

# Brahmanbaria Medical College

Ghatura, Brahmanbaria

1<sup>st</sup> card Final Examination, October-2022

BMC-09

Sub: Biochemistry (SAQ)

Marks: 40

Time: 1hr 20minutes

**Answer any Eight (08) questions. All questions carry equal Marks.**

01. Define and classify buffer with examples. What is the general mechanism of action of buffer? 2+3
02. State and deduce the Henderson-Hasselbalch equation. Mention its importance. 3+2
03. Give the functional classification of protein with examples. Draw a peptide bond. 4+1
04. Define crystalloid and colloid with examples. Differentiate between colloids and crystalloids. What are the functions of crystalloids? 1+2.5+1.5
05. Outline the functions of phospholipids. Mention the chemical properties of lipid. 2.5+2.5
06. Define and classify lipoproteins. State the biomedical importance of cholesterol. 2+3
07. Define carbohydrate. Classify polysaccharide with example of each. Mention the biomedical importance of carbohydrate. 1+1.5+2.5
08. Define enzyme. Classify enzymes according to IUBMB with example of each. What is the effect of temperature and  $P^H$  on enzyme action 1+2+2
09. Write short notes on (any two) 2.5+2.5
  - (i) Isotopes .
  - (ii) Eicosanoids.
  - (iii) Epimers.

**Brahmanbaria Medical College**  
**Department of Biochemistry**  
**1<sup>st</sup> Card Final Examination- October-2022**  
**MBBS 9<sup>th</sup> Batch**  
**Subject: Biochemistry (MCQ)**

Full marks-10

Time-10 minutes

**Write True (T) and False (F) in the left side against each alternative.**

**1. Blood buffers are-**

- a) Hemoglobin
- b) Ammonia
- c) Albumin
- d) Calcium
- e) Oxyhemoglobin

**2. The following are characteristics of a colloidal system-**

- a) Size of the particles are 1nm to 200nm
- b) System is heterogeneous
- c) System is a true solution
- d) Exerts same osmotic pressure as a crystalloidal solution of same molarity
- e) Dispersed phase shows brownian movement

**3. Crystalloids-**

- a) Are particles of less than 1nm
- b) Shows Brownian movement
- c) Having low osmotic pressure
- d) are DNA & RNA molecules
- e) Can form true solution

**4. Isotopes-**

- a) Are atoms of same element
- b) Have different atomic weight
- c) Have same number of neutron
- d) Cannot be synthesized artificially
- e) Can be used as a radiotracer

**5. Glycosaminoglycans-**

- a) Are homopolysaccharides
- b) Act as stored fuel
- c) Are complex carbohydrates
- d) Contain amino sugar & uronic acid
- e) Present in synovial fluid

**6. The followings are phospholipids-**

- a) Hyaluronic acid
- b) Phosphatidic acid
- c) Phosphatidyl choline
- d) Xanthine
- e) Phosphatidyl inositol

**7. The fatty acids-**

- a) Are aliphatic monocarboxylic acids
- b) Are not bound to albumin in serum
- c) Are simple lipids
- d) Are not essential in diet
- e) Can be synthesized from glucose

**8. Essential amino acids are-**

- a) Tyrosine
- b) Alanine
- c) Valine
- d) Proline
- e) Threonine

**9. Denaturation of protein is characterized by-**

- a) Loss of biological activity
- b) Loss of primary structure
- c) Increase in viscosity
- d) Irreversible changes in protein
- e) Loss of tertiary structure

**10. Characteristics of isoenzymes are as follows-**

- a) Has quaternary structure
- b) Has different molecular forms with different catalytic activities
- c) Has diagnostic value in disease process
- d) Can be used to treat disease
- e) Usually are non-function plasma enzymes

# Brahmanbaria Medical College

Department of Biochemistry

1<sup>st</sup> Term Final Examination- January-2023

MBBS 9<sup>th</sup> Batch

Subject: Biochemistry (SBA+ MCQ)

Full marks-20

Time-20 minutes

Give the best answer (SBA)

