FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2021

(CBCSS)

Food Science and Technology

FST 1C 04—BASIC PRINCIPLES OF ENGINEERING

(2019 Admission onwards)

Time : Three Hours   Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each section.*

2. *The minimum number of questions to be attended from the Section/Part shall remain the same.*

3. *The instruction if any, to attend a minimum number of questions from each sub section/sub part/ sub division may be ignored.*

4. *There will be an overall ceiling for each Section/Part that is equivalent to the maximum weightage of the Section/Part.*

Part A

Write Short on **four** *out of seven of the following questions.*

Each question carries 2 weightage.

1. Imperial system of units.

2. Second law of Thermodynamics.

3. Dew point.

4. Torque.

5. Boiler rating.

6. Refrigeration load.

7. Pasteurization.

(4 × 2 = 8 weightage)

Part B

*Write short essay on any **four** out of seven of the following.*
Each question carries 3 weightage.

1. Convert 150 kg/m^3 to g/cm^3.

2. Heat pump.

3. Convert moisture content of 85 % (wet basis) to moisture content dry basis.

4. Psychrometric chart and its uses.

5. Grades of Stainless Steel used in food industry.

6. Temperature measuring instruments.

7. Vapor absorption refrigeration system.

$(4 \times 3 = 12$ weightage$)$

Part C

*Write essay on any **two** out of four of the following.*
Each question carries 5 weightage.

1. Give the application of heat exchangers in food processing. Briefly explain the working principle of Shell and Tube heat exchanger.

2. Explain the working of Water Tube Boiler. How it is different from Fire tube boiler ?

3. Give the classification of Valves and Fittings used in food processing industry.

4. Compare between Vapor Compression and Absorption systems of refrigeration. What are their COPs ?

$(2 \times 5 = 10$ weightage$)$

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Food Science and Technology

FST 1C 03—RESEARCH METHODOLOGY AND STATISTICS

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

General Instructions

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Part A

Write Short on *four* out of seven of the following :

1. Binomial distribution.

2. Statistical quality control.

3. Concept of differentiation.

4. Frequency distribution.

5. Analysis of variance.

6. Probability.

7. Range.

(4 × 2 = 8 weightage)

Turn over

Part B

Write Short essay on *four* out of seven of the following :

1. How a good research problem can be identified ?

2. Discuss about review of literature for research work.

3. What factors are considered to propose a research proposal ?

4. Differentiate correlation and regression.

5. What are the methods of representing data diagrammatically ?

6. Write about chi square test and its uses.

7. Write about intellectual proposing Rights.

$(4 \times 3 = 12$ weightage$)$

Part C

Write Essay on *two* out of four of the following :

1. Find the correlation coefficient from the following data :

Age (x) in years	45	20	25	40	60	55
Blood pressure (y), mm Hg	130	120	125	125	140	135

2. What do you mean by probability ? If a batsman hits a boundary 6 times out of 30 balls played, What is the probability that he did not hit a boundary ?

3. Frame a research proposal on development of a product to address anemia in children, to be submitted to government agency for funding. The proposal to include both laboratory scale study and animal study.

4. Write about Analysis of Variance and its significance. Describe about *t*-test and its applications.

$(2 \times 5 = 10$ weightage$)$

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FST 1C 02—FOOD CHEMISTRY AND ANALYSIS

(2019 Admission onwards)

Time : Three Hours   Maximum : 30 Weightage

General Instructions

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Part A

Write short notes on any **four** *out of seven of the following questions.*

Each question carries a weightage 2.

1. Define rancidity in oils.

2. What is R_f value ?

3. Define carbohydrates.

4. What are terpeneless oils ?

5. What are flavonoids ? Give two examples.

6. Explain 'gel formation' in carbohydrates.

7. Explain primary structure of protein.

(4 × 2 = 8 weightage)

Part B

Write short essay on any **four** *out of* **seven** *of the following questions.*
Each question carries a weightage 3.

1. Millard reaction.

2. What is vanaspathi ?

3. Define Emulsion and describe types with examples.

4. Starch Retrogradation.

5. Forces in protein conformation.

6. Explain the principle of Atomic absorption spectroscopy.

7. Write in detail about Karl-Fischer titration.

(4 × 3 = 12 weightage)

Part C

Write essay on any **two** *of the following.*
Each question carries a weightage 5.

1. Explain the principle and working of HPLC. Which are the detectors used ?

2. Explain classification, sources and deficiency diseases of vitamins.

3. Discuss Chemistry of oils and fats, their sources and classification as well as composition.

4. What are major food proteins ? Discuss functional properties of proteins in foods.

(2 × 5 = 10 weightage)

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Food Science and Technology

FST 1C 01—FOOD MICROBIOLOGY

(2019 Admission onwards)

Time : Three Hours — Maximum : 30 Weightage

General Instructions

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Part A

Write short on **four** *out of seven of the following questions.*
Each question carries a weightage 4.

1. Toxi-infection.

2. Alexander Fleming.

3. Bacterial plasmids.

4. Draw structure of a virus and label it.

5. Transformation.

6. MPN method.

7. Acidophilus milk.

(4 × 2 = 8 weightage)

Part B

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

8. Dry heat sterilization.

9. Gram staining.

10. Prokaryotes.

11. Food poisoning by S. Aureus.

12. Phase contrast microscopy.

13. Replica plating.

14. Fungal spores.

(4 × 3 = 12 weightage)

Part C

Write essay on any **two** *of the following.*
Each question carries a weightage 3.

15. Differentiate between generalized and specialized transduction.

16. Write about various methods used to purify the microorganisms.

17. Write a detailed note on microbial spoilage of canned foods.

18. The significance of moulds in foods.

(2 × 5 = 10 weightage)