

**M.Sc. (DFSM)**

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

**Ist Year Assignment Booklet**

**Assignments 1-6**

**July 2024 session**

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



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

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

Dear Students,

You will have to do ten assignments in all to qualify for a M.Sc.(DFSM) degree. For each course, you will have to do one assignment. All the assignments are tutor marked and each Tutor Marked Assignment carries 100 marks. In this assignment booklet there are six assignments and 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 1-14)
- Assignment 6 (TMA-6): based on MFN-010 (Units 1-14)

**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 responsesheet.
- 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 theassignment.

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

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EnrolmentNo.....

Name.....

Address.....  
.....

Course  
Title.....

Assignment  
No.....

Date.....

Programme Study Centre.....

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

- 3) Read the assignments carefully and follow the specific instructions if any given on the assignment itself about the subject matter or itspresentation.

- 4) 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 emphasize. While solving numerical, use proper format and give working notes wherever necessary.
- 5) 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.
- 6) ***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.
- 7) Do not copy from the response sheets of other students. If copying is noticed, the assignments of such students will be rejected.
- 8) Write each assignment separately. All the assignment should not be written incontinuity.
- 9) Write the question number with each answer.
- 10) 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.
- 11) After submitting the assignment at the Study centre get the acknowledgement from the Coordinator on the prescribed assignment remittance-cum-acknowledgement card.
- 12) 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.
- 13) 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 has 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

(80marks)

In this section, you have to answer eight to ten questions in all.

### Section B: Objective Type Questions (OTQ)

(20marks)

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-1/24-25**  
**Last Date of Submission: 15<sup>th</sup> November, 2024**

**Maximum Marks:100**

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

**Section A -Descriptive Questions**

**(80marks)**

There are ten questions in this part. Answer all questions.

1. a) List the major categories of cells on the basis of the level of differentiation. (3)  
b) Draw and label the structure of Eukaryotic cell. (2)  
c)What is the composition of blood? (3)
2. a) What do you understand by “MHC”. What are its types? (3)  
b) What is Antibody Mediated Immune System? Explain briefly its mode of action. (3)  
c) Enlist four laboratory tests that can detect antigen-antibody interaction. (2)
3. a) Explain the cardiac cycle and factors affecting cardiac output (4)  
b) What is blood pressure? Enumerate the mechanisms that regulate blood pressure. (2)  
c) What is EEG? How is it useful? (2)
4. a) Explain the chemical factors that affect respiration. (3)  
b) What are gastrointestinal hormones? List any two gastrointestinal hormones and also give their functions. (5)
5. a) What is the functional unit of kidney? Draw its structure and show its major parts. (4)  
b) List the non- excretory functions of kidney. (4)
6. a) What is passive transport across cell membranes? Briefly explain any one type of passive transport. (5)  
b) Explain briefly the peripheral nervous system. (3)
7. a) Draw and label parts of a neuron. (2)  
b) What is a neurotransmitter. List the characteristics of a neurotransmitter. Name any two neurotransmitters. (6)
8. a) Briefly explain any three disorders of image formation. How are they corrected? (3)  
b) List the different organs involved in taste perception. Explain briefly the mechanism of taste perception (5)
9. a)What is haemostasis? Enumerate the disorders of haemostasis. Give an example of each. (4)  
b) List the two major hormones secreted by each of the following glands and explain their physiological effects: (2+2)
  - (i) Thyroid gland
  - (ii) Posterior Pituitary
10. a) Name the female reproductive hormones and the target tissues they act on? (4)  
b) What are the phases of menstrual cycle? (4)

**Section B – OTQ (Objective Type Questions)****(20 marks)****1. Define the following:****(5)**

- i) Mitosis
- ii) Aplastic Anemia
- iii) Interleukin-1
- iv) Emphysema
- v) Nephrotic Syndrome

