

**THIRD SEMESTER M.Sc. DEGREE (SUPPLEMENTARY) EXAMINATION
NOVEMBER 2020**

(CUCSS)

Food Science and Technology

FT 3C 21—PACKAGING TECHNOLOGY

(2014 Admissions)

Time : Three Hours

Maximum : 36 Weightage

Part A

*Answer any fourteen questions.
Each question carries 1 weightage.*

1. Thermosets _____ and _____ on heating.
2. Euro pallet size _____.
3. BOPP stands for _____.
4. Unit of water vapour transmission rate is _____.
5. Auger fillers are used for _____.
6. _____ toxicity level is approved in package materials.
7. Take up factor for A flute is _____.
8. Palletization reduces transportation hazards (True/ False).
9. Diffusion through packaging materials obeys _____.
10. Thermoplastics can be _____ number of times.
11. Bisphenol is monomer used for _____ polymer.
12. A - type of flutes have better compression strength than B-type. (True / False)
13. Name one agency, which promote and monitor the Indian export of foods _____.
14. _____ is used as a catalyst while manufacturing LDPE.
15. Expand 'LLDPE'.

Turn over

16. The safety factor used in compression strength of Indian CFB _____.
17. Unit of oxygen vapour transmission rate is _____.

(14 × 1 = 14 weightage)

Part B

*Answer any seven questions.
Each question carries 2 weightage.*

18. Differentiate Lamination and co-extrusion.
19. What are the characteristics in foods that influence the selection of packaging material ?
20. Write a short note on vacuum metallization.
21. What is prepackaging ? How it is useful ?
22. What are auger fillers and where they are used ? What kind of fillers required to fill a highly viscous products explain with the sketch ?
23. Methods of pulping for making papers.
24. What are the different types of heat sealers used in plastic sealing ?
25. Differentiate between grease proof paper and glassine.
26. Explain biodegradable films.
27. Mention the main advantages of using trays instead of pouches for retort foods.

(7 × 2 = 14 weightage)

Part C

*Answer any two questions.
Each question carries 4 weightage.*

28. What are different types of flutes in CFB ? Where are they used ?
29. Write the chemical composition and functional properties of polypropylene packaging material.
30. What are biodegradable films ? Describe in brief few of them.
31. Discuss important thermoplastics that are used in Food packaging.

(2 × 4 = 8 weightage)

**THIRD SEMESTER M.Sc. DEGREE (SUPPLEMENTARY) EXAMINATION
NOVEMBER 2020**

(CUCSS)

Food Science and Technology

FT 3C 19—TECHNOLOGY OF CEREALS, LEGUMES AND OIL SEEDS

(2014 Admissions)

Time : Three Hours

Maximum : 36 Weightage

Part A*Answer all fourteen questions.**Each question carries 1 weightage.*

1. If true density of an agricultural material is 1000 kg/ cu.m and bulk density is 400 kg/cu.m, then its porosity is _____ %.
2. Separation of pure endosperm is achieved in _____ step during flour milling.
3. Cyclone separator works on the principle of _____.
4. In rice, angle of internal friction is in the range of _____ degrees.
5. Boiling point of n-hexane used for solvent extraction is about _____ °C.
6. To get starch, maize is subjected to _____ milling.
7. Realignment of cooked starch as it cools is called _____.
8. L/B ratio of superfine varieties of rice would be _____.
9. Gota, in pulses mean _____.
10. _____ is one of the anti-nutritional factors in pulses.
11. Egg yolk is used as _____ in baking.
12. Higher the alpha-amylase activity, _____ is the Falling number.
13. Coconut milk powder is obtained by using _____ dryer.
14. Meat analogues are normally obtained from _____.
15. _____ fluid is used in supercritical fluid extraction.
16. Oil content is copra is _____.
17. Steaming is used as a method to _____ fresh paddy.

(14 × 1 = 14 weightage)

Turn over

Part B

Answer any seven questions.

Each question carries 2 weightage.

18. Mention the technology involved in the making of Indian traditional products.
19. List the by-product of Rice Milling Industry and describes its utilization.
20. What is tempering ? Give two reasons of Tempering of wheat before miling.
21. Describe the working principle of Farinograph and what are its applications.
22. What is supercritical extraction ? Describe its advantages.
23. Describe steps involved in the production of virgin coconut oil.
24. Differentiate between the traditional and modern methods of pulse milling.
25. Explain the principle of different dehuskers used in rice milling.
26. Describe the processing technology of maize.
27. Describe the structure of wheat grain with associated nutritional facts.

