

CENTRAL UNIVERSITY OF HARYANA

Second Semester Term End Examinations August-September 2022

Programme: M.Sc. Nutrition Biology

Session: 2021-22

Semester: Second

Max. Time: 3 Hours

Course Title: Nutritional Biochemistry-II

Max. Marks: 70

Course Code: SIAS NB 1 2 06 C 4004

Instructions:

1. Question no. 1 has seven parts and students are required to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student are required to answer any two parts of each question. Each part carries seven marks.

Q 1. (4X3.5=14)

- a) Differentiate between hyponatremia and hypoalkemia.
- b) How antioxidants are different from pro-oxidants?
- c) State the co-relation between Vitamin D and Ca^{2+} ions with reference to their absorption
- d) State one prophylactic use of iodide along with the reason?
- e) How manganese is important with reference to urea cycle.
- f) Differentiate between feed-back inhibition and feed forward stimulation.
- g) Briefly explain Niacin deficiency

Q 2. Explain in detail the following with examples wherever necessary (2X7=14)

- a) Hormonal control of water and sodium balance.
- b) Physiological role of Vitamin E and Vitamin K.
- c) Mechanisms of regulation of calcium balance in body.

Q3. (2X7=14)

- a) Discuss in detail the mechanisms of Sodium, Potassium and Chloride absorption.
- b) Give details of enhancers and inhibitors of Nonheme iron absorption. Also describe about transport of iron in body.
- c) Enumerate various hormones produced by the endocrine glands with their primary functions.

Q 4. (2X7=14)

- a) Describe various buffer systems of human physiology along with their respective mechanisms.
- b) Give details of physiological role of Ascorbic acid, Cyanocobalamin and Folic acid.
- c) How hormones work? Elucidate their mechanism of action with suitable diagrams.

Q 5. (2X7=14)

- a) Enumerate the role of Vitamin B₁ and Riboflavin in metabolism.
- b) Why phosphorus and calcium are major element for humans. Discuss its important functions and mechanism of action.
- c) How hormones control carbohydrate metabolism. Describe in detail.

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Second Semester Term End Examinations August-September 2022

Programme: MSc Nutrition Biology

Session: 2021-22

Semester: 2nd

Max. Time: 3 Hours

Course Title: Functional Foods and Nutraceuticals

Max. Marks: 70

Course Code: SIAS NB 1 2 07 C 4004

Instructions:

1. Question no. 1 has seven parts and students are required to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student are required to answer any two parts of each question. Each part carries seven marks.

Q 1. Briefly describe any four of the followings (4X3.5=14)

- a) Food application of resistant starch
- b) Fortified foods
- c) Gut microbiota
- d) Dietary fibre
- e) Designer probiotics
- f) Three applications of nanotechnology in nutraceuticals
- g) Bioactive proteins and peptides

Q 2. (2X7=14)

- a) Write down the classification of nutraceuticals with respect to source of origin.
- b) Write a detailed note on nutraceuticals with respect to scope, relevance and perspective for food applications.
- c) How will you extract and isolate the nutraceuticals?

Q3. (2X7=14)

- a) What do you mean by bioavailability and how it can be enhanced by using nanotechnology? Briefly, explain citing suitable examples.
- b) What do you mean by prebiotic and probiotics? Write differentiating points between them.
- c) Briefly explain the correlation between gut microbiota and physiological health condition of an individual. How functional food and nutraceuticals can Improve this?

Q 4. (2X7=14)

- a) What is synbiotics? Discuss its important features, health benefits and uses in foods.
- b) What should be characteristics of an ideal probiotics? Also discuss the potential health benefits of probiotics.
- c) Explain the important features of prebiotics. Also discuss the importance of prebiotic as functional foods.

Q 5. (2X7=14)

- a) Discuss about the quality assurance and safety of probiotic products.
- b) Explain in detail about the ICMR-DBT guidelines for evaluation of probiotics in food.
- c) What is the role of short chain fatty acids and omega fatty acids in health?

