

**M.Sc. (DFSM)**

**Master of Science in Dietetics and Food Service Management  
M.Sc. (DFSM)**

# **1st Year Assignment Booklet**

**ASSIGNMENTS 1-6**

**July, 2013/ January, 2014**

**(These assignments relate to Courses MFN-001, 002, 003, 006, 008 and 010)**



**SCHOOL OF CONTINUING EDUCATION  
Academic Block-G , Zakir Hussain Bhawan,  
Indira Gandhi National Open University  
Maidan Garhi, New Delhi -110068**

**Masters in Science Degree Programme in Dietetics and Food Service Management**  
**M.Sc. (DFSM)**  
**ASSIGNMENTS 1-6**

Dear Students,

You will have to do sixteen assignments in all to qualify for a M.Sc. (DFSM) degree. For a 2 credit theory course, you will have to do one assignment and for a 4-6 credit theory course, two assignments. All the assignments are tutor marked and each Tutor Marked Assignment carries 100 marks. In this assignment booklet the course-wise distribution of assignments is as follows:

- Assignment 1 (TMA-1): based on MFN-001 (Units 1-12)
- Assignment 2 (TMA-2): based on MFN-002 (Units 1-12)
- Assignment 3 (TMA-3): based on MFN-003 (Units 1-14)
- Assignment 4 (TMA-4): based on MFN-006 (Units 1-18)
- Assignment 5 (TMA-5): based on MFN-008 (Units 1-12)
- Assignment 6 (TMA-6): based on MFN-010 (Units 1-12)

**INSTRUCTIONS**

Before attempting the assignments please read the following instructions carefully.

- 1) Write your Enrolment Number, Name, Full Address, Signature and Date on the top right hand corner of the first page of your response sheet.
- 2) Write the Programme Title, Course Code, Title Assignment Code and Name of our Study Centre on the left hand corner of the first page of your response sheet. Course Code and Assignment Code may be reproduced from the assignment.

The top of the first page of your response sheet should look like this:

	Enrolment No.....
	Name.....
	Address..... .....
Course Title.....	
Assignment No.....	
Date.....	
Programme Study Centre.....	

All Tutor Marked Assignments are to be submitted at the study centre assigned to you.

**Read the assignments carefully and follow the specific instructions if any given on the assignment itself about the subject matter or its presentation.**

- 3) Go through the Units on which assignments are based. Make some points regarding the question and then rearrange those points in a logical order and draw up a rough outline of your answer. Make sure that the answer is logical and coherent, and has clear connections between sentences and paragraphs. The answer should be relevant to the question given in the assignment. Make sure that you have attempted all the main points of the question. Once you are satisfied with your answer, write down the final version neatly and underline the points you wish to emphasise. While solving numericals, use proper format and give working notes wherever necessary.
- 4) Use only foolscap size paper for your response and tie all the pages carefully. Avoid using very thick paper. Allow a 4 cm margin on the left and at least 4 lines in between each answer. This may facilitate the evaluator to write useful comments in the margin at appropriate places.
- 5) *Write the responses in your own hand.* Do not print or type the answers. Do not copy your answers from the Units/Blocks sent to you by the University. If you copy, you will get zero marks for the respective question.
- 6) Do not copy from the response sheets of other students. If copying is noticed, the assignments of such students will be rejected.
- 7) Write each assignment separately. All the assignment should not be written in continuity.
- 8) Write the question number with each answer.
- 9) The completed assignment should be sent to the Coordinator of the Study Centre allotted to you. Under any circumstances do not send the tutor marked response sheets to the Student Registration and Evaluation Division at Head Quarters for evaluation.
- 10) After submitting the assignment at the Study centre get the acknowledgement from the Coordinator on the prescribed assignment remittance-cum-acknowledgement card.
- 11) In case you have requested for a change of Study Centre, you should submit your Tutor marked Assignments only to the original Study Centre until the change of Study Centre is notified by the University.
- 12) If you find that there is any factual error in evaluation of your assignments e.g. any portion of assignment response has not been evaluated or total of score recorded on assignment response is incorrect you should approach the coordinator of your study centre for correction and transmission of correct score to headquarters.

