBBS Phase – I, (CBME) February 2023**	**Max. Marks:**	**20 Marks**
Subject :	**Biochemistry Paper-I, QP Code: A005**	**Time:**	**30 Minutes**

Instructions:
- Each question is followed by four options.
- Pick up the single best option and darken the appropriate circle in the OMR Sheet provided.
- Each question carries one mark. No negative marking.

1. Glucose transporter in hepatocytes is
   (A) GLUT1 (B) GLUT2
   (C) GLUT3 (D) GLUT4

2. Hartnup's disease results from defect in transport mechanism for
   (A) Nucleic acids (B) Amino acids
   (C) Carbohydrates (D) Lipids

3. Enzyme used in diagnosis of acute pancreatitis is
   (A) Alkaline phosphatase (B) Acid phosphatase
   (C) Aldolase (D) Amylase

4. Enzymes synthesized in inactive form are called
   (A) Coenzymes (B) Proenzymes
   (C) Apoenzymes (D) Lysozymes

5. Enzymes which catalyze binding of two substrates by covalent bonds are known as
   (A) Lyases (B) Hydrolases
   (C) Ligases (D) Oxidoreductases

6. Serum acid phosphatase level increases in the following condition
   (A) Carcinoma of prostate (B) Myocardial infarction
   (C) Renal failure (D) Obstructive jaundice

7. A new born baby has severe abdominal distention and diarrhoea after being breast fed, Urine analysis revealed presence of reducing sugar. What is the defect
   (A) Lactose intolerance (B) Galactasemia
   (C) Hereditary fructose intolerance (D) Glycosuria

8. Glucose 6 phosphate dehydrogenase deficiency causes hemolytic anemia due to lack of
   (A) NADPH (B) FAD
   (C) $FADH_2$ (D) NADP

9. The only glycosamino glycan which does not contain uronic acid is
   (A) Dermatan sulfate (B) Heparin
   (C) Hyaluronic acid (D) Keratan sulphate

10. Elevated levels of the following indicate the risk of heart attacks in younger people
    (A) IDL (B) HDL
    (C) Chylomicrons (D) LP(a)

11. Fatty liver is caused due to accumulation of
    (A) Fatty acids (B) Cholesterol
    (C) Phospholipids (D) Triacylglycerol

12. The following drug inhibits cholesterol biosynthesis by acting as competitive inhibition
    (A) Fibrates (B) Niacin
    (C) Statin (D) Ezetimibe

13. Which organ cannot utilize ketone bodies as source of energy
    (A) Brain (B) Muscle
    (C) Liver (D) Red blood cells

14. Albinism is due to the deficiency of the enzyme
    (A) Phenylalanine hydroxylase (B) Tyrosinase
    (C) Para hydroxyphenyl pyruvate oxidase (D) Tyrosine dehydrogenase

15. Aspartic acid is used for the synthesis of following compound
    (A) Porphyrin (B) Sphingomyelin
    (C) Pyrimidine (D) Folic acid

16. Histidine when decarboxylated will produce
    (A) Ethanol amine (B) Beta mercapto ethanolamine
    (C) Histamine (D) Putrescine

17. Melanin is synthesized from following amino acid
    (A) Histidine (B) Glutamic acid
    (C) Ornithine (D) Tyrosine

18. The following amino acid will give rise to an inhibitory neurotransmitter
    (A) Histidine (B) Glutamic acid
    (C) Ornithine (D) Tyrosine

19. Limiting amino acid in Pulses is
    (A) Leucine (B) Lysine
    (C) Methionine (D) Tryptophan

20. Which of the following has the highest Glycemic index
    (A) Table sugar (B) Ice cream
    (C) Rice (D) Legumes

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MBBS PHASE – I
(CBME)

DEGREE EXAMINATION – FEBRUARY 2023

Time: 3 Hours **Max. Marks: 100**

BIOCHEMISTRY
PAPER-II

Q.P. Code: A006

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.
All questions are compulsory.

Question Number		**Marks**
1.	M.C.Q.	**20 X 1 = 20**
LONG ESSAY QUESTIONS:		**2 X 10 = 20**
2.	Write a note on body distribution of calcium, sources, RDA, absorption and regulation of blood calcium levels.	(1+1+1+3+4)
3.	Explain in detail about Eukaryotic DNA replication with a help of neat labelled diagram. Add a note on eukaryotic DNA polymerases.	(6+4)
SHORT ESSAY QUESTIONS:		**9 X 5 = 45**
4.	Mention sources, RDA of Zinc. List **four** Zinc containing enzymes.	
5.	Define Anion Gap. Mention its normal range. Give **two** examples each for normal and high anion gap metabolic acidosis.	
6.	Explain the formation and detoxification of bilirubin in the body.	
7.	Outline the arrangement of different complexes, carriers and flow of electrons in electron transport chain.	
8.	A 55 year old male, known chronic alcoholic was admitted to hospital with distension of the abdomen and yellowish discoloration of sclera. The following are some of the biochemical findings in the patient. Total bilirubin: 10 mg/dL (0.21 mg/dL) Conjugated bilirubin : 5.5 mg/dL (0.1-0.4 mg/dL) Unconjugated: 4.5 mg/dL (0.2-0.7mg/dL) Serum alkaline phosphatase: 140 IU/L (40-125 IU/L) AST: 260 IU/L (8-20 IU/L) ALT: 290 IU/L (13-35 IU/L) Urine: Bile pigments: ++; Bile salts: +; Urobilinogen: +; a) What is your probable diagnosis? b) What are the other causes for this type of condition diagnosed?	
9.	List the types of DNA repair mechanism. Mention the associated disorders of DNA repair mechanism.	(3+2)
10.	Describe the phase II reactions of detoxification with examples.	
11.	Name any **four** free radicals. Describe how these can cause tissue damage.	
12.	Mention the post translational modifications which help in maturation of collagen. Add a note on functions of collagen.	
SHORT ANSWER QUESTIONS:		**5 X 3 = 15**
13.	Define Hypokalemia. Give the causes for the same	
14.	Mention the role of Allopurinol in the treatment of gout.	
15.	Explain Degeneracy of codon.	
16.	Name and mention clinical utility of three enzymes acting as tumour makers.	
17.	Describe professional qualities and roles of a physician.	