(7 × 2 = 14 weightage)

Part C

Answer any two questions.

Each question carries 4 weightage.

28. Discuss in detail the technology of preparing cake, biscuit, cracker and wafer.
29. What is ageing of rice ? How this can be accelerated ?
30. Describe technology of production of vegetable protein isolates.
31. Explain : (a) By-products of rice milling and their industrial uses ; (b) Antinutritional factors in pulses.

(2 × 4 = 8 weightage)

**THIRD SEMESTER M.Sc. DEGREE (SUPPLEMENTARY) EXAMINATION
NOVEMBER 2020**

(CUCSS)

Food Science and Technology

FT 3C 17—INDUSTRIAL MICROBIOLOGY AND BIOCHEMICAL ENGINEERING

(2014 Admissions)

Time : Three Hours

Maximum : 36 Weightage

Part A

Answer any fourteen questions.

Each question carries 1 weightage.

1. Proteases are involved in digesting long protein chains into shorter fragments by splitting the _____ into _____ residues.
2. $K_L a$ can be used to characterize oxygen mass transfer capability (T/F).
3. Process error is sent to the controller or actuator.
4. Relevance of bifidobacteria is _____.
5. Super-heated steam is more effective than saturated steam for moist sterilization (Y/N).
6. Major resistance for sparged air bubble in bioreactor for oxygen transfer to cells is _____.
7. During constant rate drying :
 - a) Rate diffusion of moisture to the surface is more than the rate of evaporation from the surface.
 - b) Rate diffusion of moisture to the surface is less than the rate of evaporation from the surface.
 - c) Rate diffusion of moisture to the surface is equal to the rate of evaporation from the surface.
 - d) Rate diffusion of moisture to the surface is note related to the rate of evaporation from the surface.
8. An example of probiotics is _____.

Turn over

9. Mechanical seal in fermenter is used for _____.
10. Dextran can be obtained from _____.
11. Citric acid is use for _____.
12. A cultures used for making dairy product is _____.
13. Example of polysaccharide is _____.
14. Sterilization medium for air is _____.
15. Monod kinetics describes _____.
16. An advantage of Fed-batch fermentation is _____.
17. Fermentation of beer and alcohol is different w.r.t. to _____.

(14 × 1 = 14 weightage)

Part B

*Answer any seven questions.
Each question carries 2 weightage.*

18. Distinguish between aerobic and anaerobic fermentations, and describe them briefly.
19. Define partition coefficient with an equation and explain the terms.
20. Classify the enzymes based on their uses, and write a note on the enzymes productions.
21. Enumerate the various fermentation processes that you come across in process industries.
22. What is the physical meaning of the K_m in Monod kinetics growth model ?
23. What is difference between extraction and membrane separation ?
24. What do we understand by downstream processing and what are the difficulties in it ?
25. Write a short note on animal cell bioreactors.
26. What are the considerations for biological and chemical methods of effluent treatment ?
27. When the fed-batch cultivation would be beneficial ? State specific biological condition.

(7 × 2 = 14 weightage)

Part C

Answer any two questions.

Each question carries 4 weightage.

28. Discuss the types of fermentation processes, bioreactor configurations and their advantages and disadvantages.
29. What are the different enzyme immobilization techniques ? What are the advantages and disadvantages of each class ?
30. Write short notes on any two :
 - a) Adsorption.
 - b) Membrane processing in product recovery.
 - c) Aqueous two phase extraction.
31. Discuss the principle of operation, configuration with neat sketch of cell disruption and membrane processing techniques.

(2 × 4 = 8 weightage)

**THIRD SEMESTER M.A./M.Sc./M.Com. DEGREE (REGULAR) EXAMINATION
NOVEMBER 2020**

(CBCSS)

Food Science and Technology

FST 3C 15—PACKAGING TECHNOLOGY

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each Section / Part.*
2. *The minimum number of questions to be attended from the Section / Part shall remain same.*
3. *There will be an overall ceiling for each Section / Part that is equivalent to maximum weightage of the Section / Part.*

Part A*Answer any four questions.**Each question carries 2 marks.*

1. What is hydrogen swell ? Mention stages of swelling.
2. Advantages and disadvantages of aluminum can.
3. Different types of Flutes in CFB.
4. Write a note on active and intelligent packaging.
5. Properties and composition of glass.
6. Define polymer and its types.
7. Mention different layers of tetra pack.