**A Note of Caution**

It has been noticed that some students are sending answers to Check Your Progress Exercises to the University for evaluation. Please do not send them to us. These exercises are given to help in judging your own progress. For this purpose, we have provided the answers to these exercises at the end of each Unit. We have already mentioned this in the Programme Guide.

Before dispatching your answer script, please make sure you have taken care of the following points:

- Your roll number, name and address have been written correctly.
- The title of the course and assignment number have been written clearly.
- Each assignment on each course has been written on separate sheets and pinned properly.
- All the questions in the assignments have been answered.

Now read the guidelines before answering questions.

### **GUIDELINES FOR TMA**

The Tutor Marked Assignments have two parts.

#### **Section A: Descriptive Questions (80 marks)**

In this section, you have to answer ten questions (of 8 marks each). Answer each question in about 250-300 words.

#### **Section B: Objective Type Questions (OTQ) (20 marks)**

This section contains various types of objective questions.

### **POINTS TO KEEP IN MIND**

You will find it useful to keep the following points in mind:

- 1) **Planning:** Read the assignments carefully. Go through the units on which they are based. Make some points regarding each question and then rearrange these in a logical order.
- 2) **Organization:** Be a little more selective and analytical. Give attention to your introduction and conclusion. The introduction must offer your brief interpretation of the question and how you propose to develop it. The conclusion must summarize your response to the question.

#### **Make sure that your answer:**

- a) is logical and coherent
  - b) has clear connections between sentences and paragraphs
  - c) is written correctly giving adequate consideration to your expression, style and presentation
  - d) does not exceed the number of words indicated in the question.
- 3) **Presentation:** Once you are satisfied with your answers, you can write down the final version for submission, writing each answer neatly and underline the points you wish to emphasize.

**ASSIGNMENT 1**  
**TMA-1**  
**Applied Physiology**

**Course Code: MFN-001**

**Assignment Code : MFN-001/AST-1/TMA-1 /13-14**

**Last Date of Submission: For July, 2013 session is 15<sup>th</sup> November, 2013**

**For January, 2014 session is 15<sup>th</sup> May, 2014**

**Maximum Marks: 100**

**This assignment is based on Units 1 -12 of the MFN-001 Course.**

**Section A - Descriptive Questions**

**(80 marks)**

1. a) Define physiology and list the different systems in the human body. (2)  
b) Differentiate between the following sets of terms.  
(i) Mitosis and Meiosis  
(ii) Eukaryotic cell and prokaryotic cell  
(iii) ABO blood grouping system and RH blood grouping system. (6)
2. Briefly explain the following mechanisms in our body.  
(i) Specific acquired immunity  
(ii) Circulation of blood in our body (4+4)
3. a) Graphically illustrate the organs involved in respiration and describe the mechanism of respiration. (5)  
b) Give the structure and composition of salivary glands. (3)
4. a) Give the composition and functions of :  
(i) Gastric juice  
(ii) Pancreatic Juice  
(iii) Bile (6)  
b) Briefly elaborate on the movements of the gastrointestinal tract. (2)
5. a) Graphically illustrate the basic structure of a nephron and explain in 2-3 lines about each structure of a nephron. (4)  
b) Briefly describe the process of urine formation. (4)
6. a) Briefly explain how the neurons communicate with each other. (3)  
b) Briefly elaborate on the structures and the functions of the organs, which constitute the central nervous system. (5)
7. a) Explain the types and functions of the nerves which are a part of the peripheral nervous systems. (5)  
b) Illustrate the structure of the eye, highlighting the role of rods and cones in vision. (3)

8. a) List the different organs involved in taste perception and explain the mechanism of taste perception. (5)
- b) What are hormones? Briefly explain the mechanism of hormone action. (3)
9. a) List the major hormones secreted by the following glands and explain their major physiological effect:
- (i) Anterior Pituitary
- (ii) Adrenal Gland (4+4)
10. a) Briefly describe the stages of foetal growth and development. (4)
- b) Highlight the role of different hormones during pregnancy and in the process of lactogenesis. (4)