- 1. Regarding solution following are true except-**
  - a) Mixture of two or more substances.
  - b) Distributed uniformly among each other.
  - c) Is homogenous.
  - d) 1 N solution of NaCl is isotonic.
  - e) Have a single phase at definite tem.
- 2. Buffer-**
  - a) Is a mixture of weak base and strong acid.
  - b) Is a mixture of weak acid and its conjugate base.
  - c) Can resist change of P<sup>H</sup> following addition of unlimited quantity of acid or base
  - d) Can not be prepared in vivo.
  - e) Exist only in ECF.
- 3. In H-H equation  $P^H = P^K$  occur when-**
  - a) Acid is half neutralized.
  - b) Acid is completely neutralized.
  - c) Base is not present.
  - d) Base is more than acid.
  - e) Acid is more than base.
- 4. Following sugars are reducing except-**
  - a) Glucose
  - b) Fructose.
  - c) Sucrose.
  - d) Maltose.
  - e) Ribose.
- 5. Regarding enzyme which one is not correct-**
  - a) Protein in nature.
  - b) Act as catalyst .
  - c) Heat stable.
  - d) Require optimum P<sup>H</sup> & Temperature .
  - e) Have got specificity .
- 6. Which one of the following nutrient is not essential-**
  - a) Vitamins.
  - b) Minerals.
  - c) Phenylalanine.
  - d) Glucose.
  - e) Arachidonic acid.
- 7. Trace elements include except-**
  - a) Iron.
  - b) Cu.
  - c) Iodine.
  - d) K
  - e) Selenium.
- 8. BMR-**
  - a) Causes 50-70% energy expenditure.
  - b) Is higher in elder than younger person.
  - c) Varies inversely with surface area.
  - d) Is more in hypothyroidism.
  - e) Is increased in malnutrition.
- 9. Function of Vitamin – C include except-**
  - a) Maturation of Collagen fibre.
  - b) Degradation of tyrosine.
  - c) Bone formation.
  - d) Reduction of Fe<sup>3+</sup> to Fe<sup>2+</sup>.
  - e) Act as antioxidant.
- 10. Which one of the followings is derived lipid-**
  - a) TAG.
  - b) Wax.
  - c) Fatty acid.
  - d) Phospholipid.
  - e) Lipoprotein.

Write True (T) and False (F) in the left side against each alternative

**11. Blood buffers are-**

- a) Hb.
- b) Ammonia.
- c) Albumin.
- d) Calcium.
- e) Oxyhemoglobin.

**12. The following are characteristics of a colloidal system-**

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- e) Dispersed phase shows Brownian movement.

**13. Isotopes-**

- a) Are atoms of same element.
- b) Have different atomic weight.
- c) Have same number of neutron.
- d) Cannot be synthesized artificially.
- e) Can be used as a radiotracer.

**14. Glycosaminoglycans-**

- a) Are homopolysaccharides.
- b) Act as stored fuel.
- c) Are complex Carbohydrates.
- d) Contain amino sugar and uronic acid.
- e) Present in synovial fluid.

**15. Compounds synthesized from cholesterol are-**

- a) Eicosanoids.
- b) Cholecalciferol.
- c) Estrogen.
- d) Taurocholic acid.
- e) Retinyl ester.

**16. Ketogenic amino acids-**

- a) Produce ketone bodies.
- b) Can enter TCA cycle.
- c) Are valine and alanine.
- d) Produce acetoacetyl CoA.
- e) Can synthesize protein.

**17. The following vitamin deficiency affects skin-**

- a) Retinol.
- b) Ascorbic Acid.
- c) Niacin.
- d) Cholecalciferol.
- e) Thiamin.

**18. Deficiency of following vitamins affects nervous system-**

- a) Thiamine.
- b) Ascorbic Acid.
- c) Vitamin – B<sub>12</sub>.
- d) Folic Acid.
- e) Cholecalciferol.

**19. The antioxidants are-**

- a) Phylloquinone.
- b) Ascorbic Acid.
- c) Beta carotene.
- d) NADPH.
- e) Niacin.

**20. Vitamins stored in the body are-**

- a) Retinol.
- b) Thiamine.
- c) Vitamin – B<sub>12</sub>.
- d) Vitamin – C.
- e) Niacin.

**Brahmanbaria Medical College**  
Ghatura, Brahmanbaria  
**1st Term Final Examination, January-2023**  
**BMC-09**  
**Sub: Biochemistry (SAQ)**

Marks: 70

Time: 2hr 40minutes

**Ans any seven Questions from each Groups.**

**Group – A**

- |  |         |
|--|---------|
| 01. Differentiate between colloids and crystalloids. What is protective colloid.   | 4+1     |
| 02. Define isotopes with examples. Mention the different clinical applications of isotopes.  | 3+2     |
| 03. Mention some derived lipids. Briefly discuss the properties of lipid.  | 1+4     |
| 04. Define $P^H$ with its importance. Calculate the $P^H$ of a solution when concentration of $NaHCO_3$ are 0.025M and $H_2CO_3$ 0.00125M respectively (Log 20=1.3). | 1+4     |
| 05. Write short notes on- (any two)<br>i. Mutarotation.<br>ii. Denaturation of protein.<br>iii. PUFA   | 2.5+2.5 |
| 06. Define Protein. Classify protein by its biological function. Give example from each.   | 1+4     |
| 07. What are the different types of enzyme inhibitions? Explain with suitable example.   | 1+4     |
| 08. Give the calculation of preparing 100ml 5% glucose solution. Find its osmolarity.  | 2+3     |

