PANJAB UNIVERSITY, CHANDIGARH-160014 (INDIA)

OUTLINES OF TESTS SYLLABI AND COURSES OF READING

FOR

Bachelor of Vocation (Food Science and Technology)

Session 2018-19

(1st to 6th Semester)

Semester III

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***Refer to Generic Components Common to all B.Voc. Courses**

**** Summer Industrial Training of 4-6 weeks in a relevant Industry after 4th Semester Examinations during summer break. Training report by the student to be submitted within in one week of start of 5th Semester. Viva-Voce examination to be held within 3-weeks of the start of 5th semester.**
Job Role: Food Microbiologist

Semester V								
Paper Code	**Title**	**Generic/ Skill Component**	**Theory/ Practical**	**Internal (Theory)**	**External (Theory)**	**Internal (Practical)**	**External (Practical)**	**Credit**
***GEN 501**		**Generic**	**Theory**	20	80	--	--	6
FST502	**Food Plant Layout and Business Ethics**	**Generic**	**Theory**	20	80	--	--	6
FST 03	**Principles of Management**	**Skill**	**Theory**	20	80			6

SEMESTER I

FST 103 Credits 6

Paper – Skill- INTRODUCTION TO FOOD MICROBIOLOGY

Course Objectives: To understand the types of food

Practical:

1. Introduction to the Basic Microbiology Laboratory Practices and Equipments
2. Functioning and use of compound microscope
3. Cleaning and sterilization of glassware
4. Preparation and sterilization of nutrient broth
5. Cultivation and sub-culturing of microbes
6. Preparation of slant, stab and plates using nutrient agar
7. Morphological study of bacteria and fungi using permanent slides
8. Methods of sterilization and preparation of media
9. Simple staining
10. Endospore staining
11. Standard Plate Count Method

Recommended Readings

1) Frazier William C and Westhoff, Dennis C. Food Microbiology, TMH, New Delhi, 2004
2) Jay, James M. Modern Food Microbiology, CBS Publication, New Delhi, 2000
3) Garbutt, John. Essentials of Food Microbiology, Arnold, London, 1997
4) Pelczar MJ, Chan E.C.S and Krieg, Noel R. Microbiology, 5th Ed., TMH, New Delhi, 199
5) Adams M.R and Moss M.O, 2004 "Food Microbiology", Panima Publishing corporation, New Delhi, 2ndEdition.
6) Sivasankar B, 2009. "Food Processing and Preservation", PHI Learning Private Limited, Eastern Economy Edition, 6th edition,
7) William C Frazier and Dennis C. Westoff , 2008. "Food Microbiology", Special Edition, Springer, The Mc Graw-Hill Companies,

SEMESTER I

FST 104 Credits – 6

Paper Skill BAKERY AND CONFECTIONERY TECHNOLOGY-I

Course Objectives:

• To provide know about the machinery and process involved in the baking process
• To understand the various types of sugar and its grades
• To know the confectionery product manufacture

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
All questions carry equal marks

Unit I

• Introduction to food processing and preservation.
• Various products of the bread and bakery sub-sector
• List the various types of industries within the bakery sub-sector
• Explain the baking process
• Equipments used in Bakery (Dough mixers, Dividers, rounders, Proofing, moulding, Ovens, Slicers etc), Cleaning and maintenance of the work area and machineries , Baking ingredients required for production and plan production sequence
• Testing of Flour For Bakery Goods: Laboratory testing of Wheat grain Quality, Moisture tests, Grain hardness testing. Testing, Visco graph, Amylograph, Ferinograph. Units of measurement used in the baking industry.
• Raw material required for bakery products. Role of flour, water, yeast, salt,Sugar milk and fats.
• Yeast- An elementary knowledge of Baker's yeast, the part it plays in th fermentation of dough and conditions influencing its working .
• Effect of over and under fermentation and under proofing of dough and other fermented goods

- Sponge and dough method Characteristics of good bread
- External Characteristics – volume, symmetry of shape
- Internal characteristics- colour, texture , aroma, cliarity and elasticity Bread faults and their remedies.
Bread diseases- Rope and Mould – causes and prevention.