**Section B - OTQ (Objective Type Questions)**

**(20 marks)**

There are two questions in this part

1. Explain in following in 2-3 sentences each: (10)
- (i) Vas Deferens
- (ii) Facilitated Diffusion
- (iii) Hemodialysis
- (iv) Blood urea Nitrogen (BUN)
- (v) Diabetes insipidus
- (vi) Peristaltic movement
- (vii) Hypoxia
- (viii) Oxygen dissociation curve
- (ix) Cardiac cycle
- (x) Homeostasis
2. Give the functions/role of the following structure/organs in our today: (10)
- (i) Pineal gland
- (ii) Cochlea
- (iii) Urethra
- (iv) Large intestine
- (v) Cholecystokinin-pancreozymin (CCK-PZ)
- (vi) Pyloric orifice
- (vii) Lungs
- (viii) Bundle of His
- (ix) Major Histocompatibility complex (MHC)
- (x) Platelets

**ASSIGNMENT 2**  
**Nutritional Biochemistry (TMA-2)**

**Course Code: MFN-002**

**Assignment Code: MFN-002/AST-2/TMA-2 /13-14**

**Last Date of Submission: For July, 2013 session is 30<sup>th</sup> November, 2013**  
**For January, 2014 session is 30<sup>th</sup> May, 2014**

**Maximum Marks: 100**

**This assignment is based on Units 1 - 12 of the MFN-002 Course.**

**Section A - Descriptive Questions (80 marks)**

There are ten questions in this part. Each question carries equal marks.

1. a) List any two chemical properties of the following:
  - (i) Monosaccharide
  - (ii) Neutral fats (4)
- b) What are polypeptides? Name any four polypeptides that are important from the physiological view point. (2)
- c) What are polysaccharides? Explain, highlighting the different types of polysaccharides giving suitable examples. (2)
2. a) Explain the concept of enzyme specificity, highlighting the four different types of enzyme specificity. (3)
- b) Graphically illustrate and explain the process involved for the following:
  - (i) Digestion of proteins
  - (ii) Absorption and utilization of lipids (2<sup>1/2</sup>+2<sup>1/2</sup>)
3. Give the name, structure of the active forms of the following vitamins. Also explain their role in metabolism.
  - (i) Riboflavin
  - (ii) Niacin
  - (iii) Pantothenic acid
  - (iv) Folic acid (8)
4. a) List the various metabolic pathways available for glucose in the cell. (1)
- b) Work out the energy (ATP) production when glucose is oxidized in the following metabolic pathways:
  - Glycolysis
  - Citric acid cycle. (3<sup>1/2</sup>+3<sup>1/2</sup>)(Hint: Illustrate the cycle and work out the ATP production)
5. a) Comment on the following:
  - (i) Fate of pyruvate
  - (ii) Significance of Gluconeogenesis (2+2)
- b) How does the HMP pathway differ from glycolysis? Discuss the metabolic significance of HMP pathway. (4)
6. a) Explain and graphically represent the  $\beta$ - Oxidation of palmitic acid (C16). Give the molecules of ATP obtained from  $\beta$ - Oxidation of 1 molecule of palmitic acid. (5)
- b) Briefly explain the metabolism of VLDL in our body. (3)
7. Explain the significance and the reactions involved in the following processes in amino acid metabolism:

- (i) Transmutation reaction
  - (ii) Domination reaction
  - (iii) Urea cycle (8)
8. a) What is De Nova synthesis of Purine. Explain giving reactions. (4)
- b) Explain the role of vitamin A in the visual cycle and the role of vitamin D in intestinal absorption of calcium in our today. (4)
9. (a) Describe the metabolic role of the following nutrients: (4)
- Iron
  - Selenium
- (b) Describe the biochemical role of the hormones produced by the following glands in our body: (4)
- Adrenal Medulla.
  - Anterior Pituitary
10. a) Explain the concept of signal generation and “second messengers” in the context of hormone action. (4)
- b) List the various inborn errors of metabolism. (1)
- c) Comment on the following statements: (1+1+1)
- In Alcaptonuria the urine becomes dark in color upon standing;
  - MSUD is also known as branched chain ketonuria;
  - Tay-Sachs disease is caused by an abnormal gene.