## Group-B

09. What are the dietary sources, functions and deficiency features of vitamin B<sub>12</sub>? 1+2+2
10. Name the dietary fibers. Discuss the role of dietary fibers in maintenance of health. 1+4
11. Classify PEM. Mention the difference between marasmus and Kwashiorkor. 1+4
12. List the essential trace elements. Give the role of zinc and iron in health and diseases. 1+4
13. Define balanced diet. How will you prepare a balanced diet for 22years male sedentary worker (height 160cm, Weight 60kg)? 1+4
14. Mention the fat soluble Vitamins with their active forms. Mention the steps of biosynthesis of Vitamin D. 2+3
15. Write short notes on- (Any Two) 2.5+2.5  
i. SDA .  
ii. BMI.  
iii. Rickets.
16. Define food, Nutrition, Nutrients and diet. Classify nutrients with examples. 3+2

**Brahmanbaria Medical College**  
**Department of Biochemistry**  
**2<sup>nd</sup> Card Final Examination- December-2022**  
**MBBS 9<sup>th</sup> Batch**  
**Subject: Biochemistry ( SBA+ MCQ)**

Full marks-10

Time-10 minutes

**Give the best answer (SBA)**

**1. Basic components of food include except-**

- a) Carbohydrate
- b) Vitamins
- c) Protein
- d) Water
- e) Alcohol

**2. Regarding microminerals following are applicable except-**

- a) Calcium
- b) Iron
- c) Iodine
- d) Zinc
- e) Fluoride

**3. BMR increases in the following except-**

- a) Over activity of Na<sup>+</sup>-K<sup>+</sup> pump
- b) Cold climate
- c) Fever
- d) Growing child
- e) Malnutritions

**4. Following vitamins act as co-enzyme except-**

- a) Vitamin- K
- b) β- carrotene
- c) Niacine
- d) Thiamine
- e) Vitamin-B<sub>2</sub>

**5. Following nutrients are essential except-**

- a) Iron
- b) Iodine
- c) Thiamine
- d) Palmitic acid
- e) Retinol

Write True (T) and False (F) in the left side against each alternative

**6. Energy yielding nutrients are-**

- a) Fat
- b) Protein
- c) Vitamins
- d) Minerals
- e) Dietary fibers

**7. Following statements are true for water soluble vitamins-**

- a) Act as co-enzyme
- b) Macronutrients
- c) Non- essential
- d) Heat stable
- e) Stored in human body

**8. Nutritional status can be assessed by-**

- a) BMI
- b) BMR
- c) DRI
- d) Weight
- e) Mid upper arm circumference

**9. Choose the correct answer regarding PEM-**

- a) In kwashiorkor oedema tends to be generalized
- b) Marasmus occur in 1-4 years
- c) A baby with kwashiorkor is apathetic
- d) Marasmic baby has good appetite
- e) Hair change occur in marasmus

**10. Following statements are true-**

- a) Vitamin-D is found in sunlight
- b) Retinol is antioxidant
- c) Vitamin K is required for blood coagulation
- d) Active form of riboflavin is FAD
- e) Cobalt is a trace element



# Brahmanbaria Medical College

Ghatura, Brahmanbaria

2<sup>nd</sup> card Final Examination, December-2022

BMC-09

Sub: Biochemistry (SAQ)

Marks: 40

Time: 1hr 20minutes

**Answer any Eight (08) questions. All questions carry equal Marks.**

01. Define Balanced diet. How will you prepare a balanced diet for 22 years sedentary male worker.(Height -160 cm, Weight 60 kg) 1+4
02. Classify common nutritional disorders. Compare and contrast between kwashiorkor and marasmus. 2+3
03. Define trace elements with example. State the importance of iron and iodine in nutrition. 2+3
04. Name the fat soluble vitamins with their active forms. What are the functions and deficiency features of vitamin -D. 2+3
05. Name the dietary fibers. Discuss the role of dietary fibers in maintenance of health. 1+4
06. Define Obesity. List the investigations required for diagnosis of PEM. 1+4
07. Name the water soluble vitamins with their active forms. What are the sources, Functions & deficiency features of vitamin – C. 2+3
08. Name the food source , Functions and deficiency features of Vitamin -A & Vitamin- B<sub>12</sub>. 5
09. Write short notes on (any two) 2.5+2.5
  - (i) BMI
  - (ii) Xerophthalmia
  - (iii) 7- dehydrocholesterol

# Brahmanbaria Medical College

Department of Biochemistry

2<sup>nd</sup> Term Final Examination- May-2023

MBBS 9<sup>th</sup> Batch

Subject: Biochemistry (SBA+ MCQ)

Full marks-20

Time-20 minutes

Write True (T) and False (F) in the left side against each alternative

**1. Proteolytic enzymes are-**

- a) Trypsin
- b) Nuclease
- c) Limit dextrinase
- d) Carboxy peptidase
- e) HCL

**2. Regarding gastric juice-**

- a) Contains more bicarbonate ion
- b) Secretion is stimulated by fatty diet
- c) Acid secretion is stimulated by protein in diet
- d) Contains gastrin.
- e) Achlorhydria is associated with decreased iron absorption

**3. About digestion choose the correct statements -**

- a) Lipids are digested mainly by pancreatic juice
- b) Protein digestion starts in mouth
- c) Pepsin splits carbohydrate into glucose
- d) Bile salt is required to reduce surface tension of fat
- e) Micelle is an aggregate of cholesterol

