

**SECTION-A (10 Marks)**

Answer ALL questions

ALL questions carry **EQUAL** marks

(10 × 1 = 10)

| Module No. | Question No. | Question                                                                                                                                                                                         | K Level | CO  |
|------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----|
| 1          | 1            | Which of the following is an observational study?-----<br>(i) Experimental study<br>(ii) Cross-sectional study<br>(iii) Metabolic balance study<br>(iv) In vitro study                           | K1      | CO1 |
|            | 2            | CTRI stands for:-----<br>(i) Clinical Trial Research Institute<br>(ii) Central Trial Research India<br>(iii) Clinical Trials Registry–India<br>(iv) Controlled Trial Registration Index          | K2      | CO1 |
| 2          | 3            | Protein Efficiency Ratio (PER) is calculated based on -----<br>(i) Nitrogen balance<br>(ii) Weight gain per gram protein consumed<br>(iii) Digestibility coefficient<br>(iv) Serum albumin level | K1      | CO2 |
|            | 4            | PDCAAS is used to evaluate:-----<br>(i) Mineral bioavailability<br>(ii) Vitamin A status<br>(iii) Protein quality<br>(iv) Lipid profile                                                          | K2      | CO2 |
| 3          | 5            | Indian Food Composition Tables (IFCT 2017) were developed by-----<br>(i) FAO      (ii) WHO      (iii) NIN      (iv) ICMR Delhi                                                                   | K1      | CO3 |
|            | 6            | Sampling error occurs due to-----<br>(i) Analytical mistakes<br>(ii) Non-representative sample selection<br>(iii) Improper storage<br>(iv) Data tabulation error                                 | K2      | CO3 |
| 4          | 7            | Mid-upper arm circumference is an indicator of-----<br>(i) Bone density<br>(ii) Muscle mass and fat stores<br>(iii) Water retention<br>(iv) Serum protein                                        | K1      | CO4 |
|            | 8            | Serum ferritin is an indicator of:-----<br>(i) Vitamin C status      (ii) Iron stores<br>(iii) Zinc deficiency      (iv) Calcium absorption                                                      | K2      | CO4 |
| 5          | 9            | Underwater weighing is used to assess-----<br>(i) Total body water<br>(ii) Bone density<br>(iii) Bone mass<br>(iv) Muscle strength                                                               | K1      | CO5 |
|            | 10           | Nitrogen balance study is used to assess: -----<br>(i) Carbohydrate metabolism<br>(ii) Fat oxidation<br>(iii) Protein metabolism<br>(iv) Mineral absorption                                      | K2      | CO5 |

**Cont...**

**SECTION - B (35 Marks)**

Answer ALL questions  
ALL questions carry EQUAL Marks

(5 × 7 = 35)

| Module No. | Question No. | Question                                                                                                    | K Level | CO  |
|------------|--------------|-------------------------------------------------------------------------------------------------------------|---------|-----|
| 1          | 11.a.        | Explain in vitro and in vivo studies.                                                                       | K3/K4   | CO1 |
|            |              | (OR)                                                                                                        |         |     |
|            | 11.b.        | Describe the design, ethical issues and role of CTRI in clinical trials related to nutrition.               |         |     |
| 2          | 12.a.        | Discuss the bioassay studies of fat soluble vitamins.                                                       | K4      | CO2 |
|            |              | (OR)                                                                                                        |         |     |
|            | 12.b.        | Summarize the principles, applications and assay of TSH                                                     |         |     |
| 3          | 13.a.        | Assess the guidelines and uses of Food composition data.                                                    | K4      | CO3 |
|            |              | (OR)                                                                                                        |         |     |
|            | 13.b.        | Describe the origin and development of Indian Food Composition Tables and National Sampling Plan.           |         |     |
| 4          | 14.a.        | Determine the functional assessment.                                                                        | K3/K4   | CO4 |
|            |              | (OR)                                                                                                        |         |     |
|            | 14.b.        | Evaluate the types, advantages and disadvantages of diet survey.                                            |         |     |
| 5          | 15.a.        | Discuss on Bioelectrical impedance method and anthropometric indicators of adiposity in nutritional status. | K4      | CO5 |
|            |              | (OR)                                                                                                        |         |     |
|            | 15.b.        | Examine the principles of metabolic balance studies with reference to nitrogen, calcium and iron.           |         |     |

**SECTION -C (30 Marks)**

Answer ANY THREE questions  
ALL questions carry EQUAL Marks

(3 × 10 = 30)

| Module No. | Question No. | Question                                                                                              | K Level | CO  |
|------------|--------------|-------------------------------------------------------------------------------------------------------|---------|-----|
| 1          | 16           | Explain various experimental and epidemiological study designs used in nutrition research.            | K4      | CO1 |
| 2          | 17           | Discuss on protein quality evaluation techniques and the significance of PDCAAS and biological value. | K5      | CO2 |
| 3          | 18           | Analyze the sampling protocol, methods, characteristic and sampling error.                            | K6      | CO3 |
| 4          | 19           | Explain the assessment of nutritional status.                                                         | K4      | CO4 |
| 5          | 20           | Assess multicomponent model of body composition.                                                      | K5      | CO5 |

Z-Z-Z

END