**2. Give the functions/role of the following structure/organs in our body:****(10)**

- i) Adrenal gland
- ii) ECG
- iii) Pleura
- iv) Secretin
- v) Neurotransmitters
- vi) Purkinje fibers
- vii) Temporal lobe
- viii) Myopia
- ix) Small intestine
- x) Ageusia

**3. Match the items in List I with items in List II:****(5)**

<b>List I</b>	<b>List II</b>
I Theory of Ageing	A B.M.R
II Granulopoiesis	B Auditory
III B.S.A	C Mucous cells
IV Sublingual gland	D Process of formation of neutrophils
V Occipital lobe	E Visual areas
	F Free radical

**ASSIGNMENT -2**  
**TMA-2**  
**Nutritional Biochemistry**

**Course Code: MFN-002**

**Assignment Code: MFN-002/AST-2/TMA-2/24-25**

**Last Date of Submission: 30<sup>th</sup> November,2024**

**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. Answer all questions.

1. a) What is stereo-isomerism? Explain giving an example. (3)  
b) What are polysaccharides? What are its types? Explain giving examples. (5)
2. a) Give the classification of lipids based on the chemical structure. (2)  
b) What is hydrogenation? What are the harmful health effects of partial hydrogenation of fats? (2)  
c) Give the general structure of amino acid with one example each of polar, non-polar, acidic and basic amino acids. (4)
3. a) How will you classify Vitamins based on their solubility? (2)  
b) Briefly explain the mechanism of enzyme action. (4)  
c) Differentiate between competitive and non-competitive enzyme inhibition. (2)
4. a) Explain the process of carbohydrate digestion in our body. (4)  
b) What is the role of pancreas in digestion? (4)
5. a) Briefly explain how blood glucose level is regulated in the body? (2)  
b) What is the net production of ATP when one molecule of glucose is converted to pyruvic acid? (2)  
c) Briefly explain the components of electron transport chain. (4)
6. a) What is the site for the synthesis of fatty acids? Explain giving the reactions involved in the de-novo synthesis of fatty acids. (1+4)  
b) Define Lipoprotein and apolipoprotein with suitable examples. (3)
7. a) What are Ketogenic and Glucogenic amino acids? Discuss their fate in our body. (2+3)  
b) What is the end product of purine degradation and what disease is caused because of this? (3)
8. a) Give the role of free radicals and antioxidants in lipid peroxidation. (3)  
b) Discuss the role of Vitamin K in the coagulation of blood. (3)  
c) Enumerate the physiological role of iron. (2)
9. a) Illustrate the role of parathormone in calcium homeostasis. (3)  
b) Enumerate the different second messengers used in mechanism of hormone action. (5)
10. a) List the common inborn errors due to protein metabolism. Explain briefly any two of them. (5)  
b) Differentiate between sickle cell anaemia and thalasemia. (3)

**Section B - OTQ (Objective Type Questions)****(20 Marks)****1. Explain the following in 2-3 sentences. Also give the structure wherever possible. (10)**

- a. Osazone reaction
- b. Eicosanoids
- c. Isoelectric pH
- d. Holoenzyme
- e. Pinocytosis
- f. Ketosis
- g. Cyclic AMP
- h. Folate Trap
- i. Transamination
- j. Anaplerotic reactions

**2. Name the defective enzyme in the following diseases: (5)**

- a) Tyrosinemia
- b) Phenylketonurea
- c) Alkaptonurea
- d) Niemann-Pick-Disease
- e) Von-Gierk's Syndrome

**3. Match the items in List I with items in List II : (5)**

<b>List I</b>		<b>List II</b>	
I	Calcitonin	A	Pineal
II	Oxytocin	B	Pancreas
III	Glucagon	C	Parathyroid
IV	Glucocorticoids	D	Pituitary
V	Epinephrine	E	Thyroid
		F	Adrenal Cortex
		G	Adrenal Medulla



