

M.Sc. Food Science and Technology Program Structure

Code	Title of the paper	Total Marks	Credits	Teaching Hours/Week
I Year				
I SEMESTER				
FST 101	Food Chemistry & Advances	100	4	4
FST 102	Food Microbiology & Advances	100	4	4
FST 103	Principles of Food Preservation	100	4	4
FST 104	Fruits, Vegetable Technologies & Advances	100	4	4
FST 105	Bio-statistics and Research Methodology	100	4	4
	Lab Course			
FST 106	Food Chemistry & Advances Lab	50	2	3
FST 107	Food Microbiology & Advances Lab	50	2	3
FST 108	Fruits, Vegetable Technologies & Advances Lab	50	2	3
II SEMESTER				
FST 201	Cereals, Pulses, Oil Seed Technologies & Advances	100	4	4
FST 202	Spices, Plantation Crop Technologies & Advances	100	4	4
FST 203	Fundamentals of Food Engineering	100	4	4
FST 204	Food Safety and Standards	100	4	4
FST 205	IT in Food Processing	100	4	4
	Lab Course			
FST 206	Cereals, Pulses, Oil Seed Technologies & Advances Lab	50	2	3
FST 207	Spices, Plantation Crop Technologies & Advances Lab	50	2	3
FST 208	Fundamentals of Food Engineering Lab	50	2	3
	Internship during Summer vacation	100	4	
II Year				
III SEMESTER				
FST 301	Milk, Milk Products Technology & Advances	100	4	4
FST 302	Meat, Fish Technologies & Advances	100	4	4
FST 303	Food Packaging	100	4	4
	Elective I			
FST 304	Confectionary Technology	100	4	4
FST 305	Beverage Technology	100	4	4
	Elective II			
FST 304	Flavor Technology	100	4	4
FST 305	Frozen Food Technology	100	4	4
	Lab Course			
FST 306	Milk, Milk Products Technology & Advances Lab	50	2	3
FST 307	Meat, Fish Technologies & Advances Lab	50	2	3
FST 308	Food Packaging Lab	50	2	3
IV SEMESTER				
FST 401	MOOC 1	100	3	
FST 402	MOOC 2	100	3	
FST 403	Project Work/ Internship	250	12	
	Total	2500	100	

Signature

M.Sc. Food Science and Technology Syllabus

I YEAR I SEMESTER

FST 101: FOOD CHEMISTRY & ADVANCES

UNIT - I

Introduction: Constituents of food, Energy requirement. Water - physico-chemical properties, water activity and binding in food,.

Carbohydrates: Classification, Structure, Physico-chemical properties importance of monosaccharides, disaccharides and polysaccharides. Carbohydrate digestibility, enzymatic and chemical reactions. Functional properties of dietary carbohydrates- Biological role of Dietary fibre– Nutrition - Flavor and colour development Sweetness – Texturing characteristics of carbohydrates – Plasticizing action and Humectancy of carbohydrates; Non-nutritive sweeteners.

UNIT - II

Fats and Oils: Definition and classification –role and uses of lipids –Fatty acids in foods – Plasticizing properties of fats – Enrobing fats – Emulsifying properties of fats – Rancidity and reversion of fats; crystallization and consistency, lipolysis, auto oxidation, chemistry of frying of fat and oils; hydrogenation of fats, esterification.

UNIT - III

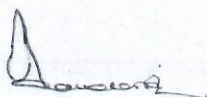
Proteins and Enzymes: Classification, structure and functions – Role of proteins and requirements. Denaturation of proteins; Chemical and enzymatic modification of proteins. Amino acids-Definition, classification, properties, Functions of proteins in foods – physical and chemical properties of proteins, Important protein sources– Milk, Meat, Fish, Egg and Cereal proteins – Enzymes – Endogenous enzymes in foods and their activity – Enzymes as food processing aids.

UNIT - IV

Vitamins and Minerals: Definition –Classification, general sources, structure, properties, functions and dietary requirements – deficiency symptoms and toxicity of fat soluble and water soluble vitamins. Losses of vitamins and minerals, optimization and retention of vitamins and minerals.

Food additives – classification and purpose – Role of thickeners, sweeteners, stabilizers, emulsifiers, leaveners, colours, flavoring agents, preservatives – examples.

Food Pigments & Flavouring Agents: Importance, types and sources of pigments — their changes during processing & storages.



