



BRAINWARE UNIVERSITY

Term End Examination 2025-2026

Programme – B.Sc.(OTT)-2022/B.Sc.(OTT)-2023/B.Sc.(OTT)-2024/B.Sc.(OTT)-2025

Course Name – Biochemistry

Course Code - BOTTC202

(Semester II)

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) Identify the bond absent in DNA structure.
 - a) Phosphodiester bond.
 - b) Hydrogen bond.
 - c) Glycosidic bond.
 - d) Disulphide bond.
- (ii) Identify the incorrect statement.
 - a) m RNA is transported to cytoplasm
 - b) t RNA brings amino acid for translation
 - c) r RNA is synthesized in nucleolus
 - d) r RNA has D loop
- (iii) Identify that Vitamin B12 is associated with:
 - a) Iron.
 - b) Cobalt.
 - c) Platinum.
 - d) Copper.
- (iv) Identify why dietary fibers are an essential component of our food.
 - a) To provide extra protein
 - b) To balance insulin
 - c) To help our body remove undigested food
 - d) To provide us energy
- (v) Select the incorrect statement:
 - a) Exopeptidase consist of elastase , trypsin etc.
 - b) Amino acids are more stable than imino acids
 - c) carboxypeptidase is calcium dependent enzyme
 - d) Dipeptide is cobalt and magnesium dependent enzyme
- (vi) Choose the equilibrium constant of ionization reaction of pure water:
 - a) $1.8 \times (10)^{-14} \text{ M}$
 - b) $1.0 \times (10)^{-14} \text{ M}$
 - c) $1.8 \times (10)^{-7}$
 - d) $1.8 \times (10)^7$
- (vii) Select the which of these is not related with elevated BUN:
 - a) liver failure
 - b) pre renal failure
 - c) intrinsic renal failure
 - d) post renal failure
- (viii) Select that A disease cannot be predicted by increased creatinine kinase level is:
 - a) injuries
 - b) intramuscular injections
 - c) macroamylsemia
 - d) vigorous exercise

- (ix) Identify why plasma ALT level elevation is dependent on the time limit from damage or injury after which blood was taken is:
- a) ALT is cleared from blood in few days . b) ALT is metabolised in few hours
 c) ALT clearance needs a lot of time d) All of these
- (x) Write the direct ELISA test employs:
- a) known antibody b) known antigen
 c) complement d) patient antibody
- (xi) Choose a disease that can be detected with ELISA:
- a) Ebola b) AIDS
 c) Rotavirus d) all of these
- (xii) Write the precursor of Vitamin A.
- a) Gamma carotene b) beta carotene
 c) alpha carotene d) all of these
- (xiii) Select that fecal stercobilinogen increase is associated with:
- a) Hemolytic jaundice b) Hepatic jaundice
 c) Viral hepatitis d) Obstructive jaundice
- (xiv) Trace the location from where carboxypeptidase is secreted.
- a) Pancreas. b) Stomach.
 c) Salivary glands. d) Intestine.
- (xv) Write the pH of gastric juice.
- a) 1.5-3.0. b) 5.0-6.8.
 c) 7.0-9.0. d) 6.0-8.0.

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Describe the procedure of NADH produced in glycolysis contribute to the TCA cycle and the electron transport chain. (3)
3. Discuss the properties and function of outer membrane of mitochondria. (3)
4. Illustrate the process of hexoses absorption from to capillary by specific transport carriers. (3)
5. Differentiate between micromineral and macromineral with example and functions of each. (3)
6. A 35-year-old male presents with jaundice, fatigue, and dark-colored urine for the past week. He reports nausea and loss of appetite. Blood tests show the following: Total Bilirubin: 5.6 mg/dL (Normal: 0.2-1.2 mg/dL), Direct Bilirubin: 3.4 mg/dL (Normal: 0.0-0.3 mg/dL), Alanine Aminotransferase (ALT): 850 IU/L (Normal: 10-40 IU/L), Aspartate Aminotransferase (AST): 700 IU/L (Normal: 10-40 IU/L), Alkaline Phosphatase (ALP): 110 IU/L (Normal: 30-120 IU/L) Based on the lab findings and clinical presentation, estimate the likely diagnosis. (3)

OR

A 50-year-old male with a history of chronic alcohol consumption presents with abdominal pain and yellowish skin. Lab results show: Total Bilirubin: 3.5 mg/dL, Direct Bilirubin: 1.2 mg/dL, ALT: 95 IU/L, AST: 230 IU/L, AST/ALT ratio: >2, ALP: 140 IU/L, Gamma-Glutamyl Transferase (GGT): 200 IU/L (Normal: 9-48 IU/L), Serum Albumin: 2.8 g/dL (Normal: 3.5-5.0 g/dL). Based on the lab findings and clinical presentation, estimate the likely diagnosis. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Apply your knowledge and write all the test parameters of Liver Function test and explain briefly each one of them. (5)
8. Explain the role of Vitamin D for regulating Blood Calcium Level. (5)
9. Discuss the function of CRP and fibrinogen. (5)

10. In an experiment the absorbance of total protein of sample A is 2.3 and Sample B is 1. Infer the result . (5)
11. Explain the disease observed due to deficiency of vitamin A. (5)
12. A solution of tryptophan(trp) has an absorbance at 280nm of 0.54 in a 0.5cm length cuvette. Absorbance coefficient of trp is 6.4×10^3 L/mol/cm. Calculate the concentration of solution. (5)

OR

Calculate the molar absorptivity of a 1×10^{-4} M solution. Absorbance =0.20, path length is 2.5cm. (5)

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Department of Allied Health Sciences
Brainware University
Barasat, Kolkata- 700125