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

**Course Code:MFN-003**

**Assignment Code:MFN-003/AST-3/TMA-3/24-25**

**Last Date of Submission: 31<sup>st</sup> December,2024**

**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. Answer all questions.

1. a) Briefly discuss the role of microorganisms in fermented foods. Substantiate your answer by highlighting the common microbes used in food fermentation and the fermented products obtained. (5)  
b) What is a bacterial growth curve? Describe the stages of bacterial growth. (1+2)
2. a) Discuss the use of chemicals as a measure to control and destroy microorganisms in foods. (4)  
b) Explain the factors which influence spoilage of the following foods: (2+2)
  - i) Milk and Milk products
  - ii) Meat
3. a) Mention the microorganisms involved with the following food borne diseases. What measures will you adopt to decrease the risk of infection with regards to each? (3+3)
  - i) Botulism
  - ii) Shigellosis  
b) Explain the anti-nutritional factors found in food. (2)
4. a) What are the various toxicants in animal foods? Explain giving examples. (4)  
b) Discuss the uses of preservatives, anti-caking agents, emulsifying agents as additives in food industry. (4)
5. a).What are the harmful effects of food adulteration? (4)  
b) How will you detect the following in the context of adulteration: (4)
  - i) Artificial colour added to tea leaves.
  - ii) Silver foil replaced by aluminum foil
  - iii) Vanaspati added to Ghee
  - iv) Metanil yellow added to Turmeric powder
6. a) Describe the food safety measures that should be observed on the premises of a catering establishment? (5)  
b) What are street foods? How can we ensure safety and quality of raw materials used in preparation of street foods? (3)
7. a) What are the common disinfectants used in food industry? (4)  
b) Enlist the hygiene requirements for licensing and sale of food items in India. (4)
8. a) Discuss the toxicity hazard linked with the interaction between packaging material and food. (4)  
b) Give one example each of the uses of the following packaging material: (2)
  - i) Paper
  - ii) Paper Boards
  - iii) Polyethylene (2)
  - iv) Laminated films  
c) List the mandatory labeling requirements of pre-packaged foods.
9. a) Why is risk assessment important? List the four steps involved in risk assessment. (4)  
b) Explain the role of critical control points in the implementation of HACCP. (4)
10. a) Describe briefly the role of voluntary product certification with regard to food safety. (4)  
b) Define the sanitary and phyto-sanitary measures (SPS) and technical barriers to trade (TBT) agreements. (4)

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

**(20 Marks)**

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

- i) Biological Hazard
- ii) GM Foods
- iii) Irradiation
- iv) MAP
- v) VOD
- vi) Arsenic Poisoning
- vii) CODEX
- viii) QUATS
- ix) GRAS
- x) Food safety management system

2. Differentiate between the following set of terms with examples: (5)

- i) Food infection and Food intoxication
- ii) Direct food additive and Indirect food additive
- iii) Vacuum packaging and Gas packaging
- iv) Registration and Licensing
- v) Thermophiles and Psychrophiles

3. Match the items in List I to items in List II : (5)

**List I**

- I Faba beans
- II *Lathyrus sativus*
- III Acid cleaning compound
- IV Alkaline cleaning compound
- V Phytate

**List II**

- A Sodium hydroxide
- B Phosphate
- C Poor absorption of iron
- D Predisposes to urinary stones
- E Cyanide precursors
- F Anti-bacterial activity
- G BOAA

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

**Course Code: MFN-006**  
**Assignment Code: MFN-006/AST-4/TMA-4/24-25**  
**Last Date of Submission: 31<sup>st</sup> January, 2025**  
**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. Answer all the questions.

