

**FOURTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION****APRIL 2021**

Food Technology

FTL 4B 07—FOOD CHEMISTRY AND ANALYTICAL INSTRUMENTATION

Time : Two Hours and a Half

Maximum : 80 Marks

**Section A***Answer at least ten questions.**Each question carries 3 marks.**All questions can be attended.**Overall Ceiling 30.*

1. Define Apoenzyme.
2. What are essential fatty acids ? Give examples.
3. What is a Colloid ?
4. Draw the ring structure of Furanose.
5. Guar gum is also known as \_\_\_\_\_.
6. What are whey proteins ?
7. Write two function of vitamin.
8. What is Betaine ?
9. \_\_\_\_\_ are sulphur containing amino acids.
10. What are the classifications of protein ?
11. What is the principle of a calorie meter ?
12. What are the adsorbent used in paper chromatography ?
13. Spectrophotometer is used to study \_\_\_\_\_.
14. What are anti oxidants ? Give example.
15. What is bound water ?

(10 × 3 = 30 marks)

**Turn over**

**Section B**

*Answer at least **five** questions.*

*Each question carries 6 marks.*

*All questions can be attended.*

*Overall Ceiling 30.*

16. Explain in brief starch gelatinization and retrogradation.
17. Write a short note on physiological functions of protein.
18. Compare and contrast hydrolytic and oxidative rancidity.
19. Write a short note on water solute interactions.
20. Write a note on enzymes in waste management.
21. Write in brief different colloidal interactions.
22. Explain principle and working of atomic absorption spectrophotometer.
23. With the help of neat diagram explain the changes in chlorophyll during heating.

(5 × 6 = 30 marks)

**Section C**

*Answer any **two** questions.*

*Each question carries 10 marks.*

24. Write in details types and characteristics of dispersion systems in focus on emulsion.
25. What is the principle of chromatography? Explain different chromatographic methods.
26. Discuss briefly about chemical modification of fats and oils.
27. Differentiate moisture content and water activity. Explain different methods of moisture content determination.

(2 × 10 = 20 marks)

**FOURTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION  
APRIL 2021**

Food Technology

FTL 4C 06—FOOD PRESERVATION AND QUALITY CONTROL

(2017 Admissions)

Time : Three Hours

Maximum : 64 Marks

**Part A**

*Answer all the questions.  
Each question carries 1 mark.*

1. "AGMARK Act 1937" comes under :
  - a) Department of Consumer Affairs, Government of India.
  - b) Directorate of Marketing and Inspection.
  - c) Department of Agriculture and Co-operation.
  - d) Department of Legal Metrology.
2. Which stage does adulteration take place ?
  - a) Producer.
  - b) Distributor.
  - c) Retailer
  - d) All of the mentioned.
3. What has been banned for tea bag products by FSSAI from 2018 ?
  - a) Use of stapler pins.
  - b) Thread for dipping.
  - c) Cloth bag containing the tea leaves
  - d) Herbal tea leaves.
4. Vacreation refers to \_\_\_\_\_.
  - a) Vacuum packaging.
  - b) Vacuum creation.
  - c) Vacuum sterilization.
  - d) Vacuum pasteurization.

**Turn over**

5. Blanching vegetables prior to freezing is done to \_\_\_\_\_.
- a) Maintain colour.
  - b) Improve texture
  - c) Prevent microbial activity
  - d) Denature enzyme
6. Acetic acid and lactic acid are used for :
- a) Curing meats.
  - b) Preservation of color.
  - c) Preservation of pickles.
  - d) Inhibiting mold growth.
7. ISO stands for :
- a) Indian Standards Organization.
  - b) International Organization for Standardization.
  - c) Indian Organization for Standardization.
  - d) International Standard Offices.
8. The temperatures used for canning foods ranges from \_\_\_\_\_.
- a) 0-20 °C.
  - b) 20-60 °C.
  - c) 60-100 °C.
  - d) 100-121 °C.
9. How many acts are repealed by Food Safety and Standards Act, 2006 ?
- a) 4.
  - b) 5.
  - c) 7.
  - d) 8.
10. MSG is used as \_\_\_\_\_.
- a) Colour enhancer.
  - b) Thickening agent.
  - c) Flavour enhancer.
  - d) Emulsifier.

(10 × 1 = 10 marks)

### Part B

*Answer all the questions.  
Each question carries 2 marks.*

11. Give two examples for food additives.
12. What is cold storage ?
13. What are voluntary standards ?

14. Why gamma rays preferred over X-rays in food during irradiation treatment ?
15. Write the importance of pre-cooling after harvesting of fruit and vegetable.
16. Give any two examples for emulsifiers used in food.
17. What is cold sterilization ?

(7 × 2 = 14 marks)

### Part C

*Answer any five questions.  
Each question carries 4 marks.*

18. What was the issue regarding Nestle Maggi ? What are the main violations noted by FSSAI ?
19. What are low temperature preservation techniques ?
20. Write the classification of irradiation based on dose.
21. Differentiate between food enrichment and food fortification.
22. Technologically justify why additives are used in food ?
23. Write a short note on HACCP.
24. What are the International organizations governing food safety ?
25. Explain curing agents and anti-caking agents.

