



**All India Institute of Medical Sciences, Kalyani**  
**B.Sc. (Hons) Nursing First Year Examination, July 2025**

**Time: 3 Hrs.**

**NUTRITION & BIOCHEMISTRY**

**Marks: 75**

**INSTRUCTIONS FOR SECTION A & B:-**

- Answer Nutrition & Biochemistry Section in separate answer booklets.
- Draw diagram wherever necessary

**NUTRITION (45 MARKS)**

**SECTION-A**

**Answer any ONE of the following:**

**[1×10=10]**

1. Define balanced diet. Describe the principles of menu planning. Explain the therapeutic diet for cardiovascular diseases. (2+5+3)
2. Define basal metabolic rate (BMR). Describe the factors affecting basal metabolic rate. Describe the methods of assessment of nutritional status. (2+4+4)

**SECTION-B**

**Answer any FIVE of the following:**

**[5×5=25]**

3. Protein energy malnutrition
4. Vitamin A
5. Classification and Functions of Carbohydrates (3+2)
6. Methods of food preservation
7. Digestion and absorption of fats
8. Functions and dietary sources of calcium (3+2)
9. Maintenance of fluid and electrolyte balance in the body

-----



**All India Institute of Medical Sciences, Kalyani**

**B.Sc. (Hons) Nursing First Year Examination, July 2025**

**Time: 3 Hrs.**

**NUTRITION & BIOCHEMISTRY**

**Marks: 75**

**INSTRUCTIONS FOR SECTION A & B:-**

- Answer Biochemistry & Nutrition Section in separate answer booklets.
- Draw diagram wherever necessary

**BIOCHEMISTRY (30 MARKS)**

**SECTION-A**

**Answer any TWO of the following:**

**[2x7=14]**

1. Describe the Glycolysis pathway occurring under aerobic conditions, including the net NADH and ATP yield. (4+3)
2. Describe the steps involved in the  $\beta$ -oxidation pathway for a saturated even-chain fatty acid (e.g., Palmitic acid). Calculate the total ATP generated from the complete oxidation of one molecule of Palmitic acid. (4+3)
3. Explain the biochemical pathway (including key enzymes) by which the human body detoxifies toxic ammonia into urea. How is the end-product, urea, utilized diagnostically? (3+2+2)

**SECTION-B**

**Write short notes on any Two:**

**[2x5=10]**

4. Discuss the biochemical functions of Vitamin C (Ascorbic Acid). Mention the deficiency disease associated with it and list its characteristic features. (3+2)
  5. Explain the Fluid Mosaic Model of the cell membrane. Briefly describe active and passive transport and provide one example for each. (2+3)
  6. Describe the composition and main functions of High-Density Lipoprotein (HDL) and Low-Density Lipoprotein (LDL) in the transport of cholesterol. (2+3)
-



## B.Sc. (Hons) Nursing First Year Examination, July 2025

Enrollment No. \_\_\_\_\_

Invigilator sign: \_\_\_\_\_

### SECTION C (NUTRITION)

#### INSTRUCTIONS:

- Section C (Nutrition & Biochemistry) should be answered in first 20 minutes of the Exam duration and handed over to the invigilators.
- Put one tick ✓ mark to only one answer that you consider correct for each question.
- Mark your tick ✓ in pen.

#### Multiple Choice Questions (MCQs):

[10×1=10]

1. The condition in which there is insufficient, excessive or imbalanced consumption of nutrients
  - a. Undernutrition
  - b. Malnutrition
  - c. Overnutrition
  - d. Nutrition
2. Which cholesterol is designated as good cholesterol?
  - a. VLDL
  - b. LDL
  - c. HDL
  - d. IDL
3. What is the end product of the action of salivary amylase?
  - a. Maltose
  - b. Fructose
  - c. Mannose
  - d. Sucrose
4. The Mid-Day Meal Programme provides meals to children for the following minimum numbers of days
  - a. 275
  - b. 345
  - c. 250
  - d. 200
5. The best way to increase the nutritive value of pulses is?
  - a. Mixing pulses
  - b. Fortification
  - c. Parboiling
  - d. Germination
6. Calorific value of fat is
  - a. 4 Kcal/gm
  - b. 9 Kcal/gm
  - c. 10 Kcal/gm
  - d. 5 Kcal/gm
7. PUFAs are mostly found in
  - a. Vegetable oil
  - b. Butter
  - c. Ghee
  - d. Animal foods
8. Which of the following is NOT correctly matched?
  - a. Vitamin B6 – Beriberi
  - b. Vitamin B12 – Pernicious anaemia
  - c. Vitamin C – Scurvy
  - d. Vitamin D – Osteoporosis
9. The micro mineral present in the teeth is
  - a. Calcium
  - b. Iodine
  - c. Manganese
  - d. Fluorine
10. Protein requirement for a pregnant woman per day is
  - a. 20 gms
  - b. 60 gms
  - c. 30 gms
  - d. 100 gms



## B.Sc. (Hons) Nursing First Year Examination, July 2025

Enrollment No. \_\_\_\_\_

Invigilator sign:

### SECTION C (BIOCHEMISTRY)

#### INSTRUCTIONS:

- Section C (Biochemistry & Nutrition) should be answered in first 20 minutes of the Exam duration and handed over to the invigilators.
- Put one Tick (✓) mark to only one answer that you consider correct for each question.
- Mark your Tick (✓) in pen.

#### Multiple Choice Questions (MCQs):

[6x1=6]

1. The major cation present in the extracellular fluid (ECF) is:
    - a. Potassium
    - b. Sodium
    - c. Calcium
    - d. Magnesium
  2. Which of the following vitamins primarily functions as an antioxidant, protecting cell membranes from damage?
    - a. Vitamin K
    - b. Vitamin D
    - c. Vitamin B1 (Thiamine)
    - d. Vitamin E (Tocopherol)
  3. Liver enzymes AST and ALT are involved in which amino acid metabolic process related to nitrogen handling?
    - a. The Urea Cycle
    - b. Gluconeogenesis
    - c. Transamination
    - d. Ketogenesis
  4. Ceruloplasmin is a protein found in plasma that is important for the transport of which mineral?
    - a. Iron
    - b. Zinc
    - c. Copper
    - d. Manganese
  5. The final common metabolic pathway for the complete oxidation of carbohydrates, fats, and proteins to CO<sub>2</sub> and H<sub>2</sub>O is:
    - a. Glycolysis
    - b. HMP Shunt
    - c. Urea Cycle
    - d. TCA Cycle (Krebs Cycle)
  6. In which primary organ does the Urea Cycle take place to convert ammonia into urea?
    - a. Kidney
    - b. Brain
    - c. Liver
    - d. Lungs
-