(4 × 2 = 8 weightage)

Part B*Answer any four questions.**Each question carries 3 marks.*

1. Define shelf life and brief the factors affecting the rate of reaction in food shelf life.
2. Packaging material used for dairy products.

Turn over

3. Define ASLT? Advantages of ASLT in shelf life studies ?
4. Write a brief note on smart packaging.
5. Explain in brief on legislative and safety aspects of food packaging.
6. Characteristics of plastics films for MAP of fresh produce.
7. Principal structural difference between cellulose and hemicellulose.

(4 × 3 = 12 weightage)

Part C

Write essay on any two of the following.

Each question carries 5 marks.

1. Explain in detail Modified and controlled atmospheric packaging.
2. Briefly describe on the advantage, disadvantage and uses of tin.
3. Write detail note on edible and biodegradable packaging.
4. Explain in detail the rigid, semi rigid and flexible packaging with examples.

(2 × 5 = 10 weightage)

**THIRD SEMESTER M.Sc. DEGREE (SUPPLEMENTARY) EXAMINATION
NOVEMBER 2020**

(CUCSS)

Food Science and Technology

FT 3C 16—FOOD STORAGE AND INFESTATION CONTROL

(2014 Admissions)

Time : Three Hours

Maximum : 36 Weightage

Part A

Answer any fourteen questions.

Each question carries 1 weightage.

1. Checking or scouting for pests in an area to determine, what pests are present, how many and how much damage they are causing is known as _____.
2. Insects differ from other arthropods because insects have _____.
3. A _____ immediately eliminate pests inside a structure, though the structure can be re-infested immediately after application.
4. A mature female rat gives birth to about _____ young/year.
5. The toxicity of a pesticide is a measure of its ability to cause _____.
6. IPM stands for _____.
7. Rodent infestation signs include _____.
8. The larvae of _____ feed on the surface grains and spin large amounts of silk webbing in and over their food.
9. _____ is the first step in bird control.
10. _____ are common insect pest of stored product, feeding on almost all dried foods.
11. CWC stands for _____.
12. Farmers in the developed and developing countries are looking towards the use of natural materials as _____ agents.

Turn over

13. The granary weevil, rice weevil and angoumois grain moth, are _____ feeders, living on whole grains or seeds.
14. There are _____ important steps each to be followed in order to assure best control of rat and mouse populations.
15. Warehouses, grain mills, silos, and corn cribs are especially vulnerable to _____ infestation.
16. Mold activity in binned seed products can result in _____ and _____ of grains.
17. The most common method of sealing sheets during fumigation at ground level is by means of _____ which hold down the sheet in contact with the floor.

(14 × 1 = 14 weightage)

Part B

*Answer any seven questions.
Each question carries 2 weightage.*

18. Define a pest in simple terms.
19. How do we detect food spoilage ?
20. List the methods used to identify pests in foods.
21. Name 3 parts of an insect.
22. What is Integrated Pest Management ?
23. Name five types of pesticides.
24. What is the difference between a narrow spectrum pesticide and a broad spectrum pesticide ?
25. Name the two classes of storage insect pests.
26. Why is it necessary to dry grains before storing ?
27. What is chemical spoilage of foods ?

(7 × 2 = 14 weightage)

Part C

*Answer any two questions.
Each question carries 4 weightage.*

28. Describe three of the six different methods of pest control.
29. Explain briefly the functions of the Central Warehousing Corporation.
30. Describe briefly the advantages and disadvantages of fumigation.
31. Enumerate the effect of molds on stored grains.

(2 × 4 = 8 weightage)

**THIRD SEMESTER M.A./M.Sc./M.Com. DEGREE (REGULAR)
EXAMINATION, NOVEMBER 2020**

(CBCSS)

Food Science and Technology

FST 3C 14—TECHNOLOGY OF CEREALS, LEGUMES AND OILS SEEDS

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each Section/Part.*
2. *The minimum number of questions to be attended from the Section/Part shall remain same.*
3. *There will be an overall ceiling for each Section/Part that is equivalent to maximum weightage of the Section/Part.*

Part A

Answer any four questions.

Each question carries 2 weightage.

1. What is Gluten ?
2. What is retrogradation of starch ?
3. What are the essential amino acids found in rice ?
4. What are the advantages of using Rapid Visco-Analyser ?
5. What are the disadvantages of parboiling of paddy ?
6. What is degree of milling of rice and what is its importance ?
7. What are the uses of oilseed meal and flour ?