(5 × 4 = 20 marks)

### Part D

*Answer any two of the following.  
Each question carries 10 marks.*

26. Explain food adulteration as a major issue in India with suitable examples.
27. What is chemical preservation ? How it help in preserving food commodities ?
28. Explain BIS, CODEX, AGMARK, and HACCP.

(2 × 10 = 20 marks)

**FOURTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION  
APRIL 2021**

Food Technology

FTL 4B 07—FOOD CHEMISTRY AND ANALYTICAL INSTRUMENTATION

(2017 Admissions)

Time : Three Hours

Maximum : 80 Marks

I. Objective Type (*All Questions are Compulsory*) :

Multiple choices :

- 1 Sucrose is a (Monosaccharide, Disaccharide, Polysaccharide).
- 2 Sugar present in milk (Lactose, Gluten, Zein).
- 3 RID is a detector of (HPLC, GC, FTIR).

Answer in a single or two words :

- 4 What is the principle of chromatography ?
- 5 Name any *two* essential amino acids ?

Write True/ False :

- 6 Glucose is a reducing sugar.
- 7 Enzymatic browning turns a cut piece of apple brown in colour.

Fill in the blanks :

- 8 \_\_\_\_\_ is a type of detector used in GC.
- 9 \_\_\_\_\_ is a pigment in turmeric.
- 10 \_\_\_\_\_ a SFA.

(10 × 1 = 10 marks)

II. Short answer type questions (*Answer any five questions*) :

- 11 Define enzyme activity.
- 12 Denaturation of proteins.
- 13 Explain about emulsions, with examples
- 14 What is rancidity ?

- 15 Write the classification of enzymes.
- 16 What is free and bound water ?
- 17 Define Colloids.

(5 × 2 = 10 marks)

III. Short essay questions (Answer any *six* questions) :

- 18 Explain retro gradation.
- 19 Write the role of Fibre in food.
- 20 What is the theory of emulsion formation ?
- 21 Describe the role of antioxidants in lipids.
- 22 Write note on essential amino acids and modified starches.
- 23 Write a note on chlorophylls.
- 24 What is the role of enzymes in food processing ?
- 25 Write a short note on properties of solutions.

(6 × 5 = 30 marks)

IV. Essay questions (Answer any *two* questions) :

- 26 Describe in detail about the chemistry of colloids and their role in foods.
- 27 Explain GC in detail. Illustrate about any *two* detectors used in GC.
- 28 Explain different structure of protein.
- 29 What are carbohydrates ? How these are classified ? Explain the identification method of any one sugar.

(2 × 15 = 30 marks)

## FOURTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION, APRIL 2021

## Food Technology

## FTL 4B 07—FOOD CHEMISTRY AND ANALYTICAL INSTRUMENTATION

(2014 Admissions)

Time : Three Hours

Maximum : 80 Marks

I. Objective type (All questions are *compulsory*) :

Multiple choices :

1 Pectin belongs to :

- (a) Polysaccharide. (b) Disaccharide.  
(c) Monosaccharide. (d) Peptone.

2 Kjeldhal's method is used for the determination of :

- (a) Carbohydrates. (b) Protein.  
(c) Fat. (d) Minerals.

3 Emulsion is a type of colloid with :

- (a) Liquid in liquid. (b) Liquid in solid.  
(c) Gas in solid. (d) Solid in gas.

Fill in the blanks :

- 4 PUFA stands for \_\_\_\_\_.
- 5 The linkage between aminoacids in a protein is \_\_\_\_\_.
- 6 \_\_\_\_\_ is an example for oil in water emulsion
- 7 \_\_\_\_\_ is the enzyme that hydrolyses sucrose to glucose and fructose.
- 8 Gas Chromatography is useful to analyse \_\_\_\_\_ organic compounds.

Expand the following :

9. GC-MS.  
10. PDA.



- 3 Describe auto-oxidation in lipids.
- 4 Write the structures of Oleic acid and linoleic acid.
- 5 Name any two enzyme specificities.
- 6 Write the structures of a carotenoid and name it.
- 7 Describe  $R_f$  value in TLC and its importance.

(5 × 2 = 10 marks)

III. Answer any *six* questions :

- 1 Describe in detail about 'Gelatinization of starch'.
- 2 Write in detail about the classification of proteins.
- 3 Explain one method in detail for the determination of moisture in foods.
- 4 Describe the factors effecting the enzyme activity.
- 5 Write a brief account of properties of chlorophylls.
- 6 Describe the role of antioxidants in lipids.
- 7 Write a short note on fluorimetry.
- 8 Write a short note on emulsifying agents.

(6 × 5 = 30 marks)

IV. Answer any *two* questions :

- 1 Explain various methods useful for the determination of proteins.
- 2 Explain in depth about the tests for Rancidity in oils and fats.
- 3 Describe in detail about anthocyanins with respect to structure, chemical reactions and methods for their quantitative analysis.
- 4 Explain comprehensively about Beer-Lambert's law and its application.

(2 × 15 = 30 marks)