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Term End Semester Examinations August-September 2022

Programme: M.Sc. Nutrition Biology

Session: 2021-22

Semester: Second

Max. Time: 3 Hours

Course Title: Food Microbiology and Food Safety

Max. Marks: 70

Course Code: SIAS NB 1304 C 4004

Instructions:

1. Question no. 1 has seven parts and students are required to answer **any four**. Each part carries **three and half Marks**.
 2. Question no. 2 to 5 have three parts and students are required to answer **any two parts** of each question. Each part carries **seven marks**.
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Q 1. Attempt **Any Four** of the following:

(4X3.5=14)

- a) Water activity (A_w) as an intrinsic parameter in relation to microbial spoilage of foods
- b) Benzoic acid and Parabens in preservation of foods
- c) Role of starter cultures in production of fermented meats
- d) Spoilage manifestations in acid and low acid canned foods
- e) Aseptic packaging of food products
- f) *Bacillus cereus* food poisoning
- g) Bio-sensors in food safety

Q 2.

(2X7=14)

- a) How does storage temperature of foods impact their microbial spoilage? How do 'cell number' and the 'moisture content' of food affect the destruction of microorganisms by heat?
- b) What are principles of food preservation? Explain chemical and radiation methods of food preservation.
- c) What is bio-preservation? Describe different classes of bacteriocins of Lactic Acid Bacteria (LAB) with suitable examples?

Q3. (2X7=14)

- a) What is modified Atmospheric Packaging (MAP) of foods? How does it help in extending the shelf-life of the product?
- b) Discuss the role of lactic starter cultures in the manufacture of fermented dairy products. How do they help in value addition of the product?
- c) Give a schematic diagram of the brewing process for beer production

Q 4. (2X7=14)

- a) Give structure of hen's egg and describe various agents/factors that provide it protection from spoilage.
- b) Describe the following:
 - i. Bacterial soft rot in vegetables
 - ii. Spoilage indicators of meat and fish
- c) Discuss the following:
 - i. *Enterobacter sakazakii* as a pathogen in foods and its implications
 - ii. Aflatoxins in foods and their effects on human health

Q 5. (2X7=14)

- a) Discuss the Staphylococcal food poisoning and suitable measures to prevent it.
- b) What is the concept of 'Hurdle Technology' in food safety? Discuss in brief the most important hurdles used in the food industry.
- c) Describe the following:
 - i. Polymerase Chain reaction (PCR) as a molecular detection and identification method for food-borne pathogens
 - ii. FSSAI

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Second Semester Term End Examinations August-September 2022

Programme: M.Sc. Nutrition Biology

Session: 2021-22

Semester: IIInd

Max. Time: 3 Hours

Course Title: Public Health Nutrition

Max. Marks: 70

Course Code: SIAS NB 1 2 02 DCEC 4004

Instructions:

1. Question no. 1 has seven parts and students are required to answer any four. Each part carries three and half Marks.
2. Question no. 2 to 5 have three parts and student are required to answer any two parts of each question. Each part carries seven marks.

Q 1. Write short notes on the following (4X3.5=14)

- a) Public health nutrition
- b) Rapid assessment methods
- c) Vitamin A
- d) Overnutrition
- e) Nutrition security
- f) Health statistics
- g) Obesity

Q 2. Explain the following (2X7=14)

- a) Role of public health nutritionist in management of communicable and non-communicable diseases.
- b) Role of National Nutrition Mission in improving the maternal nutrition.
- c) What are the various health determinants and indicators for assessing the nutritional status of a population.

Q3. (2X7=14)

- a) Explain importance of nutritional status assessment. What are the errors involved in methods of assessing nutritional status?
- b) Explain anthropometric and clinical methods for assessing the nutritional status.
- c) Explain 24 Hour dietary recall method and food frequency questionnaire.