Practicals

1. Preparation of cookies and biscuits
2. Preparation of different types of cakes
3. Preparation of different types of pastries
4. Preparation of different types of ice creams (Vanilla, Strawberry, chocolate, Pineapple, Mango)
5. Preparation different types of Pudding
6. Preparation of Bread rolls; Bread sticks & softs rolls;

SEMESTER I

FST 105 Credits 6

Paper Skill BAKERY AND CONFECTIONERY TECHNOLOGY-II

4. Perform the quality assessment test on yeast and skimmed milk powder for bakery application.
5. Prepare Chocolate cookies and assessment of its quality.

Reference Books

1. Samuel A. Matz, “Bakery Technology and Engineering”, Chapman & Hall, 3rd

SEMESTER II

FST 202

Paper GEN MANAGEMENT OF FOOD INDUSTRY Credits 6

Objectives :

SEMESTER II

FST 203 Credits 6

PRACTICAL

1. To perform platform tests in milk.(Acidity, COB,MBRT, specific gravity, SNF)
2. To estimate milk protein by Folin method.
3. To estimate milk fat by Gerber method.
4. Preparation of flavoured milk/. Pasteurization of milk
5. To prepare casein and calculate its yield.

Recommended Readings

1. De Sukumar, Outlines of Dairy Technology, Oxford University Press, Oxford. 2007
2. Hall GM, Fish Processing Technology, VCH Publishers Inc., NY, 1992
3. Sen DP, Advances in Fish Processing Technology, Allied Publishers Pvt. Limited 2005
4. Shahidi F and Botta JR, Seafoods: Chemistry, Processing, Technology and Quality, Blackie Academic & Professional,London,1994
5. Webb and Johnson, Fundamentals of Dairy Chemistry

• Method of documenting and recording the details of raw material to final finished product

PRACTICAL :

1 Platform tests,
2 Determination of fat, SNF, TS Protein,
3 Lactose and ash contents of milk.
4 Layoput plan for setting up of milk plant,
5 Preparation and Evaluation of different types of milk and milk products 6
Preparation and evaluation of butter, ice cream, cheese, yoghurt

Text Books/References:

1 Sukumar. 1983. Outlines of Dairy Technology. De,Oxford University Press.
2. James N.Warner.1989. Principles of Dairy Processing by, Wiley Eastern Ltd.
3. Eckles,Combs; and Macy. 1982. Milk and Milk Products by,Tata McGraw Hill.
4. Aneja et al. 2002.Technology of Indian Milk Products.A Dairy India Publication.

SEMESTER II

FST 205 Credits 6

Paper Skill FOOD PACKAGING

Course Objectives

• Filling and sealing of Flexible plastic containers, Seal types, Hot wire sealing, hot bar sealing and impulse sealing. Form fill

• Seal equipment: Printing on packages, Bar codes, Nutrition labeling and legislative requirements. Filling and Sealing of pouches, pouch from fill seal machines.

• Active packaging, Moisture control, CO2 and Oxygen scavenging, Modified atmosphere packaging – principles, applications.

• Permeability of gases in packs.

• Speciality packages.

• Personal hygiene and sanitation guidelines; • Food safety hygiene standards in a work environment,

SEMESTER III

FST 302 Credits 6

PAPER General - FST 302: FOOD BIOCHEMISTRY

Objectives: The paper provides basic information on chemical, physical and functional properties of various biomolecules present in food and how they contribute to the overall quality of foods.