**4. Characteristics of ICF -**

- a) Major fluid volume compartment
- b)  $K^+$  is the major cation
- c)  $Cl^-$  is the major anion
- d) Total ionic concentration is less than ECF
- e)  $P^H$  is lower than ECF

**5. Which one is transcellular fluid-**

- a) Fluid in aqueous humor
- b) Blood
- c) Synovial fluid
- d) Interstitial fluid
- e) Peritoneal fluid

**6. About GIT hormone-**

- a) CCK causes gall bladder contraction
- b) Secretin stimulates biliary bicarbonate secretion
- c) Gastric inhibitory polypeptide inhibits insulin release
- d) Secretin stimulates pancreatic bicarbonate secretion
- e) CCK stimulates gastric emptying

**7. In respiratory acidosis -**

- a)  $P^H$  is decreased
- b)  $P^H$  is increased
- c)  $PCO_2$  is increased
- d)  $[HCO_3^-]$  is increased
- e)  $[HCO_3^-]$  remains unchanged

**8. Metabolic alkalosis-**

- a) May occur when there is secondary hyperaldosteronism
- b) Causes hyperventilation
- c) Due to increased  $[HCO_3^-]$  concentration in plasma
- d) Invariably produces alkaline urine
- e) May produce tetany

**9. Hypokalemia -**

- a) Is responsible for metabolic alkalosis
- b) Is an effect of acidosis
- c) May occur in Addison's disease
- d) Produces acidic urine
- e) Causes paralytic ileus

**10. Regarding digestion and absorption-**

- a) Carbohydrate digestion mainly occurs in stomach
- b) Fat emulsification occurs by bile salts
- c) Glucose is absorbed by Na- glucose cotransport system
- d) Fructose is absorbed by facilitated diffusion
- e) Cholagogue decreases bile flow

Give the best answer (SBA)

11. All are the substrates for gluconeogenesis except-

- a) Glucogenic amino acids
- b) Glycerol
- c) Pyruvate
- d) Lactate
- e) Ketogenic amino acids

12. Following are the metabolic fates of pyruvate except-

- a) Synthesis of cholesterol
- b) Synthesis of alanine
- c) Conversion of lactate
- d) Oxidation to acetyl CoA
- e) Synthesis of glucose

13. All are carbohydrate splitting enzymes except-

- a) Maltase
- b) ptylin
- c) Sucrase
- d) Limit dextrinase
- e) Pepsin

14. HMP shunt occurs in following organs except-

- a) Liver
- b) Testes and ovary
- c) Adrenal cortex
- d) RBC
- e) Non lactating breast

15. Regarding glycogenolysis true statement is-

- a) Is an anabolic pathway
- b) Occurs in liver and cardiac muscle
- c) ATP is produced
- d) Occurs in mitochondria
- e) Stimulated by glucagon

16. Following are causes of metabolic acidosis except-

- a) Renal failure
- b) Lactic acidosis
- c) Diabetic ketoacidosis
- d) Poisoning by salicylate
- e) Hyperaldosteronism

17. Anion gap increased in following conditions except-

- a) Renal failure
- b) Lactic acidosis
- c) Alkalosis
- d) Acidosis
- e) Poisoning by ethylene glycol

18. Which is not applicable for water turnover-

- a) In children it is 40-50 %
- b) In adult it is 16-18%
- c) Children get quickly dehydrated.
- d) In children, ECF and ICF volume are not equal
- e) Changes with atmospheric temperature.

19. Following are ketone bodies except--

- a) Acetone
- b) 3-Hydroxy butyrate
- c) Beta carotene.
- d) Acetoacetate
- e) Beta hydroxybutyrate

20. Regarding beta oxidation-

- a) Major catabolic pathway of fatty acid
- b) Fatty acid activation occurs in mitochondria
- c) Present in RBC and Neuron
- d) Reaction of beta oxidation proper mainly occurs in cytosol
- e) Major source of energy for brain

# Brahmanbaria Medical College

Ghatura, Brahmanbaria

2<sup>nd</sup> Term Final Examination, May-2023

BMC-09

Sub: Biochemistry (SAQ)

Marks: 70

Time: 2hr 40munites

Ans any seven Questions from each Groups.

## Group – A

01. Name the digestive juices with daily volume. Give the composition of pancreatic juice. 2+3
02. Give the steps of CHO digestion. Write down the absorption of glucose with diagram. 3+2
03. Classify local hormones of GIT. Mention the function of secretin and CCK-PZ. 3+2
04. Show with a diagram the steps of TCA cycle. Calculate the ATP production in this cycle. 3+2
05. Define gluconeogenesis. Mention the substrate, enzymes and important of this pathway. 1+4
06. Write down the sources and fates of acetyl - CoA. Outline the steps of cholesterol biosynthesis. 2+3
07. Define amino acid pool. Show with a diagram how this pool is maintained. Name the NPN substances. 1+3+2
08. Write short notes on- (Any two) 2.5+2.5
  - a. IF of Casle.
  - b. Micelles.
  - c. Ammonia intoxication.