Text Books

1. Owen R, Fennema, 1996. Food Chemistry, 3rd Edition. Marcel Dekker, Inc., New York, USA.
2. H.-D. Belitz, W. Grosch and P. Schieberle. 2009. Food Chemistry, 4th Ed. Springer-Verlag Berlin Heidelberg.
3. Fox, B. A. and Cameron, A.G., "Food Science, Nutrition and Health", 5th Edition, Edward Arnold, London 2005.

References:

1. Srinivasan Damodaran, Kirk L. Parkin, and O.R. Fennema, E, "Food Chemistry" 4th Edition, CRC Press, New York 2007.
2. Sivasankar, B, "Food processing and preservation" Prentice – Hall of India Pvt. Ltd. New Delhi 2002.

FST 102 FOOD MICROBIOLOGY & ADVANCES

UNIT I

Introduction: History, Development and scope of Microbiology - Classification and Identification of Microorganisms – Bacteria, fungi, viruses, protozoa and bacteriophage Morphology, cultivation. Recent advances in detection of microorganisms - Nucleic acid probe hybridisation, the polymerase chain reaction, the ligase chain reaction, transcription mediated amplification. Growth curve – microscopy – types - importance of micro organisms in food.

UNIT II

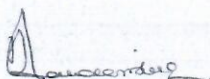
Isolation of Microorganisms: Methods of isolation and purification – preparation of media – types of nutritional media – staining techniques – Simple, differential and structural staining – preservation of the microbial culture- primary sources of micro organisms in food- Factors affecting the growth and survival of microorganisms - Intrinsic and extrinsic factors.

UNIT III

Microbial spoilage in Foods: Types of micro organisms in food via meat, poultry, sea foods, vegetables, dairy products, fruits and vegetables. Assessing microbial population in food- meat, poultry, fish and dairy products- microbial spoilage of fruits, vegetables, cereal and bakery products, meat products and egg.

Harmful Micro-organism and Beneficial Micro-organism: Food borne diseases – food infection and food intoxication, toxins - bacterial, fungal and algal – symptoms, causes and control measures.

Micro organisms as food- Single Cell Protein Fermented food- pickles, sauerkraut- vinegar and lactic acid.



UNIT IV

Food Preservation: Preservation by Moist Heat-Heat Resistance of microorganisms and spores. Decimal reduction time (D values), 12D concept, Thermal Death Time curves. Unit of lethality, determination of process – General, improved method and other methods lethality requirements, effective F values. Preservation by low temperature. The behaviour of microorganisms under freezing and refrigeration environment. Growth and lethal effects of low temperature treatments on microorganisms in raw and processed foods.

Text Books

1. Pelczar, M.J., E.C.S. Chan and N.R. Krieg. "Microbiology". McGraw-Hill New York 1993.
2. Frazier, W.C. and Westhoff, D.C. "Food Microbiology". Fourth Edition. Tata McGraw Hill Publishing Co. Ltd., New Delhi 2008.

References

1. Banwart, G.J. "Basic Food Microbiology" Van No Strand Reinhold Publishers, New York 1989.
2. Jay, J.M., "Modern Food Microbiology". CBS Publishers & Distributors, New Delhi 2000.

FST 103: PRINCIPLES OF FOOD PRESERVATION

UNIT:- I

Definition, history, scope and principles of food preservation, classification of foods based on perishability, causes of quality deterioration and spoilage. Methods of food preservation; Preservation by traditional methods: Curing, smoking, and etc., Natural Preservation: sugar and salt, oil, anti-microbial agents, biological agents, chemical preservation and Hurdle technology. Preservation by fermentation.

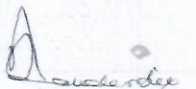
UNIT:- II

Radiations: Sources of radiations, units and dosages, effect on microorganisms and different nutrients; safe limits, irradiation mechanism

Preservation by water removal from liquid foods: Evaporation. Preservation by drying and dehydration of foods, Cabinet, tunnel, belt, bin, drum, spray, vacuum, foam mat, fluidized-bed and freeze drying of foods

UNIT :- III

Preservation by heat treatment: blanching, canning, pasteurization, sterilization, extrusion, baking, roasting, frying. Preservation of foods by low temperatures: Chilling: Chilling injury, Applications and procedures, Controlled and Modified atmospheric storage of foods. Freezing: Slow and quick freezing of foods; Frozen storage and thawing of foods, Individual Quick Freezing; Freeze concentration and membrane process for food concentrations.