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
All questions carry equal marks

UNIT I

Introduction to Biomolecules –

- Major and minor constituents of food, Bioavailability of nutrients, their functions, sources, Basics of bioenergetics.
- Carbohydrates - Classification, structure & properties, artificial sweeteners.
- Proteins - Structure and classification of amino acids, essential and non-essential amino acids, structural organization of proteins, physico-chemical properties of proteins, catabolism of proteins in prokaryotes.
- Lipids – Classification and its

UNIT II

- Biosynthetic Pathways: Brief account of Biosynthesi

Practicals

1. Introduction and study of microbiological instruments.
2. Media preparation, aseptic techniques and transfer of microorganisms.
3. To study various culture techniques- pour plating, spread plating and streaking.
4. To study morphology of bacteria by simple staining and negative staining.
5. Principle, procedure and use of gram staining method.
6. Staining of bacterial spores.
7. To distinguish the growth characteristics of microorganisms in various differential and selective media.
8. Identification of fungi by Lactophenol cotton blue staining method.
9. Sampling and observation of microorganisms from natural sources.
10. To study serial dilutions of the sample and plate counts.
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SEMESTER III

FST 304 Credits 6

PAPER FST 304: :FOOD ANALYSIS AND INSTRUMENTATION

Objectives: To generate the skill of handling the different instruments of food process technology. • To study the various techniques of food analysis.

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
All questions carry equal marks

Unit 1

- Introduction to food analysis, type of samples and sampling techniques, storage and preservation of samples, expression of results. Different preservation principles involved in food processing Sampling: Sampling techniques and preparation of food samples. Sampling of Milk, Eggs, Dried &Frozen food products.
- Physico chemical methods for food analysis: Moisture & Total solids Carbohydrates Proteins Fats Fiber Ash & its types Minerals Vitamins Enzymatic methods
- Sensory Tests : Difference, Rating & Sensitivity tests. Types of panels Testing area & schedule

Unit II

- Instrumentation in food analysis : Principles, types and applications of colorimetry and electrophoresis and chromatography :paper, thin layer, ion exchange

Unit III

- Instrumentation in food analysis: Color measurement in foods. X-ray analysis of foods and its applications, scanning electron microscopy (SEM) in food analysis and identification

Unit IV

- Ultrasonic and other instruments for determination of physical and rheological properties of food Texture analysis in foods.
- Sensory versus instrumental analysis of texture, rapid methods of microbial analysis, immunoassays; Techniques for estimation and analysis of toxins and pesticides in food.

Practicals:

1. Use of spectrophotometer in food content estimations.
2. Determination of physical and rheological properties of foods by different techniques .
3. Separation of food components by chromatography**.**

Reference Books:

1. SemihOtles. 2008. Handbook of Food Analysis Instruments. CRC Press
2. Gulaboski, Rubin and Carlos M, Pereira (2008) Electrochemical techniques and instrumentation in Food Analysis in Handbook of Food Analysis Instruments (book, SemihOtles, ed.). In: Handbook of Food Analysis Instruments. Wiley.Practicals
3. Nielsen, S.S, 2004, Introduction to chemical Analysis of foods, CBS Publishers, New Delhi.
4. Ranganna. S., 2001, Handbook of Analysis & Quality control for Fruit & Vegetable Products, Tata McGraw Hill, New Delhi.
5. Pomeranz.Y, Meloan.C.E, 1996, Food Analysis – Theory & Practice, CBS Publiushers, New Delhi
6. Jacobs.M.B., 1999, Chemical Analysis of Food & Food Products, CBS Publiishers, New Delhi.
7. Jay.J.M, 1996, Modern Food Microbiology, CBS Publishers, New Delhi.
8. Debnath, 2005, Tools & Techniques of Biotechnology, Pointer Publishers, Jaipur

SEMESTER III

FST 305 Credits 6

PAPER FST 305: Microbiological Analysis

Objectives:

- To generate the skill of handling the different instruments of microbiological analysis
- To study the various techniques of microbiological analysis

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
All questions carry equal marks

Unit I

- Equipments and tools used for of food products such as weighing scale,
- homogenizer, autoclave, laminar air flow chamber, v41(e)-141(i)0.89126(p)-18.0723(m)ir26(e)-1.782r·18.0723(m)124894( )-3.