1. Explain the following briefly
  - a) Health service delivery system in India (3)
  - b) Role of any one food-based strategy in combating public nutrition problems in our country (2)
  - c) Three goals of SDGs of importance in public nutrition ? (3)
2.
  - a) Present the WHO classification of PEM in a community. (4)
  - b) Briefly describe the measures/approaches which are being adopted to prevent Vitamin A deficiency in the community. (4)
3.
  - a) Discuss the three indicators of nutrition in the community. (4)
  - b) Discuss the relationship between fertility, nutrition and quality of life. (4)
4.
  - a) Present the use of anthropometric measures in nutritional status assessment. (4)
  - b) Briefly explain indirect assessment of nutritional status in community. (4)
5. a) Explain the following methods for nutritional assessment: (8)
  - i) Biochemical assessment
  - ii) Individual diet survey
  - iii) Qualitative diet survey
  - iv) Clinical assessment
6.
  - a) Enumerate the major agencies involved with nutrition monitoring in our country (4)
  - b) Why is it important to maintain an efficient nutrition surveillance system in our country? (4)
7.
  - a) What do you understand by term 'Supplementary Nutrition'? Describe the components of ICDS programme and elaborate on reasons for limited impact of ICDS on nutritional status. (4)
  - b) List the various nutrient deficiency control programmes launched by our government. Enumerate the components of any one of the programmes. (4)
8.
  - a) What is food fortification ? Explain fortification as a strategy to combat malnutrition.. (4)
  - b) Comment on the Behaviourist theory of nutrition education. (4)
9. Describe the various steps required to plan, implement and evaluate a public nutrition programme. (8)
10.
  - a) Discuss the role of Face-to-Face method as a channel for Nutrition Communication. (4)
  - b) Why is community participation important in the implementation of any Nutrition (4)

Programme ?

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

**(20marks)**

1. Explain the following in 2-3 sentences each: (10)
  - i) Self help groups
  - ii) Village Health Guide
  - iii) The Delphi technique
  - iv) Aim of National Nutrition Policy
  - v) PDS
  
2. Explain the following terms: (5)
  - i) Maternal Mortality Rate
  - ii) Sample Registration System
  - iii) Low weight-for-height
  - iv) Qualitative survey
  - v) Social Marketing
  
3. Match the following: (5)

I Berberi	A Niacin
II Pellagra	B Vitamin A
III Scurvy	C Vitamin D
IV Rickets	D Ascorbic acid
V Bitot's spot	E Thiamine

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

**Course Code: MFN-008**

**Assignment Code: MFN-008/AST-5/TMA-5/24-25**

**Last Date of Submission: 28<sup>th</sup>February, 2025**

**Maximum Marks:100**

**This assignment is based on Units 1 -14 of the MFN-008 Course.**

**Section A -Descriptive Questions**

**(80 marks)**

There are ten questions in this part. Answer all the questions.

1. a) Briefly describe any four functional roles of sugars in the food industry giving suitable examples. (4)  
b) What is invert sugar? Give an example. Explain its uses in food industry. (4)
2. a) What are Hydrocolloids? List any two important food hydrocolloids. (4)  
b) What are microbial polysaccharides? Give examples and list few food applications of these polysaccharides. (4)
3. a) Explain briefly the process of thermal decomposition of fats and oils. (4)  
b) Explain the Hydration properties of proteins and its role in food preparation. (4)
4. a) Explain the role of any two vitamins in Food Industry with the help of examples. (4)  
b) Give the functional and nutritional role of any two essential minerals in food industry. (4)
5. a) What are the deteriorative actions and useful effects of enzymes in food processing operations? (4)  
b) Define Sols and emulsions. Briefly explain how are they formed and what are the factors affecting their stability? (4)
6. a) What do you understand by the term food rheology? Name two instruments that are used to measure texture of foods. (2+4)  
b) Enumerate the functions of colour in foods. (2)
7. a) What are biocatalysts? Explain their role in food industry. (4)  
b) Describe the alterations occurring in the following foods during processing : (2+2)  
(i) Milk and milk products  
(ii) Cereal, cereal products and legumes
8. a) Enlist ten traditional methods of food processing. (2)  
b) What is thermal processing? List the different methods used for thermal processing. Briefly explain the application of any one method in the food industry. (2+2+2)
9. a) Define Irradiation. Give any two uses of irradiation. (2+2)  
b) What are the types of fermentation and fermented foods used in India? Discuss briefly. (4)
10. What is product development? List the need and factors influencing product development. (8)