UNIT:- IV

Recent (Non-thermal) preservation processes: Pulsed electric field and pulsed intense light, ultrasound, dielectric heating, ohmic and infrared heating, high pressure processing, cold plasma, oscillating magnetic field and microwave processing, etc.

Text Books:

1. Food Science, Norman N. Potter and J.H. Hotchkiss, Chapman and Hall, 5th Edition., 1998.
2. Food processing technology: principles and practice, P. J. Fellows, Taylor and Francis, 3rd Edition 2009.
3. Handbook of Food Preservation, M. Shafiur Rahman. CRC Press, Boca Raton, FL, USA, 2nd Ed. 2007.

References:

1. Principles of Food Science-Part-II: Physical Method of Food Preservation, M. Karel, O.R. Fennema and D.B. Lund, Marcel Dekkar Inc., 2nd Edition, 2001.
2. Principles of Food Preservation, V. Kyzlink, Elsevier Press, 2nd Edition, 2003.
3. Modern Food Microbiology, J. M. Jay, D. Van Nostrand, 7th Edition, 2005.
4. Food Processing Handbook. James G. Brennan, Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany, 2006

FST 104: FRUITS, VEGETABLE TECHNOLOGIES & ADVANCES

UNIT – I

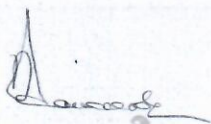
Scope, Production and processing scenario of fruits and vegetables in India and world; Supply chain of fresh fruits and vegetables; Primary processing and pack house handling of fruits and vegetables; Peeling, slicing, cubing, cutting and other size reduction operations for fruits and vegetables; Storage of Fresh Fruits and Vegetables: Containers: Tin, glass and other packaging materials. Canning and spoilage of canned foods, detection and control.

UNIT – II

Preparation of Juice, Squash, Syrup, Sherbet, Nectar, Cordial, Crush etc.; FSSAI specifications, Processing for above products; Preparation of crystallized fruits and preserves, Jam, Jelly and Marmalades, defects in making, Candies; FSSAI specifications.

UNIT – III

Preparation of Chutney, Pickles, Sauce, Puree, Paste, Ketchup; Toffee, Cheese, Lather. Production of Pectin and Vinegar; Commercial processing technology of selected fruits and vegetables for production of various value-added processed products; FSSAI specifications.



UNIT – IV

Minimally processed Fruits and Vegetables: Factors affecting shelf life and the quality of minimally processed fruits and vegetables. Dehydration of Fruits and Vegetables: Methods; packaging, storage. Products: Dehydrated, Wafers and Papads, Soup powders; Use of food additives in fruit and vegetable preservation; Restructured fruits & Vegetables; FSSAI specifications. Non-thermal processing of fruits and vegetables and processed products. Commercially available non thermal processed fruits and vegetables.

Text Books:

1. Giridhar Lal, Siddappa and Tandon. Preservation of fruits and vegetables. ICAR, New Delhi.
2. Sudhir Gupta (Compiled). Fruits and Vegetables Processing Hand Book. EIRI, Delhi.
3. Srivastava. P.R. and Sanjeev Kumar. Fruit and vegetable preservation - 3rd Edition. International Publishers, Delhi.
4. Y.H. Hui. 2006. Handbook of Fruits and Fruit Processing. Blackwell Publishing Ltd., Oxford, UK.

References:

1. Norman Potter. Food Science. CBS publishers and distributors, New Delhi.
2. Joshi and Pandey. Biotechnology: Food Fermentation, Volume-II. Educational Publishing and Distributing Co
3. EIRI Board of Consultants and Engineers. Manufacture of Snacks, Namkeen, Papads and Potato products-EIRI.
4. A.K. Thompson. 2003. Fruit and Vegetables: Harvest, Handling and Storage, 2nd Ed. Blackwell Publishing Ltd., Oxford, UK.