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MULTIPLE CHOICE QUESTIONS

Course:	**MBBS Phase – I, (CBME) February 2023**	**Max. Marks:**	**20 Marks**
Subject :	**Biochemistry Paper-II, QP Code: A006**	**Time:**	**30 Minutes**

Instructions:
- Each question is followed by four options.
- Pick up the single best option and darken the appropriate circle in the OMR Sheet provided.
- Each question carries one mark. No negative marking.

1. Clotting factor activated by Vitamin K is
   (A) Factor I (B) Factor II
   (C) Factor III (D) Factor IV

2. Acrodermatitis enteropathica is caused due to deficiency of
   (A) Molybdenum (B) Zinc
   (C) Fluorine (D) Iodine

3. Factors favoring calcium absorption include all of the following, **EXCEPT**
   (A) Low gastric pH (B) Lysine
   (C) Oxalates (D) Vitamin D

4. The major buffer in extracellular fluid is
   (A) Hemoglobin (B) Bicarbonate
   (C) Protein (D) Phosphate

5. Respiratory acidosis can occur in
   (A) Hysterical hyperventilation (B) Bronchial Asthma
   (C) Renal Diseases (D) Loss of intestinal fluids

6. Post transcriptional modification involves:
   (A) Removal of exons (B) Addition of introns
   (C) Removal of introns (D) Phosphorylation of serine

7. Substitution of an adenine base by guanine in DNA is known as:
   (A) Transposition (B) Transition
   (C) Transversion (D) Translation

8. Which of the following is an inhibitor of eukaryotic transcription?
   (A) Actinomycin D (B) Clindamycin
   (C) Tetracycline (D) Erythromycin

9. The following is **NOT** a detoxifying agent
   (A) Glycine (B) Glutathione
   (C) Glucuronic acid (D) Glycogen

10. Which of the following statement is **INCORRECT** about conjugation?
    (A) Conjugation reactions can occur independently
    (B) The reactions occur after phase 1 reactions
    (C) Most of the reactions occur in liver
    (D) The polarity of xenobiotic decreases after conjugation

11. A 32 year old female working in laboratory was accidently exposed to cyanide & was rushed to the hospital. She was declared dead upon reaching the hospital. Which complex of ETC might have been inhibited?
    (A) Complex I
    (B) Complex II
    (C) Complex III
    (D) Complex IV

12. An uncoupler of oxidative phosphorylation
    (A) Inhibit electron transport and ATP synthesis
    (B) Allows electron transport to occur without ATP formation
    (C) Inhibit electron transport without impairment of ATP synthesis
    (D) Inhibit transfer of electrons from cytochrome aa3 to molecular oxygen

13. The following is **NOT** true regarding gout
    (A) It is seen in HGPRTase deficiency
    (B) There is deposition of urate crystals in joints
    (C) Can be treated using Allopurinol
    (D) It is caused due deficiency of PRPP synthetase

14. Glycosylation of collagen occurs in which of the following residues?
    (A) Hydroxyproline
    (B) Lysine
    (C) Proline
    (D) Hydroxylysine

15. Which of the following amino acid is required for synthesis of porphyrins?
    (A) Lysine
    (B) Glycine
    (C) Phenylalanine
    (D) Methionine

16. Biliveridin is converted to bilirubin by the process of
    (A) Oxidation
    (B) Reduction
    (C) Conjugation
    (D) Decarboxylation

17. Excretion of 30-300mg/dL of protein in urine is called
    (A) Proteinuria
    (B) Microalbuminuria
    (C) Isosthenuria
    (D) Macroalbuminuria

18. Specific gravity of urine is increased in
    (A) Diabetes Insipidus
    (B) Diabetes mellitus
    (C) Excess intake of fluids
    (D) None of the above

19. Vaccination is an example of
    (A) Naturally acquired active immunity
    (B) Naturally acquired passive immunity
    (C) Artificially acquired active immunity
    (D) Artificially acquired passive immunity

20. Which of the following substances exert beneficial effects in the prevention of cancer?
    (A) Vitamin E
    (B) Carotene
    (C) Vitamin C
    (D) All of the above

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