**Section B - OTQ (Objective Type Questions)**

**(20 marks)**

1. Differentiate between the following sets of terms giving examples/ illustrations.
- (a) D sugar - L sugar
  - (b) Amylose - Amylopectin
  - (c) n3 fatty acid - n6 fatty acid
  - (d) Neutral fats - Phospholipids
  - (e) Reducing sugar - Non- reducing sugar
  - (f) Glycosides linkages - Peptide linkages
  - (g) DNA - RNA
  - (h) Cis isomer - Trans isomer
  - (i) Pyridoxal - Pyridoxamine
  - (j) Ergocalciferol - Cholecalciferol (10)
2. Explain in 2-3 sentences and also give the structure whenever possible.
- (a) Mutarotation
  - (b) Hydrogenation
  - (c) Zwitterion
  - (d) Conjugated proteins
  - (e) PI (of proteins)
  - (f) Nucleotide structure
  - (g) TTP ( Thiamin Triophosphate)
  - (h) Tocopherol
  - (i) Haloenzyme
  - (j) Isozymes (10)



**ASSIGNMENT 3**  
**TMA-3**  
**Food Microbiology and Safety**

**Course Code: MFN-003**

**Assignment Code : MFN-003/AST-3/TMA-3 /13-14**

**Last Date of Submission: For July, 2013 session is 31<sup>st</sup> December, 2013**

**For January, 2014 session is 15<sup>th</sup> June, 2014**

**Maximum Marks: 100**

**This assignment is based on Units 1 -14 of the MFN-003 Course.**

**Section A - Descriptive Questions**

**(80 marks)**

There are ten questions in this part. Each question carries equal marks.

1. Briefly describe the uses and ill effects of microorganisms in the food industry. (8)
2. Explain the various hazards and recent concerns of food safety. (8)
3. a) Illustrate the stages of bacterial growth. (2)
- b) Enumerate the factors affecting the growth of microorganisms in food. (6)
4. a) Discuss the spoilage of the following foods:
  - (i) Poultry and poultry products (2)
  - (ii) Cereals and cereal products (2)
- b) Give the classification of food borne diseases and give appropriate examples under each category. (4)
5. a) Explain briefly the naturally occurring toxicants in plants foods. (5)
- b) Enumerate the various types of environmental food contaminants. (3)
6. a) What are food additives ? (1)
- b) Comment on the applicability of the following food additives in the food industry
  - (i) Preservatives (4)
  - (ii) Food colours (4)
- c) Briefly explain the safety issues linked with the use of food additives. (3)
7. a) Define and classify food adulterants. (4)
- b) Briefly explain the harmful effects of food adulterants. (4)
8. a) Differentiate between cleaning agents and disinfectants / sanitizers used to maintain hygiene in a food service establishment. Give appropriate examples. (4)
- b) What measures would you advocate to minimize hazards associated with the staff/workers working in a food service establishment. (4)
9. (a) List the types of packaging used for various food products and briefly explain the environmental issues related with some of these packaging. (4)
- (b) What is HACCP? What does it involve? Elaborate in the context of its seven principles. (4)
10. Briefly elaborate on the following food regulations/agreements in the area of food standardization and quality control.
  - (i) Essential Commodities Act, 1955. (3)

- (ii) Voluntary based product certification. (3)
- (iii) Technical Barrier to Trade. (TBT). (2)

**Section B - OTQ (Objective Type Questions)**

**(20 marks)**

Q. 1) Explain the following briefly in 2-3 sentences each: - (10)

- (i) JECFA
- (ii) ISO
- (iii) Codex Alimentarius
- (iv) CCP decision tree
- (v) Risk Analysis
- (vi) BIS
- (vii) GRAS
- (viii) NOAEL
- (ix) Ergotism
- (x) Listeriosis

Q.2) Differentiate between the following sets of terms: - (10)

- a. Nutrition labeling - Nutrition claims.
- b. Controlled Atmosphere Packaging (CAP) - Modified Atmosphere Packaging (MAP).
- c. Street foods - Temporary food service.
- d. Mycotoxins - Mycotoxicosis
- e. Canning - Sterilization.

**ASSIGNMENT 4**  
**TMA-4**  
**Public Nutrition**

**Course Code: MFN-006**

**Assignment Code : MFN-006/AST-4/TMA-4 /13-14**

**Last Date of Submission: For July, 2013 session is 31<sup>st</sup> January, 2014**

**For January, 2014 session is 31<sup>st</sup> August, 2014**

**Maximum Marks: 100**

**This assignment is based on Units 1 - 18 of the MFN-006 Course.**

**Section A - Descriptive Questions**

**(80 marks)**

There are ten questions in this part. Each question carries equal marks.