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

**(20marks)**

**1. Explain the following briefly in 2 –3 lines:** **(5)**

- i. SCP
- ii. Syneresis
- iii. Rancidity
- iv. Viscosity
- v. Fortification

**2. Differentiate between the following:** **(10)**

- i) Starches and modified starches
- ii) Visible and invisible fat
- iii) Food science and food technology
- iv) Solar drying and Freeze drying
- v) Pasteurization and blanching

**3. Match the following:** **(5)**

- |     |                                     |   |                   |
|-----|-------------------------------------|---|-------------------|
| I   | Artificial sweetners                | A | Enzymes           |
| II  | Amylopectin                         | B | Alpha-lactalbumin |
| III | Omega-3-polyunsaturated fatty acids | C | Marine oils       |
| IV  | WPC                                 | D | Starch            |
| V   | Ligases                             | E | Non-nutritive     |

## ASSIGNMENT 6

### TMA-6

#### Understanding Computer Applications

Course Code: MFN-010

Assignment Code: MFN-010/AST-6/TMA/24-25

Last Date of Submission: 15<sup>th</sup> March 2025

Maximum Marks: 100

**This assignment is based on Units 1 -14 of the MFN-010 Course.**

**There are five questions. Answer all questions.**

1. Create new MS Word document on topic 'National Nutrition Programmes in India' consisting of 3 pages. Your document should be prepared with given specifications: (20)

- i) Font-typeface- Arial
- ii) Font size-12
- iii) Font Colour- Title in red colour, headings in black colour and text in green colour
- iv) Title should be bold and in capitals
- v) Headings should be in italics and underline
- vi) Text of document should be in center alignment
- vii) Spacing-Double spaced
- viii) Margins-Top-2 inch, Bottom-2.5inch
- ix) Page numbers at the bottom centre of each page
- x) Create table (rows-6, columns-3) with fixed column width

Take a printout of this document and submit along with the assignment. Write the steps involved to create the above document.

2. Create a worksheet using excel having different columns depicting the Serial Number, Name of the subject, Age (years), Height (cm) and Weight (kg) of 20 adults in your neighbourhood. Put in the required data for the respective columns in 20 rows. Also, write step-by-step procedure to perform the following activities in your answer sheet and take a printout of excel worksheet and attach with the assignment. (20)

Your worksheet should contain the following:

- i) Coding of male (M) and female (F) and calculate the number of males and number of females by giving formula in the cell.
- ii) Calculate the average age of the males and females.
- ii) Create a new column after variable weight. The variable name of this new column will be BMI. Calculate BMI of each adult by putting formula for BMI.
- iii) Create four categories of adults falling in underweight, normal and overweight and obese according to WHO criteria.
- iv) Find out sum of the number of adults falling in the four categories of BMI. Depict this data in a bar chart.
- v) Average BMI of all adults.

3. a) What are the different features/operation of MS-Outlook express  
b) Explain the data processing functions of the computer with an illustration.
4. Explain the following term with the help of an example/diagram, if needed: (2x15)
- a. Computer virus
  - b. Pivot tables
  - c. Macros in Excel
  - d. Ergonomics
  - e. Screenshot
  - f. Microsoft Power point
  - g. Thesaurus
  - h. Mail merge
  - i. Auto Text feature
  - j. Indenting text
  - k. Web layout view
  - l. Quick access toolbar
  - m. LAN
  - n. Notepad
  - o. Toolbar
5. Differentiate between the following terms: (10)
- i) Disk fragmenter and Disk clean up
  - ii) Main memory and Auxillary memory
  - iii) System software and Application software
  - iv) AutoText and Auto Correct
  - v) File and Folder