(4 × 2 = 8 weightage)

Part B

Answer any four questions.

Each question carries 3 weightage.

1. Why rice bran needs to be stabilized ? What are the different methods of rice bran stabilization ?
2. What are the steps involved in modern method of pulse milling ?

Turn over

3. What are the major factors affecting the milling quality of rice ?
4. What is tempering ? Give two reasons for Tempering wheat before milling.
5. What are the steps involved in the production of protein isolates ?
6. What are the advantages of sprouting of pulses ?
7. What are the steps involved in modern rice milling and the machines used therein ?

(4 × 3 = 12 weightage)

Part C

Answer any two of the following.

Each question carries 5 weightage.

1. Describe the structure of wheat grain with associated nutritional facts.
2. Explain the steps involved in maize milling to get low-fat, low-fibre grits.
3. How is spray dried coconut powder prepared ?
4. What is ageing of rice? How this can be accelerated ?

(2 × 5 = 10 weightage)

**THIRD SEMESTER M.A./M.Sc./M.Com. DEGREE (REGULAR) EXAMINATION
NOVEMBER 2020**

(CBCSS)

Food Science and Technology

FST 3C 13—PRINCIPLES OF FOOD PROCESSING AND PRESERVATION

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each Section / Part.*
2. *The minimum number of questions to be attended from the Section / Part shall remain same.*
3. *There will be an overall ceiling for each Section / Part that is equivalent to maximum weightage of the Section / Part.*

Part A*Answer four out of seven questions.**Each question carries 2 weightage.*

1. What are calorie dense foods ?
2. What is freeze preservation ?
3. Define Blanching.
4. What is F_0 Value ?
5. Define water activity.
6. Give classification of food additives.
7. Give 2 advantages of non-thermal processing.

(4 × 2 = 8 weightage)

Part B*Write a short essay on any four of the following.**Each question carries 3 weightage.*

1. Briefly explain 3 major causes of food spoilage.
2. Explain the steps involved in canning of foods.
3. Differentiate slow freezing and quick freezing of foods.

Turn over

4. List the advantages and limitations of solar drying.
5. Briefly explain application of Pulsed Electric Field technology in food processing.
6. Explain Curing and effect of salt on food preservation.
7. Discuss analysis of adulterants by FSSAI DART method.

(4 × 3 = 12 weightage)

Part C

*Answer any two questions.
Each question carries 5 weightage.*

1. With an example, explain sterilization of food ? How it is different from pasteurization ?
2. Explain acetic and lactic fermentation and its application in food preservation.
3. Explain membrane based non-thermal processing of liquid foods.
4. Describe Instrumental methods of Sensory analysis.

(2 × 5 = 10 weightage)

**THIRD SEMESTER M.A./M.Sc./M.Com. DEGREE (REGULAR) EXAMINATION
NOVEMBER 2020**

(CBCSS)

Food Science and Technology

FST 3C 12—TECHNOLOGY OF FRUITS, VEGETABLES, SPICES AND PLANTATION
PRODUCTS

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each Section/Part.*
2. *The minimum number of questions to be attended from the Section/Part shall remain same.*
3. *There will be an overall ceiling for each Section/Part that is equivalent to maximum weightage of the Section/Part.*

Part A*Answer any four questions.**Each questions carries 2 weightage.*

Write a short notes on :

1. Necessity for Decaffeination coffee ?
2. Seed spices.
3. Osmosis in food processing.
4. Zero energy cool chamber.
5. Differentiate climacteric fruits and non-climacteric fruits.
6. Maturity indices in vegetables.
7. Methods used for ripening of fruits.

(4 × 2 = 8 weightage)

Part B*Answer any four questions.**Each question carries 3 weightage.*

8. Sorting/grading fruits and vegetables.
9. Processing of black, oolong and green tea.

Turn over

10. Role of pectin in Jam making.
11. Write about preparation of tomato puree with specification ?
12. Write a note on RTS beverages.
13. Note on spice/herb essential oil.
14. Differentiate between lime and lemon.

(4 × 3 = 12 weightage)

Part C

Answer any two questions.

Each question carries 5 weightage.

15. Describe dry and wet processing of coffee and value added coffee products.
16. Elaborate on tomato processing and products with flow charts.
17. Note on post-harvest technology of fruits.
18. Outline classification, products and therapeutic value of spices.

(2 × 5 = 10 weightage)