## Group-B

- |  |         |
|--|---------|
| 09. Classify body fluid compartments. Write down the major differences between ECF and ICF.  | 2+3     |
| 10. Define water-turnover. Make an intake and output chart for an adult at temperate climate. Why new born baby has got high water-turnover?             | 1+3+1   |
| 11. Name the mechanism involved in water and electrolyte balance. Explain the rule of ANP.   | 2+3     |
| 12. Classify simple acid base disorders with their primary defect. Define respiratory acidosis. Mention some causes of this disorder.                    | 2+1+2   |
| 13. Write down the acid base parameters with their normal ranges. What is anion gap? Mention the importance of anion gap.                                | 3+1+1   |
| 14. Explain with the diagram the role of kidneys in acid base balance.   | 5       |
| 15. What is GFR? Mention the factors affecting GFR.  | 1+4     |
| 16. Write short notes on- (Any two)<br>a. ECF volume contraction.<br>b. Calculation of plasma osmolarity and Na <sup>+</sup> deficit.<br>c. Hypokalemia. | 2.5+2.5 |

# Brahmanbaria Medical College

Ghatura, Brahmanbaria

3<sup>rd</sup> card Final Examination, March-2023

BMC-09

Sub: Biochemistry (SAQ)

Marks: 40

Time: 1hr 20minutes

Answer any Eight (08) questions. All questions carry equal Marks.

01. Define digestion. Outline the steps of digestion and absorption of fat. 1+4
02. Give the composition of gastric juice. List the function of gastric HCl and mucin. 3+2
03. Classify local hormones of GIT. Mention the sources and functions of gastrin and secretin. 2+3
04. What is biological oxidation? Name the enzymes involved in biological oxidation. Write down the functions of hydroperoxidases and oxygenases. 1+2+2
05. Write down the intermediary pathways of carbohydrate metabolism. Give the steps of anaerobic glycolysis with ATP production. 2+3
06. Outline the steps of glycogenolysis. Compare glycogenolysis occurring in liver and muscle. 3+2
07. What is  $\beta$ -oxidation of fatty acid? Give the steps of  $\beta$ -oxidation of palmitic acid with ATP calculation. 1+4
08. Mention the sources of ammonia in human body. Show with a diagram the steps of kreb's urea cycle. 1+4
09. Name the ketone bodies. Write down the pathway of ketone body formation. 1+4
10. Write short notes on: (any two) 2.5+2.5
  - (i) Achlorohydria.
  - (ii) Cori cycle.
  - (iii) Ammonia intoxication.

**Brahmanbaria Medical College**  
**Department of Biochemistry**  
**3rd Term Final Examination- September-2023**  
**MBBS 9<sup>th</sup> Batch**  
**Subject: Biochemistry ( MCQ + SBA)**

Full marks-20

Time-20 minutes

**MCQ**

**Write True (T) and False (F) in the left side against each alternative**

**1. Blood calcium is regulated by-**

- a) Parathormone
- b) Aldosterone
- c) Androgens
- d) Calcitriol
- e) Calcitonin

**2. In hypothyroidism:**

- a) BMR increases
- b) S. TSH increases
- c) T. FT4 decreases
- d) S. Cholesterol increased
- e) Heat intolerance

**3. Insulin stimulates-**

- a) Glycogenolysis
- b) Lipolysis
- c) Ketogenesis
- d) K<sup>+</sup> entry into cells
- e) Glucose entry into cells

**4. Prolonged standing of whole blood may cause-**

- a) Hyperglycemia
- b) Hyperkalemia
- c) Increased serum LDH
- d) Increased serum Cl<sup>-</sup> level
- e) Increased hemolysis

**5. Biological laboratory hazard may be caused by-**

- a) AIDS
- b) Viral hepatitis
- c) Bronchial asthma
- d) Obstructive jaundice
- e) Ebola virus disease

**6. Raised ALP in blood occurs in**

- a) Obstructive jaundice
- b) Pregnancy
- c) Osteoporosis
- d) Rickets
- e) Pancreatitis

**7. Translation requires-**

- a) mRNA
- b) Ribosome
- c) Topoisomerase
- d) Amino acyl-tRNA synthetase
- e) DNA polymerase

**8. Missense codons may be-**

- a) AUG
- b) AGU
- c) UAG
- d) UCC
- e) GAU

**9. Nucleotides required for DNA synthesis**

- a) ATP
- b) dGTP
- c) dCTP
- d) dUTP
- e) TIP

**10. Recombinant DNA technology requires**

- a) Restriction enzyme
- b) Electrophoresis
- c) Chromatography
- d) vector
- e) Nucleic acid probe