1. a) Discuss the concept and scope of public nutrition. (5)
- b) Briefly describe the role of a public nutritionist in health care delivery. (3)
2. a) Explain the concept of food and nutrition security , highlighting the determinants of food security. (4)
- b) Graphically present the economic consequences and economic evaluation of malnutrition. Explain briefly. (4)
3. Elaborate on the available preventive measures to combat:
  - (i) Iron deficiency Anaemia
  - (ii) Vitamin A deficiency (4+4)
4. a) Briefly explain the factors which contribute to the high fertility in India. (4)
- b) List the classifications (based on body weight) commonly used in India to assess the nutritional status of preschool children. Explain any one in detail. (1+3)
5. a) What are the commonly used methods for dietary assessment ? Explain any one method. (1+3)
- b) Briefly describe the concept of nutrition monitoring and nutrition surveillance highlighting their activities. (4)
- 6 a) List one programme under each of the following and briefly describe its components.
  - (i) Food supplementation programme
  - (ii) Food security programmes
  - (iii) Self Employment and wage employment scheme (8)
7. a) Differentiate between food based and nutrient based strategies. (2)
- b) Discuss the role of dietary diversification and food fortification in combating public nutrition problems. (4)
- . c) Enumerate the supplementary feeding component of various intervention programme run by the Government or non- government organizations in our Conley. (2)

8. a) Briefly explain the concept of programme management and administration. (3)
- b) List the major steps involved in planning, implementing and evaluating a public nutrition programme. (In 2-3 sentences explain the issues aspects covered under each step). (5)
9. a) What is need assessment ? Explain any one technique you would adopt for need assessment in a community. (4)
- b) Illustrate the components of communication process and the different phases in the process of nutrition education. Briefly explain these processes (4)
10. a) "Nutrition/ health information can be communicable through many channels," Justify the statement giving appropriate examples. (4)
- b) As a nutrition educator what useful guidelines would you adopt for formulating effective message design? (2)
- c) Enumerate the different steps involved in the planning an effective training programme in the area of nutrition education. (2)

**Section B - OTQ (Objective Type Questions)**

**(20 marks)**

1. List the clinical signs the following nutritional disorders (10)
  - (i) Vitamin A deficiency
  - (ii) Riboflavin deficiency
  - (iii) Iodine deficiency
  - (iv) Fluorosis
  - (v) Niacin deficiency
  - (vi) Vitamin C deficiency
  - (vii) Folic acid and Vitamin B 12 deficiency
  - (viii) Rickets
  - (ix) Lathyrism
  - (x) Vitamin B, (Thiamin) deficiency
  
2. Explain the following briefly in 2-3 sentences (10)
  - (i) BMI
  - (ii) Biochemical Assessment
  - (iii) Summative evaluation
  - (iv) Social Marketing
  - (v) National Immunization schedule

**ASSIGNMENT 5**  
**TMA-5**  
**Principles of Food Science**

**Course Code: MFN-008**

**Assignment Code : MFN-008/AST-5/TMA-5 /13-14**

**Last Date of Submission: For July, 2013 session is 28<sup>th</sup> February, 2014**

**For January, 2014 session is 30<sup>th</sup> September, 2014**

**Maximum Marks: 100**

**This assignment is based on Units 1 -12 of the MFN-008 Course.**

**Section A - Descriptive Questions**

**(80 marks)**

There are ten questions in this part. Each question carries equal marks.