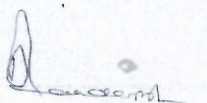
FST 105: BIO-STATISTICS AND RESEARCH METHODOLOGY

UNIT: I

Scope and importance of Biostatistics; Measures of Central Tendency – Mean, Mode, and Mode for Grouped and Ungrouped Data, Measures of Variability – Range, Variance, Standard Deviation and Standard Error, Measures of Relative Positions - Sigma Scores, Standard Scores Percentiles, Percentile Ranks, Measures of Relationships – Correlation and Regression Analysis, Measures of Shape – Skewness, Kurtosis

UNIT: II

Variables and Scales of Measurement, Tabulation and Graphical Presentation of Data – Probability, Theoretical conditional, Gaussian Curve, Binomial Distribution, Poisson Distribution, Density Functions, Calculations and Interpretation of Statistical Procedures - Parametric and Non-parametric tests - Student's t- test, Mann Whitney U test, Chi-square test, ANOVA. Vital Statistics and Life Tables, Use of Statistical Software - SPSS



UNIT: III

Significance, Purpose and Types of Research; Research Methodology – Basics, Origin and identification of problem, Literature survey, Formulation of hypothesis, Research Tools and Methodology of Data Collection, Experimental design, Execution, Sampling, Analysis of data, Testing of hypothesis, Interpretation of research findings; Ethics in Research, Databases in Food Research.

UNIT:IV

Methodology for writing scientific report writing and publication in peer reviewed scientific journals- use of vocabulary, art of illustration, manuscript preparation as per journal guidelines; Preparation of project proposal- Project description, goals, work plan, Expected outcome, progress reporting; Plagiarism.

Text books and Reference materials

1. Bandarkar, P.L. and Wilkinson T.S. (2000): Methodology and Techniques of Social Research, Himalaya Publishing House, Mumbai.
2. Copper, H.M. (2002). Integrating research: A guide for literature reviews (2nd Edition). California: Sage
3. Harman, E & Montages, I. (Eds.) (2007). The thesis and the book, New Delhi : Vistar.
4. Mukherjee, R. (1989): The Quality of Life: Valuation in School Research, Sage Publications, New Delhi.
5. Stranss, A and Corbin, J. (1990): Basis of Qualitative Research: Grounded Theory Procedures and Techniques, Sage Publications, California

SEMESTER I: LAB COURSE

FST 106: FOOD CHEMISTRY & ADVANCES LAB

Laboratory Experiments:

1. Sampling plan; Sampling requirements, Sample collection and preparation for analysis procedures and methods
2. Determination of pH
3. Determination of moisture content of foods by oven drying and distillation methods
4. Determination of Total and Acid insoluble ash content in foods
5. Determination of crude fat content by solvent extraction methods in foods
6. Determination of crude Protein by Kjeldhal Lowry method & other methods



7. Determination of reducing and total sugar content in foods
8. Determination of crude fibre content in foods
9. Determination of specific mineral contents in foods such as Calcium, Iron, Phosphorus, Chloride etc.
10. Determination of specific vitamin content of food such as ascorbic acid, carotenes etc.
11. Determination of specific Natural and/ or added Colouring Matters in foods
12. Determination of specific added food Preservatives in foods

FST 107: FOOD MICROBIOLOGY & ADVANCES LAB

Laboratory Experiments:


1. Familiarization with common techniques for handling pure culture serial dilution, Inoculation, slide preparation incubation, counting etc.
2. Direct total, viable, and non-viable count of microorganisms in milk.
3. Preparation and sterilization of media and glass ware for microbial counts.
- 4-6. Determination of Standard Plate Count (SPC) in natural and/or processed foods like cereal and cereal products, vegetable and fruits, meat and meat products, fish and other sea foods, Eggs and poultry, milk and milk products; sugar, salts and spices.
- 7-9. Microbiological examination of some selected natural and processed foods like cereal and cereal products, vegetable and fruits, meat and meat products, fish and other sea foods, Eggs and poultry, milk and milk products; sugar, salts and spices.
- 10-12 Microbiological examination of potable water: Total and coliform count.
- 13-15. Enumeration of coliform organism in some selected processed foods like cereal and cereal products, vegetable and fruits, meat and meat products, fish and other sea foods, Eggs and poultry, milk and milk products; sugar, salts and spices.