Q 4. (2X7=14)

- a) Write about the etiology, clinical features and health implications of PEM.
- b) Explain triple burden of nutrition. How Protein energy malnutrition is different from Severe acute malnutrition?
- c) Write about the clinical features and dietary management of anemia and vitamin D deficiency

Q 5. (2X7=14)

- a) Explain the impact of food production and distribution on food security and nutrition at regional, state, national and international level.
- b) Write about the etiology, clinical features and health implications of cardiovascular diseases.
- c) Explain health implication and preventive strategies for diabetes and hypertension.

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Second Semester Term End Examinations August-September 2022

Programme: M.Sc in Nutrition Biology

Session: 2021-22

Semester: Second

Max. Time: 3 Hours

Course Title: Nutritional Toxicology

Max. Marks: 70

Course Code: SIAS NB 1 2 01 DCEC 4004

Instructions:

1. Question no. 1 has seven parts and students are required to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student are required to answer any two parts of each question. Each part carries seven marks.

Q 1. (4X3.5=14)

- a) What do you mean by direct and indirect food additives? Write any two differentiating points between them.
- b) Write any one toxicity effects of each fat-soluble vitamins.
- c) What do you mean by GRAS (Explain with an example). What is the correlation between ADI and EDI.
- d) Write about the general principles of toxicology.
- e) Mention the steps involved in risk assessment.
- f) Write about the mode of action of microbial toxins.
- g) Differentiate food allergies and intolerances.

Q 2. (2X7=14)

- a) Describe the classification of Toxicants.
- b) What are antinutritional substances? Describe about their course of action in detail.
- c) What is meant by toxicity testing? Describe the in-vitro and in-vivo studies of toxicity testing.

Q3. (2X7=14)

- a) What are NOTS? Describe in detail.
- b) Write a note on microbial toxins.
- c) What is food poisoning? Describe its types, causative factors, symptoms, and prevention.

Q 4. (2X7=14)

- a) How do you determine the safety of direct food additives? Name any five food additives.
- b) Describe regulatory aspects of additives.
- c) What are toxic components in foods associated with marine environment.

Q 5.

(2X7=14)

- a) Name any five-food packaging material? List any three contaminants derived from them.
- b) Describe regulatory aspects of food additives.
- c) Briefly describe food-drug interactions and their mechanisms of action with suitable example.

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Second Semester Term End Examinations August-September 2022

Programme: MSc, Nutrition Biology

Session: 2021-22

Semester: II

Max. Time: 3 Hours

Course Title: Therapeutic Nutrition

Max. Marks: 70

Course Code: SIAL NB 1 2 03 DCEC 4004

Instructions:

1. Question no. 1 has seven parts and students are required to answer any four. Each part carries three and half Marks.
2. Question no. 2 to 5 have three parts and student are required to answer any two parts of each question. Each part carries seven marks.

Q 1. Briefly Describe : (4X3.5=14)

- a) Food faddism & faulty food habits
- b) Nutrition related problems of adolescents.
- c) What is meant by geriatric nutrition? Write a short note on nutrition related problems during that stage.
- d) Parenteral nutrition
- e) Nutritional screening of hospitalized patients
- f) DASH diet
- g) Glycemic index

Q 2. Discuss on the followings: (2X7=14)

- a) Principles and factors affecting meal planning.
- b) Impact of food on stress management.
- c) Factors to be considered in planning a diet for school children.

Q3. (2X7=14)

- a) Describe the physiological stages of pregnancy and the nutritional requirements during pregnancy.
- b) What is meant by lactation? What are the benefits of breast feeding? Describe the calorie requirements of the mother during lactation.
- c) Write in detail regarding the growth & nutritional needs of a toddler.

Q 4. (2X7=14)

- a) Describe the steps of the nutritional care process.
- b) Briefly discuss about therapeutic adaptations of the normal diet.
- c) Discuss the role of nutritional factors in the etiology of cancer.

Q 5. Write in brief: (2X7=14)

- a) Etiology, Symptoms and dietary management of diabetes.
- b) Describe dietary management of peptic ulcer.
- c) Discuss the etiology of hypertension and nutritional therapy involved for its management.