**Give the best answer (SBA)**

**11. Purine base is-**

- a) Cytosine
- b) Thymine
- c) Inocline
- d) Uracil
- e) Guanine

**12. The following is nucleoside-**

- a) NAD
- b) NADP
- c) Uridine
- d) CoA
- e) Cytosine

**13. DNA-**

- a) Is single stranded, made possible by hydrogen bonding between base pairs
- b) The diameter of the double helix is 3nm
- c) The distance between two bases is 0.34nm
- d) The primary structure is a monomer of ribonucleotides
- e) Does not have complementary base pairing

**14. Post translational modifications include-**

- a) Splicing
- b) Addition of poly A tail
- c) 5 capping
- d) Glycosylation
- e) RNA editing

**15. Restriction endonuclease-**

- a) Primer needed
- b) Is a viral enzyme
- c) Cleaves a DNA at a specific nuclear sequence which is palindromic
- d) Proof reading activity present
- e) Cleaves RNA at its middle

**16. Cardiac enzymes are-**

- a) Lipase
- b) ALT
- c) CK-MB
- d) CK-MM
- e) Amylase

**17. Synthetic liver function testes are estimation of-**

- a) Serum bilirubin
- b) ALP
- c) ALT
- d) Alpha feto protein
- e) Albumin globulin ratio

**18. Polyuria occurs in-**

- a) Diarrhoea
- b) Acute glomerulonephritis
- c) Diabetes mellitus
- d) Nephrotic syndrome
- e) High fever

**19. In pre-hepatic jaundice, there are marked rise in**

- a) Serum acid phosphate
- b) Serum ALT
- c) Serum AST
- d) Serum conjugated bilirubin
- e) Serum unconjugated bilirubin

**20. Following characteristics are studied during chemical examination of urine**

- a) Reaction
- b) Specific gravity
- c) Reducing substance
- d) Osmolarity
- e) Casts



# 3<sup>rd</sup> Term Final Examination, September-2023

## Sub: Biochemistry (SAQ)

Marks: 70

Time: 2hr 40minutes

**Answer any 4 questions from 1 to 5 of each Group. Question 6 and 7 are compulsory.**

### **Group – A**

01. Name the units of expression of biochemical parameters of blood. 1+4  
Convert the following parameters into mmol or micro mol / litre-
  - i.FBG 120mg / dl
  - ii. Blood urea 30mg/dl
  - iii. Serum cholesterol 150mg/dl
  - iv. Serum creatinine 1mg/dl
02. Define with examples the functional and non functional plasma enzyme. 2+3  
Name 3 non functional plasma enzymes with their clinical significance.
03. Define and Classify diabetes mellitus. Differentiate between type 1& type 2 DM. 2+3
04. How can you asses hepatocellular damage and synthetic function of liver? 5
05. Make a list of renal function tests. Why serum creatinine is more reliable test then serum urea as a renal function test? 4+1
06. A patient came to you with serum bilirubin 25mg/dl – 1+2+2
  - i. Mention the type of jaundice in this case.
  - ii. What other laboratory findings can be found in this types of jaundice.
  - iii. Mention some causes of this case.
07. Answer the following questions regarding lipid profile- 1+4+5
  - i. What is lipid profile?
  - ii. Write down the components of lipid profile with their desirable values.
  - iii. Mention the indication of lipid profile.

## Group-B

01. Name the purine and pyrimidine bases. Mention the differences between DNA and RNA. 2+3
02. Define mutation. Classify point mutation with their clinical effect. What are the importance of recombinant DNA technology? 1+2+2
03. Define replication. What are the requirements of replication? Differentiate between replication and transcription. 1+1.5+2.5
04. Define genetic code. Mention the characteristics of genetic code. Write in brief about codon. 1+2+2
05. What is PCR? Briefly discuss about the steps of PCR. Mention the importance of PCR. 1+2+2
06. A baby born with karyotype 47XY+21. 1+4
- i) Mention the diagnosis.
  - ii) Mention some features of this chromosomal disorder.
07. Answer following questions regarding Translation: 1+2.5+4+2.5
- i) Define translation.
  - ii) What are the requirements of translation?
  - iii) Write in short the steps of protein synthesis with diagram.
  - iv) Name the post translational modifications. Give the examples of hydroxylation and carboxylation.

**Brahmanbaria Medical College**  
**Department of Biochemistry**  
**3<sup>rd</sup> Card Final Examination- March-2023**  
**MBBS 9<sup>th</sup> Batch**  
**Subject: Biochemistry (SBA+ MCQ)**

Full marks-10

Time-10 minutes

**Give the best answer (SBA)**

- 1. Which of the following digestive juice does not contain enzyme-**
  - a) Saliva.
  - b) Gastric juice.
  - c) Bile.
  - d) Succus entericus.
  - e) Pancreatic juice.
  
- 2. Chemical reaction involved in digestion is-**
  - a) Hydrogenation.
  - b) Oxidation.
  - c) Reduction.
  - d) Hydrolysis.
  - e) Decarboxylation.
  
- 3. Regarding TCA cycle followings are not applicable-**
  - a) Is an amphibolic pathway.
  - b) Involved in gluconeogenesis.
  - c) Occur in mitochondria.
  - d) Can take place in anaerobic condition.
  - e) Involved in fatty acid synthesis.
  