FST 108: FRUITS, VEGETABLE TECHNOLOGIES & ADVANCES LAB

Laboratory Experiments:

1. Estimation of benzoic acid & SO₂
2. Pectin determination in fruits and vegetable products.
3. Preparation fruit juices e.g. carambola, orange, pineapple, mango etc.
4. Canning of fruits and vegetables
5. Extraction of Pectin (identification pectin rich foods, chemistry and interaction of pectin with other components)
6. Preparation of jams and jellies, marmalade, crystallized & glazed fruit, preserves and candies (knowledge on selection of fruits)
7. Preparation of Syrup, Squash, Crush
8. Preparation of tuti-fruti

9. Preparation of pickles, chutneys
10. Preparation of tomato products
11. Preparation of Papain
12. Drying of fruit and vegetables (Soup powders, dried products)
13. Visit to a Canning Plant
14. Visit to Fruits and Vegetable processing industries; processing of Mushrooms.

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M.Sc. Food Science and Technology
SEMESTER - END EXAMINATION
Theory Model Question Paper Pattern

Time: 3 hrs

Max. Marks: 75

Section-A

Answer all questions. Each question carries 15 marks.

4x15=60

Q1. Unit-1

a or b

Q2. Unit-2

a or b

Q3. Unit-3

a or b


Q4. Unit-4

a or b

Section-B

5x3=15

Q5. It contains 8 short questions with at least two from each unit, carrying 3 marks.
5 questions are to be answered.



M.Sc., Food Science & Technology: Semester – I
SEMESTER-END EXAMINATION
Theory Model Question Paper Pattern
PAPER CODE 101: FOOD CHEMISTRY & ADVANCES
(With effective from the Admitted batch of 2023-24)

Time: 3 Hrs.
Marks

Max Marks: 75

Section – A

4 X 15 = 60

Answer all four questions (Choosing ONE from each Unit). Each question carried 15 marks

1. a) What are carbohydrates? Describe the classification of carbohydrates with structure and examples.

OR

b) What are dietary fibers? Explain the functional properties of dietary fibers and its Biological role in nutrition.
2. a) What are fats and oils? Explain the physicochemical properties of lipids.

OR

b) Define Triglycerides. Explain the physical properties of triglycerides and its biological role
3. a) Define proteins. Explain the structure and classification of protein with examples.

OR

b) Define enzymes. Describe the different classes of enzymes and importance of enzymes in Food industry
4. a) Define Vitamins. Explain the classification of vitamins with dietary sources and deficiency disorders.

OR

b) Define food additives. Explain the classification of food additives with examples.

Section – B

5 X 3 = 15

It contains 8 short questions with at least two from each unit. Each question carries 3 marks (Covering all units) Answer any five of the following.

5. Water Activity
6. Natural and Artificial Sweeteners
7. Humectants
8. Endoenzymes
9. Toxicity of Vitamins
10. Emulsifying fats
11. Food Pigments
12. Structural classification of Proteins

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M.Sc., Food Science & Technology: Semester – I
SEMESTER-END EXAMINATION
Theory Model Question Paper Pattern
PAPER CODE 102: FOOD MICROBIOLOGY & ADVANCES
(With effective from the Admitted batch of 2023-24)

Time: 3 Hrs.

Max Marks: 75 Marks

Section – A

4 X 15 = 60

Answer all four questions (Choosing ONE from each Unit). Each question carried 15 marks

1. a) Define the term microbiology. Explain the scope and importance of microbiology in food industry

OR

b) Describe the classification of microorganisms. Explain the different stages of growth of microorganisms with the help of growth curve.

2. a) Explain the primary sources of microorganisms in food and describe the factors effecting the growth of microorganisms.

OR

b) Describe the process of isolation of micro-organisms in foods. Explain the different Staining techniques used in microbiology.

3. a) Explain microbial spoilage in foods. Describe the classification of food based on spoilage with examples.

OR

b) Define SCP. Explain the food microbiology of cereals and bakery products.

4. a) What is food preservation? Describe different food preservation techniques.

OR

b) Define 12-D concept. Explain the behavior of microorganisms under low temperature environment

Section –B

5 X 3 = 15

It contains 8 short questions with at least two from each unit. Each question carries 3 marks (Covering all units) Answer any five of the following.

5. Prokaryotic and Eukaryotic cell
6. Bright-field & Dark-field microscopy
7. Differential staining
8. Fermented Food Products
9. Culture Media
10. D-value & F-value
11. Freezing
12. Beneficial microorganisms



M.Sc., Food Science & Technology: Semester – I
SEMESTER-END EXAMINATION
Theory Model Question Paper Pattern
PAPER CODE 103: PRINCIPLES OF FOOD PRESERVATION

(With effective from the Admitted batch of 2023-24)

Time: 3 Hrs.