1. a) Define food science and technology and discuss its scope in the context of dietetics and food service management. (4)  
b) Discuss the role of sugars in the appearance of foods. (4)
2. a) Differentiate between starches, modified starches and non-starch polysaccharides giving examples. (2<sup>1/2</sup>)  
b) Discuss the functional application of the following substances in the food industry  
- Pectin  
- Guar gum  
- Gellan gum (5<sup>1/2</sup>)
3. a) Briefly describe the deteriorative changes occurring in fats and oils. (6)  
b) Explain how the antioxidants delay the onset of rancidity. (2)
4. a) List the functional properties of proteins and discuss any one in detail. (4)  
b) Briefly describe the application of proteins in the food industry. (4)
5. a) Describe the role of enzymes and colours in the food industry. (4)  
b) Differentiate between the following and give appropriate examples:  
- Sol and Gel  
- Foams and emulsion (2+2)
6. List any one alteration occurring in the following foods during processing.  
- Green leafy vegetable (particularly Spinach)  
- Milk and milk product  
- Meat  
- Fish (8)
7. Present a brief review on the traditional methods and the methods of food processing used today. (8)
8. a) Discuss the 12D concepts used in sterilizing foods. (3)  
b) Elaborate on the principles of drying and freezing as a method of food processing. (2)  
c) Enumerate the methods commonly used for drying and freezing. (3)

9. a) What are the microorganisms involved in fermented foods? Explain giving examples of foods fermented by microorganisms and their role in the fermentation process. (5)
- b) Briefly explain the use of chemicals as preservatives. (3)
10. a) What are functional foods? List the special ingredients required in the development of functional foods. (3)
- b) Describe the role of sensory evaluation during product life cycle. (3)
- c) Enumerate the preliminary preparation steps involved for preparing raw material for processing. (2)

**Section B - OTQ (Objective Type Questions)**

**(20 marks)**

1. Explain the following in 2-3 sentences each: (10)
  - (i) Shelf – life
  - (ii) Food irradiation
  - (iii) Water activity
  - (iv) Concentration
  - (v) Pasteurization
  - (vi) Rheology
  - (vii) Tyndall effect
  - (viii) Single cell proteins (SCP)
  - (ix) Product development
  - (x) Hedonic Rating
  
2. Give the role of the following in the food industry (10)
  - (i) Niacin
  - (ii) Vitamin A
  - (iii) Vitamin E
  - (iv) Sodium
  - (v) Gluten
  - (vi) Pullulan
  - (vii) Agar
  - (viii) Sugars (in surface cracking in cookies)
  - (ix) Suspension
  - (x) Vitamin D

**ASSIGNMENT 6**  
**TMA-6**  
**Understanding Computer Applications**

**Course Code: MFN-010**  
**Assignment Code: MFN-010/AST-6/TMA /13-14**  
**Last Date of Submission: For July, 2013 session is 31<sup>st</sup> March 2014**  
**For January, 2014 session is 31<sup>st</sup> October, 2014**

**Maximum Marks: 100**

**This assignment is based on Units 1 - 12 of the MFN-010 Course**

1. Write the step-by-step procedure to perform the following activities in Windows OS (20)
  - (1) Finding the list of document files created during last week
  - (2) Copying a file to another folder
  - (3) Add/Removing a Program
  - (4) Finding the IP address of your computer
  - (5) Sharing of folders and Printers
  
2. Create a MS PowerPoint presentation consisting of about 10 slides involving all the following activities: (20)
  - (i) It should have a Master Slide.
  - (ii) Insert the header and footer in all the slides except master
  - (iii) Set the font properties.
  - (iv) One table should be one of the slide
  - (v) One slide should contain a Graph
  - (vi) Insert an image on one of the slide.
  
3. Create a document using Microsoft-Word. Enter about five pages. The text should contain: (20)
  - A table with 5 columns, having proper headings and borders.
  - The pages should have margins as what they are in your blocks. The page number should also appear as they do in your printed blocks.
  - Reformat the whole document as to appear in 3 columns. However, you may show the table using more than one column
  - Demonstrate at least two arithmetic features and Auto text features of WORD.

Document the process of creation of above document file.

4. Create a worksheet using excel maintaining your monthly household expenses under various heads, for a year. Your worksheet should contain: (20)
- Formulas that automatically calculate
  - You must find the average expenses per month
  - Automatically find the month when the minimum amount was spent.
  - Create a chart for head wise expenditure per month
5. Explain the following term with the help of an example/ diagram, if needed. (20)
- (a) CPU
  - (b) Main Memory
  - (c) Input / output device
  - (d) TCP/IP
  - (e) Ergonomics
  - (f) Maintenance of your computer
  - (g) Computer Virus
  - (h) Internet
  - (i) e-mail
  - (j) Networking