Practicals

1. Quality audit methods and procedures
2. lactophenol staining
3. Hanging drop preparation to observe motility of bacteria

Reference Books:

1. Adams M.R and Moss M.O, 2004 “Food Microbiology”, Panima Publishing corporation, New Delhi, 2ndEdition.
2. Frasier.1987. Food Microbiology.Tata McGraw-Hill Education Reference Books 1.Sivasankar B, 2009. “Food Processing and Preservation”, PHI Learning Private Limited, Easterrn Economy Edition, 6th edition,
3. William C Frazier and Dennis C. Westoff , 2008. “Food Microbiology”, Special Edition, Springer, TheMcGraw-Hill Companies,
4. Jay, James M. Modern Food Microbiology, CBS Publication, New Delhi, 2000
5. Garbutt, John. Essentials of Food Microbiology, Arnold, London, 1997
6. Pelczar MJ, Chan E.C.S and Krieg, Noel R. Microbiology, 5th Ed., TMH, New Delhi, 1993

UNIT IV

Texture:

- Introduction
- Definition and classification of texture profile
- Subjective evaluation, phases of oral processing
- Objective analysis, rheological methods of texture

SEMESTER IV

FST 403 Credits 6

PAPER 403: TECHNOLOGY OF CEREALS, PULSES AND OILSEEDS

THEORY

Objectives:

- To teach technology of milling of various cereals
- To impart technical knowhow of pulses and oilseeds refining
- To create awareness about the processing of major cereals like paddy, maize etc.
- To study the storage and handling techniques of cereals.
- To gain knowledge on processing and milling of pulses.
- To study about the byproducts obtained during processing along with their uses.

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
All questions carry equal marks

UNIT 1: Technology of cereals

- Wheat --Types, milling, flour grade, flour treatments (bleaching, maturing), flour for various purposes, technology of dough development. Chapter4-7, Kent
- Paddy Processing: Composition of paddy, physicochemical properties and Quality characteristics. Curing

SEMESTER IV

PAPER FST 404 Credits 6

- MRA
- Microbiological standards and limits (for processed food, water)
- Microbiological Assessment and categories of food based on microbial quality
- Sampling
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Unit IV

- Food Laws, standards and regulations :History, National and International laws & Regulations: USFDA, EU, USFDA, ISO 9000 series etc. Food laws and standards, IPR and patents, Food standards and safety Act : salient provisions and prospects, role of various national and international agencies
- World Trade Organization (Sanitary and Phyto Sanitary agreement, Technical Barriers in Trade), -Standards of Identity, Standards of fill of the container. Statistical quality control in food industry Food safety and Standards Act 2006: Salient provision and prospects, Role of national and international regulatory agencies, Bureau of Indian Standards (BIS), AGMARK, Food Safety and Standards Authority of India (FSSAI

PRACTICALS

1. Qualitative tests for fats and oils, spices and condiments.
2. Estimation of residual sulphur dioxide in beverages.
3. Chromatographic estimation of colour.
4. Analysis of edible common salt for MC, MIW and total chlorides.
5. Estimation of pesticide residues in food/water.
6. Estimation of benzoic acid in foods.
7. Techniques of quality assessment of different natural and processed foods.
8. Identification and ranking of food product attributes
9. Sensory and instrumental methods for measuring food quality assessment of fruits, vegetable, dairy products, milk and other processed products.

REFERENCE BOOKS –

1. Pieternel A, Luning, Willem J. Marcelis, Food Quality Management, Technological and Managerial principles and practices, Wageningen,2009.
2. Brannen and etal,Food Additives, Marcel Dekker,New York,1990
3. Shalton, Principles and Practices for the safe processing of Foods.
4. DeMan, 3rd edition, Principles of Food Chemistry, Springer, 2007.
5. InteazAlli (2003). Food Quality Assurance Principles and Practices. CRC Press .
6. J Andres Vasconcellos (2003) Quality Assurance for the Food Industry. A Practical Approach.. CRC Press

Semester V

Paper Title: FOOD PLANT LAYOUT AND BUSINESS ETHICS

Paper Code : FST 502

Course objective:

- [illegible]
- [illegible]
- [illegible]

1. Manufacturing Facilities Design and Material Handling by Fred E. Meyers, and Matthew P. Stephens, 3rd Edition, Pearson Prentice Hall, 2000.