Max Marks: 75 Marks

Section – A

4 X 15 = 60

Answer all four questions (Choosing ONE from each Unit). Each question carried 15 marks

1. a) Define food preservation. Explain the food preservation techniques (Traditional, chemical, and natural)

OR

b) Define Drying and dehydration. Explain the Cabinet dryer, Fluidized bed dryer, Spray dryer, and freeze dryer with a diagram.

2. a) What is food irradiation? Explain the mechanism, units of dosage, effect on microorganisms.

OR

b) Define evaporators. Explain the types of evaporators.

3. a) List and Explain the types of preservation by high and low temperature treatment.

OR

b) Explain controlled atmospheric storage and modified atmospheric storage.

4. a) Explain the mechanism, applications, laws involved in high pressure processing.

OR

b) Explain broadly with mechanism and application about pulse electric field and Microwave treatment

Section –B

5 X 3 = 15

It contains 8 short questions with at least two from each unit. Each question carries 3 marks (Covering all units) Answer any five of the following.

5. Classification of foods based on perishability.
6. Hurdle technology
7. Fermentation preservation
8. Slow and quick freezing
9. Chilling and chilling injury
10. Dielectric heating
11. Infrared heating
12. Pasteurization and sterilization



M.Sc., Food Science & Technology: Semester – I
SEMESTER-END EXAMINATION
Theory Model Question Paper Pattern
PAPER CODE 104: FRUITS, VEGETABLE TECHNOLOGIES & ADVANCES
(With effective from the Admitted batch of 2023-24)

Time: 3 Hrs.

Max Marks: 75 Marks

Section – A

4 X 15 = 60

Answer all four questions (Choosing ONE from each Unit). Each question carried 15 marks

1. a) What is the process of canning? Explain the spoilage of canned foods.
OR
b) What is pickling? Explain the process of pickling of any product with flowchart.
2. a) Explain processing of Jam and Jelly with flowchart. State the defects of processing the crystallized products and FSSAI standards.
OR
b) Explain the processing of squash and nectar with flowchart. State the FSSAI standards for processing these products and equipment's required for their processing.
3. a) Explain the commercial processing of mango or any fruits and their value-added products produced.
OR
b) Explain the commercial processing of tomato or any vegetables and their value-added products produced
4. a) Explain the primary and secondary processing of fruits and vegetables with processing steps. Explain the factors affecting the shelf life and quality of primary processing fruits and vegetables.
OR
b) Explain the processing of soup powders and wafers. Explain the packaging methods and storage of fruits, vegetables, and dehydrated products.

Section –B

5 X 3 = 15

It contains 8 short questions with at least two from each unit. Each question carries 3 marks (Covering all units) Answer any five of the following.

5. Hydrogen swell, Flipper and springer in canning
6. Cubing and cutting
7. Blanching
8. Aseptic canning
9. Screening, Sorting and Grading
10. HACCAP, FSSAI, GMP (Full forms)
11. Explain types of peeling
12. Ultrasound principle for treatment of fruits and vegetables



M.Sc., Food Science & Technology: Semester – I
SEMESTER-END EXAMINATION
Theory Model Question Paper Pattern
PAPER CODE 105: BIostatistics AND RESEARCH Methodology
(With effective from the Admitted batch of 2023-24)

Time: 3 Hrs.

Max Marks: 75 Marks

Section – A

4 X 15 = 60

Answer all four questions (Choosing ONE from each Unit). Each question carried 15 marks

1. a) List the measures of central tendency and variability. Explain the types with formulas.

OR

- b) List the measures of relative positions and relationships and explain their types.

2. a) Define parametric and Non-parametric tests. Explain the list of Non-parametric with statistical examples

OR

- b) What is ANOVA. List and explain the variables in ANOVA table.

3. a) Define Research and research Methodology. Explain the types of research and Criteria of good research.

OR

- b) Describe the different steps in research process. Explain the methodology of data collection.

4. a) What is report writing? Explain structure, types and significance of report writing.

OR

- b) What is sampling? Discuss the ethics in research and explain process of project proposal in research

Section –B

5 X 3 = 15

It contains 8 short questions with at least two from each unit. Each question carries 3 marks (Covering all units) Answer any five of the following.

5. Poisson Distribution
6. Skewness
7. SPSS
8. Gaussian curve
9. Literature Survey
10. Testing of Hypothesis
11. Plagiarism
12. Work plan