- 4. NPN compounds produced from amino acid except-**
  - a) Thyroid hormones.
  - b) Creatine.
  - c) Albumin.
  - d) Porphyrins.
  - e) Epinephrin.
  
- 5. Regarding lipoproteins which one of the following is true-**
  - a) VLDL carries exogenous TAG.
  - b) Chylomicrone contain Apo-B-100.
  - c) Are metabolised in liver by LPL.
  - d) HDL transport cholesterol from peripheral tissue to liver.
  - e) LDL is good for health.

Write True (T) and False (F) in the left side against each alternative

**6. Metabolic pathways occurring in mitochondria are-**

- a) Glycogenesis.
- b) Citric acid cycle.
- c) Ketogenesis.
- d) Conversion of pyruvate to acetyl CoA.
- e) HMP shunt.

**7. Substrates for gluconeogenesis are-**

- a) Fatty acid.
- b) Alanine.
- c) Lactate.
- d) Glycerol.
- e) Acetoacetic acid.

**8. The pentose phosphate pathway-**

- a) Generates NADH in oxidative phase.
- b) Occurs in the cytosol.
- c) Produces 2 moles of ATP per mole of glucose.
- d) Requires glucose 6-phosphate dehydrogenase.
- e) Nonoxidative phase requires transketolase.

**9. Ketone bodies are metabolic fuel for-**

- a) Skeletal muscle.
- b) Heart muscle.
- c) RBC.
- d) Brain.
- e) Liver.

**10. Synthesis of one mole of urea requires-**

- a) Two moles of ATP.
- b) Two moles of ammonium ions.
- c) Two moles of alfa amino nitrogen of aspartate.
- d) One mole of carbondioxide.
- e) N-acetyl glutamate as an enzyme activator.

**Brahmanbaria Medical College**  
**Department of Biochemistry**  
**4<sup>th</sup> Card Final Examination- April-2023**  
**MBBS 9<sup>th</sup> Batch**  
**Subject: Biochemistry (SBA+ MCQ)**

Full marks-10

Time-10 minutes

**Give the best answer (SBA)**

- 1. ECF volume can be measured by using following indicators expect-**
  - a) Inulin
  - b) Manitol
  - c) Sucrose
  - d) D<sub>2</sub>O
  - e) Radioactive radium
  
- 2. Among the following which is not included as ICF-**
  - a) Plasma
  - b) Pleural Fluid.
  - c) CSF
  - d) Aqueous Humor
  - e) Fluid in GIT
  
- 3. Which is not Applicable for water turnover-**
  - a) In children it is 40% -50%
  - b) In a adult it is 18%-20%
  - c) Adults get quickly dehydrated
  - d) In children ECF & ICF Volume are equal
  - e) Is high due to high surface area in children
  
- 4. Normal urine acidic due to -**
  - a) Increased H<sup>+</sup> secretion
  - b) Excretion of NH<sub>4</sub>CL
  - c) Excretion of Acidic phosphate
  - d) Loss of HCO<sub>3</sub><sup>-</sup> through urine
  - e) Increased production of acid in the body
  
- 5. Which are of the following mechanism is operated in the body in hypertonic volume expansion-**
  - a) Thirst mechanism
  - b) ADH- Osmoreceptor mechanism
  - c) RAA mechanism
  - d) ANP mechanism
  - e) Counter- current mechanism

Write True (T) and False (F) in the left side against each alternative

**6. Which one is transcellular fluid?**

- a) Fluid in aqueous humor
- b) Blood
- c) Synovial fluid
- d) Interstitial fluid
- e) Peritoneal fluid

**7. A patient has  $p^H=7.2$ .  $HCO_3^- \downarrow$ ,  $PCO_2$  normal, what is clinical condition?**

- a) Respiratory acidosis
- b) Respiratory alkalosis
- c) Metabolic acidosis
- d) Metabolic alkalosis
- e) None of above

**8. Characteristics of metabolic alkalosis-**

- a)  $[H^+]$  decreased
- b)  $[PCO_2]$  increased
- c)  $[HCO_3^-]$  decreased
- d)  $[HCO_3^-]$  increased
- e) pH is  $<7.35$

**9. Following are true for kidney-**

- a) Almost all the filtered  $HCO_3^-$  are reabsorbed in PCT
- b) Water reabsorption is done by facilitated diffusion through supraoptic ADH mechanism
- c) ADH acts on Loop of Henle.
- d) Renin angiotensin system activated by hypervolemia.
- e) ANF secretion causes water reabsorption

**10. In metabolic acidosis-**

- a)  $[H^+]$  decreased
- b)  $PCO_2$  increased
- c)  $HCO_3^-$  decreased
- d) Normal anion gap
- e) pH is  $<7.35$

# Brahmanbaria Medical College

Ghatura, Brahmanbaria

4<sup>th</sup> card Final Examination, April-2023

BMC-09

Sub: Biochemistry (SAQ)

Marks: 40

Time: 1hr 20minutes

Answer any Eight (08) questions. All questions carry equal Marks.