2. James M Moore, “Plant Layout and Design”, McMillan & Co., (1959) 3. J M Apple, “Plant layout and Material handling”, John Willey & Sons, (1977)

Practical based on FPP 205 Time: 3 hours 1. Industrial visit and report making.

3. J.P. Sharma, Corporate Governance, Business Ethics & CSR, Ane Books Pvt. Ltd., Nee Delhi.

4. Andrew Crane, Dirk Matten, Business Ethics, Oxford University Press, New Delhi.

5. Daniel Albuquerque, Business Ethics, Principles and Practices (Indian Edition), Oxford University Press, New Delhi

6. Fr. Floriano C. Roa, Business Ethics and Social Responsibility, Rexestore.

7. O. C. Ferrell, John Fraedrich, Linda Ferrell, Business Ethics: Ethical Decision Making & Cases, Cengagae Learning

8. Michael Blowfield, Alan Murray, Corporate Responsibility – A Critical Introduction, Oxford University Press, New Delhi

Semester V

Paper Title: PRINCIPLES OF MANAGEMENT

Paper Code: FST 503

Course Objective:

• To make the students understand the concepts of management & their Practical application in the food industry.

Instructions for paper setters:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising two questions from each unit, including one compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT I

Organization: Concept of organization, Goals and policies, Nature & importance of organization. Standards of business processes of organization.
Principles of organizations: Formal & Informal, Centralized & Decentralized.

Resource management. Code of business conduct and manpower modelling.

Management: Concept of Management. Need and Scope. Levels of management. Types of management. External & internal factors affecting management. Different schools of management thought – Behavioural, Scientific, Systems and Contingency.

UNIT II

Planning: Definition, Nature and importance of planning. Advantages & disadvantages. Types of plans, objectives, strategies, policies, procedures, methods, rules, programs & budgets. Steps in planning. Planning assumptions.

Decision-making: Types of decisions. Step by step decision making process.

Coordination and Controlling: Coordination: Concept, need and techniques. Controlling Objectives and Process of control. Devices of control.

UNIT III

Communication: Definition, Nature, Process of communication.

Types of communication: Upward & downward, Verbal & Nonverbal, Formal & Informal.

Barriers to communication, Methods of improving communication and effectiveness.

Staffing Definition, Delegation and Departmentalization. Authority & responsibility. SWOT

Analysis of staff. Recognizing and rewarding staff embers.

UNIT IV

Leadership: Definition. Leadership theories: Behavioural, contingency and emerging leadership theories. Different styles of leadership. Characteristics of a good leader.

Motivation: Definition. Nature & importance. Benefits of motivated

UNIT IV

Management of trials production: Objective of trial production and trial product, processing method and specification. Selection of production team for trial. Preparation of technical production procedures (considering all engineering and process parameters for new product trial).

Preparation of detailed trial production schedule. Monitoring trial production. Documentation and evaluation of trial production data and identification of process/parameters to be modified/changed to achieve required specification.

Textbooks/References:

1. Economics and Management of the food industry by Jeffrey H. Dorfman- Routledge Publishers, 2013.
2. Energy Efficiency and management in food processing facilities by Lijun Wang- CRC Publications, 2008.

Practical based on FST-504

Practical: 40
Internal Assessment: 10
Total Marks: 50

B.Voc. (Food Science and Tecchnology)

Semester V

Paper Title: PRODUCTION OPTIMIZATION & COST EFFICIENCY

Paper Code: FST 505

Course Objective:

- To make students understand management of production optimization and cost efficiency by managing utilities and energy, optimizing production and implementing changes in production process.

Instructions for paper setters:

1. The syllabus of this paper has been divided into four units.

Semester VI

Paper Title: PROJECT MANAGEMENT
Paper Code: FST 602

Course Objectives:

The objective of this paper is to provide knowledge to students about the essentials of undertaking projects in an organizational environment.

