18390

BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – M.Sc.(ND)-2025
Course Name – Advanced Food Science and Nutrition
Course Code - MND10401
(Semester I)

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) Recall which of the following is a monosaccharide.
a) Sucrose b) Lactose
c) Glucose d) Maltose

(ii) Identify which polysaccharide is found in plant cell walls.
a) Starch b) Cellulose
c) Glycogen d) Inulin

(iii) Identify the basic unit of carbohydrates
a) Glycerol b) Fatty acid
c) Amino acid d) Monosaccharide

(iv) Choose which of these would best support gut microbiota health.
a) Sucrose b) Fructo-oligosaccharides
c) Amylopectin d) Lactose

(v) Identify the fatty acid known for its association with cardiovascular risk.
a) Omega-3 b) Trans fat
c) Oleic acid d) Linoleic acid

(vi) Identify a common example of polyunsaturated fatty acid.
a) Stearic acid b) Palmitic acid
c) Linoleic acid d) Lauric acid

(vii) Explain how amino acids are absorbed in the small intestine.
a) Through passive diffusion b) Through bile emulsification
c) Through sodium-dependent transporters d) Through enzymes

(viii) Choose the best method to evaluate protein quality in a food.
a) Lipid profile b) Protein efficiency ratio
c) Enzyme assay d) Vitamin test

(ix) Recall the number of hydrogen bonds between cytosine and guanine.

a) One
b) Two
c) Three
d) Four

(x) Explain the concept of a nucleoside.

a) Base + phosphate
b) Sugar + base
c) Base + sugar + phosphate
d) Protein + base

(xi) Choose the complementary base for adenine in DNA.

a) Uracil
b) Cytosine
c) Thymine
d) Guanine

(xii) Name a water-soluble vitamin.

a) Vitamin A
b) Vitamin D
c) Vitamin C
d) Vitamin E

(xiii) Explain the role of sodium in electrolyte balance.

a) Bone formation
b) Blood coagulation
c) Nerve transmission and fluid balance
d) Oxygen transport

(xiv) Predict the consequence of calcium deficiency.

a) Hypertension
b) Rickets and osteoporosis
c) Night blindness
d) Edema

(xv) Determine which vitamin is at risk of deficiency in strict vegans.

a) Vitamin C
b) Vitamin B12
c) Vitamin A
d) Vitamin B2

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Define monosaccharides and give two examples. (3)
3. Identify the structural differences between glucose and fructose. (3)
4. Summarize the digestion process of carbohydrates. (3)
5. Analyze the structural differences between purine and pyrimidine bases. (3)
6. Assess the impact of excess vitamin A on human physiology. (3)

OR

Assess the role of zinc and selenium in immune function and antioxidant defense. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Describe the types of isomerism shown by carbohydrates with examples. (5)
8. Explain the nutritional significance of dietary and functional fibers. (5)
9. Explain the methods used for protein separation and purification. (5)
10. Analyze the various methods used to evaluate protein quality in diets. (5)
11. Compare the structural differences between ribose and deoxyribose sugars and their implications in nucleic acid stability. (5)
12. Summarize a comprehensive explanation of the biochemical roles of water-soluble vitamins in energy metabolism. (5)

OR

Assess the combined roles of calcium and phosphorus in bone metabolism and homeostasis. (5)

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