01. Mention the criteria of an ideal indicator. Write down the indicators used for the measurement of volume of different compartment of body fluid. 2+3
02. What is water turnover? Make an intake output chart for an adult male in temperate climate. 1+4
03. Write down the ECF volume disorders. Mention some causes and effect of hypertonic volume contraction. 2+3
04. Mention the sources of acid and bases in human body. How  $P^H$  of ECF is maintained within 7.35 to 7.45. 2+3
05. Classify simple acid base disorders with their primary defect. How they are compensated? 3+2
06. Define metabolic acidosis? Give the blood findings of uncompensated phase of this disorder. 1+4
07. Diagnose the acid base disorder:  $P^H = 7.5$ ,  $HCO_3 = 15\text{mmol/L}$ ,  $PCO_2 = 21\text{mmhg}$ . Write down the causes and compensation of this disorder. 2+1.5+1.5
08. Show with diagram the role of kidney in acid base balance. 5
09. Write short notes on: (any two) 2.5+2.5
  - (i) Anion gap.
  - (ii) Diuresis.
  - (iii) Hyperkalemia.

**Brahmanbaria Medical College**  
**Department of Biochemistry**  
**5<sup>th</sup> Card Final Examination- July-2023**  
**MBBS 9<sup>th</sup> Batch**  
**Subject: Biochemistry (SBA+ MCQ)**

Full marks-10

Time-10 minutes

**Give the best answer (SBA)**

**1. Which is the feature of klinefelter syndrome-**

- a) Low-set ears.
- b) Webbed neck.
- c) Gynecomastia.
- d) Macroglossia
- e) Short stature.

**2. Which is the feature of autosomal recessive disorder-**

- a) Heterozygous state.
- b) Chance of affected site 50%
- c) Delayed onset.
- d) Vertical transmission.
- e) Horizontal transmission.

**3. Which enzyme are required for okazaki fragments**

- a) DNA ligase.
- b) DNA helicase.
- c) DNA polymerase.
- d) DNA gyrase.
- e) RNA polymerase.

**4. Which is not component of the replication fork-**

- a) DNA helicase.
- b) RNA Primer
- c) DNA polymerase.
- d) SSB protein.
- e) RNA polymerase.

**5. Which is the autosomal dominant disorder-**

- a) Cystic fibrosis.
- b) Phenylketonuria.
- c) Wilson's disease.
- d) Tuberous sclerosis.
- e) Galactosemia.



Write True (T) and False (F) in the left side against each alternative

**6. Features of Transcription-**

- a) Primer is required
- b) Process of high fidelity
- c) Conservative
- d) Non-Selective
- e) Symmetrical

**7. PCR-**

- a) Means permanent changes in RNA
- b) Is an invivo process
- c) Requires RNA polymerase
- d) Involved the process of DNA melting ad annealing.
- e) Process is faster and less difficult than cloning.

**8. Replication of DNA-**

- a) Uses only one strand as a template.
- b) Preserves the characteristics of species
- c) Occurs in the S phage of cell cycle.
- d) Produces okazaki fragment leading stand.
- e) Starts in the replication fork.

**9. Chromatin-**

- a) Is the chromosomal material
- b) Single stranded DNA molecule
- c) Contain both histone & nonhistone proteins.
- d) Dense particles called nucleosome.
- e) Tightly bound to histone.

**10. Genetic code-**

- a) Exists in the forms of codons
- b) Exist in 66 possible codons
- c) 61 codons specify the 20 aminoacids
- d) More than one codon can specify the same amino acids.
- e) Is universal.

**Brahmanbaria Medical College**  
Ghatura, Brahmanbaria  
**5<sup>th</sup> card Final Examination, July-2023**  
**BMC-09**  
**Sub: Biochemistry (SAQ)**

**Marks: 35**

**Time: 1hr 20minutes**

**Answer any Four (04) questions from Question 1 to 5. Question 6 & 7 are compulsory.**

- |   |       |
|---|-------|
| 01. Name the nitrogenous bases. Define nucleoside and nucleotide with examples. Mention the functions of nucleotides.     | 1+2+2 |
| 02. Draw and label the Watson and Crick model of DNA. What is Chargoff's rule? .  | 4+1   |
| 03. Name the different RNA with their function. Draw the structure of tRNA.   | 3+2   |
| 04. Define Transcription. Write down the post transcriptional modification of mRNA. What is Transcription unit?           | 1+3+1 |
| 05. Define genetic code. Mention the properties of genetic code with brief description.                                   | 1+4   |
| 06. What is Translation? Write down the basic requirements for this process. Mention the post translational modification. | 1+2+2 |
| 07. Answer the following questions regarding PCR-   |       |
| a. Define PCR.  | 1     |
| b. Mention the requirements of PCR  | 2     |
| c. Mention the application of PCR.  | 3     |
| d. Explain with diagram the steps of this process.  | 4     |