Instructions:

• The syllabus of this paper has been divided into FOUR units.

• Examiner will set NINE questions comprising two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.

The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.

• All questions carry equal marks.

UNIT-I

Paper Title: BUDGETARY CONTROL & OPTIMIZATION
Paper Code: FST 603

Course Objective:

- To make students understand the importance of budget in food industry and manage production within budget during production process in food processing unit.

Instructions for paper setters:

1. The syllabus of this paper has been divided into four units.
2. Examiner will set a total of nine questions comprising two questions from each unit, including compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT I

Budget management: Definition of Budget. Objectives, Types of budgets. Accounting models to manage budget. Budgetary systems. Monitoring methods. Evaluation of performance against budgets.

General concept of Budget control: Fundamentals of controlling activity. Principals of efficiency in the control process. Analysis of budget deviation.

UNIT II

Production within optimum budget: Allocation of budget for product/manpower**.** Scheduling production and planning timings. Identification of variances in budget control and revision. Ways of reducing expenditure.

UNIT III

Variance analysis: Types of variances: cost variances, material variances, labor variances, overhead and fixed overhead variances, sales variance, profit variance.

Identification of variances: Identify situations of actual budget exceeds the approved budget. Investigate reason for variance. Corrective measures to keep budget under control.

UNIT IV

Identification of impact on budget of production-related decisions: Scheduling holidays. Adjusting production volume. Scheduling equipment maintenance. Identification of opportunities to improve performance.

Financial and accounting procedures of the organisation: Principles and processes involved in business and financial control.

Textbooks/References:

1. Purchasing and Inventory Management by K S Menon and Sarika Kul

Semester VI

Paper Title: DOCUMENTATION SYSTEM MANAGEMENT
Paper Code: FST 604

Course Objective:

- To make students understand various documents in food industry and develop processes to pass audits.

Instructions for paper setters:

1. The syllabus of this paper has been divided into four units.
2. Examiner will set nine questions comprising two questions from each unit and one compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt five questions in total including compulsory question and one question from each unit.
4. All questions carry equal marks

UNIT I

Documentation and record keeping in production plant: Importance of documentation. Training on documentation system. Up-to-date and accessible documents for audits on production process. Documentation of recommendation/corrective actions. Methods to track production information from documented and maintained records.

Documentation management strategies: Automation of accounts payable and receivable. Reduce Out-of-Spec Product costs by receiving electronic employee acknowledgments. Centralization of vendor contracts.

UNIT II

Standard Operating Procedures: Standard operating procedures: definition, procedure, purpose, format, developing, implementing and effective dion2(n)10(g)-2(ng)10( )-190(.-190(i)-2(

UNIT IV

ERP: Definition. Evolution of ERP. ERP Characteristics and features. Role of ERP in food industry. Benefits of ERP. Business Process Reengineering (BPR). ERP implementation for online operations. Risk and governance issues in ERP. Co-relation of ERP with E-commerce.

Textbooks/References:

1. Auditing in the food industry. From Safety and quality to environmental and other audits by Mike Dillon and Chris Grifith-CRC Press and Woodhead publishing limited, 2001.
2. Quality Assurance for the Food industry: A practical approach by Andres Vasconcellos J- CRC press, 2005.

Practical based on FST-604

Practical: 40
Internal Assessment: 10
Total Marks: 50
Time: 3 hours

1. Prepare report on technical documents related to production process of the organization
2. Study legal and safety documents pertaining to food industry.
3. Prepare HACCP based SOP checklist of any food processing unit.
4. Report preparation of online ERP in the organisation.
5. Discuss any 5-food safety policies.

UNIT- IV

Monitoring Health and environment safety: Health and safety policies. Methods to establish systems for monitoring, measuring and reporting on health and safety. OHSAS – Occupational Health and Safety Management Systems.

Food regulatory systems: Introduction to FSSAI, GMP, GHP, HACCP, QMS, ISO.

Textbooks/Refernces: