JSS COLLEGE OF ARTS, COMMERCE & SCIENCE

(An Autonomous College of University of Mysore)

Re-accredited by NAAC with 'A' grade

OOTY ROAD, MYSORE-570 025, KARNATAKA

ESTD-1964

SYLLABUS

M.VOC. (FOOD PROCESSING & ENGINEERING)

2021-2022

DEPARTMENT OF FOOD PROCESSING AND ENGINEERING

Scheme of Instruction For M. Voc. (Food Processing & Engineering) year 2021-22								
General Education Component								
(L-Lecture; T-Tutorial; P-Practical/Practice) (1 Credit = 15 Hrs)								
Semesters	**Paper No.**	**Title**	**L:T:P**	**Theory Hours**	**Tutorial Hours**	**Practical Hours**	**Total Hours**	**Total Credits**
Sem I	G .1	Food Chemistry	2:0:1	30	0	15	45	3
	G - 2	Food and Nutrition	2:0:1	30	0	15	45	3
								06
Sem II	G-3	Food Microbiology	2:0:1	30	0	15	45	3
	G-4	Biostatistics	2:0:1	30	0	15	45	3
								06
Sem III	G-5	Information Communication Technology	2:0:1	30	0	15	45	3
	G-6	Product development and Entrepreneurship	2:0:1	30	0	15	45	3
								06
Sem IV	G-7	Food marketing	2:0:1	30	0	15	45	3
	G-8	Food standards, Regulatory Affairs and IPR Issues	2:0:1	30	0	15	45	3
								06

General Component

Semester - I **MFA 510**

Sl. No.	Paper I : Food Chemistry	Hrs
1.	Introduction to food chemistry, its role in processing and food formulations,	1
2.	Moisture in foods: Role and type of water in foods, Functional properties of water, role of water in food spoilage, Water activity and sorption isotherm, Molecular mobility and food stability.	2
3.	Dispersed systems of foods: Physicochemical aspects of food dispersion system: a) Sol b) gel c) foam d) emulsions.	1
4.	Carbohydrates: Functional characteristics of different carbohydrates. Maillard reaction, caramelization, methods to control non enzymatic reactions. Starch and Dietary fibres, Functional properties of polysaccharides, natural vegetable gums, carbohydrate composition of various natural foods.	5
5.	Proteins in foods: Protein content and composition in various foods- cereal grains, legumes and oilseed proteins, proteins of meat, milk, egg and fish. Functional properties of proteins in foods – water and oil binding, foaming, gelation, emulsification. Effect of processing on functional properties of proteins-heat processing alkali treatments, chilling, freezing, dehydration and radiations. Unconventional sources of proteins- SCP fish protein concentrates, leaf proteins	5
6.	Lipids in foods: Role and use of lipids /fat, occurrence, fat group classification, Physicochemical aspects of fatty acids in natural foods, hydrolysis, reversion,. Chemical aspects of lipolysis, auto-oxidation, antioxidants, Technology of fat and oil processing: Refining, Hydrogenations, Inter etherification, Safety use of oils and fats in food formulation.	5
7.	Vitamins and minerals, Dietary sources, requirements, Allowances, Enrichment, Restorations, Fortifications, Losses of vitamins and minerals, Optimization and retention of vitamins and minerals	2

8.	Enzymes in food industry, Carbohydrases (Amylases, cellulases, pectinases,) Proteases, Lipases and oxidases in food processing.	2
8.	Chemistry of food flavour: definitions of flavour, Flavourmatics / flavouring compounds, Sensory assessment of flavour, Technology for flavour retention.	2
9.	Food additives: Buffer systems/ salts / Acids, Chelating agents and sequestrants, Antioxidants, Antimicrobial agents, Non- nutritive and low calorie sweetners, Stabilizer and thickeners,	2
10.	Food colours, natural and synthetic, Regulatory aspects –Natural and synthetic permitted food colours.	1
11.	Food toxicants – anti nutritional factors and their occurrence, effects and methods of elimination or inactivation- protease inhibitors, lectins, lathyrogens, phytates and flatulence factors.	2
12.	Food Contaminants, Pesticidal residues – permitted limits. Toxicology and public health.	2

Sl. No.	**Practical**	**Hrs**
1.	Determination of moisture content of foods using different methods	3
2.	Determination of crude proteins by microkjeldahl method	3
3.	Determination of crude fat by soxlet method	3
4.	Determination of acid value, saponification value and iodine number of fat/ oil	3
5.	Determination of minerals and acid insoluble ash and estimation of Calcium and phosphorus	3
6.	Assay of amylases, papain and lipases	3
7.	Detection of common food adulterants	3
8.	Determination of food colors	3

MODEL QUESTION PAPER

CODE NO: MFA 510

Semester - I

Food Chemistry

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

1. Answer all the questions in one sentence or a word 10 X 1 = 10

   a. ----------
   b. ----------
   c. ----------
   d. ----------
   e. ----------

2. Answer any four of the following questions 4 X 5 = 20

   a. ----------
   b. ----------
   c. ----------
   d. ----------
   e. ----------

3. Answer any four questions of the following 4 X 10 = 40

   a. ----------
   b. ----------
   c. ----------
   d. ----------
   e. ----------

(Note- 10 Marks may be divided in to 6+4 or 5+5)

I SEMESTER PRACTICAL EXAMINATION

Food Chemistry

PRACTICAL

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE :- Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

1. Determination of moisture content of foods using different methods
2. Determination of crude proteins by microkjeldahl method
3. Determination of crude fat by soxlet method
4. Determination of acid value, saponification value and iodine number of fat/ oil
5. Determination of minerals and acid insoluble ash and estimation of Calcium and phosperus
6. Assay of amylases, papain and lipases
7. Detection of common food adulterants
8. Determination of food colors

General Component

Semester – I **MFA 520**

Sl. no.	Paper II :Food and Nutrition	Hrs
1.	Introduction to Food: Definition, classification and constituents of food : Carbohydrates, Fats , Proteins ,Fat soluble vitamins-A, D, E and K , Water soluble vitamins – Thiamin, Riboflavin, Niacin, Pyridoxine, Folate, Vitamin B12 and Vitamin C, Minerals – Calcium, Iron, Zinc, Iodine and Flourine.	4
2.	Functions of food, Effect of deficiency & overconsumption of dietary sources on health, Basic Food Groups, Recommended dietary Allowance (RDA), Food guide pyramid, Dietary fibers, Functions of water in body. Balanced Diet: Concept of Balanced Diet: Definition, food groups used in planning balanced diets.	5
3.	Traditional and contemporary methods of food processing and quality evaluation of food products	3
4.	Nutrition: Basic terms used in Nutrition, relationship between food, health and nutrition, Bioavailability of nutrients. Basal Metabolic Rate (BMR). Protein quality, Dietary allowances and standards for different age groups: Adult man/woman, Preschool children, Adolescent children, pregnant woman. Geriatric nutrition, Nutrition for athletes	10
5.	Digestion and absorption of carbohydrates, proteins and fats. Factors influencing the sensory acceptability and digestion of foods	2
6.	Food Design: Nutritive values of cereals, pulses, oil seeds, fruits, vegetables, fish, meat and eggs. Nutrient composition of foods and Energy calculations	3
7.	Antinutritional factors: Sources and harmful effects of anti vitamins (e.g.: avidin, dicoumarol), Natural toxicants, (e.g.: Lathyrus sativa).Food adultrants- structure and harmfull effects of - Butter yellow, lead chromate and malachite green.	3

Sl. no.	Practical	Hrs
1.	Sensory acceptability of food products: Physical Attributes (Appearance, color, texture, taste and overall acceptansibility). Texture measurement of food products by instrumental methods. Preparation of food labelling. Formulation for foods for target groups (weaning, pre-school children, geriatric, therapeutic foods etc.). Processing of spices for traditional products. Storage and shelf determination.	9h
2.	Estimation of iron in drumsticks	3h
3.	Estimation of Calcium in ragi	3h

MODEL QUESTION PAPER

CODE NO: MFA 520

Semester - I

Food and Nutrition

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

1. Answer all the questions in one sentence or a word 10 X 1 = 10

f. ----------
g. ----------
h. ----------
i. ----------
j. ----------

2. Answer any four of the following questions 4 X 5 = 20

f. ----------
g. ----------
h. ----------
i. ----------
j. ----------

3. Answer any four questions of the following 4 X 10 = 40

f. ----------
g. ----------
h. ----------
i. ----------
j. ----------

(Note- 10 Marks may be divided in to 6+4 or 5+5)

I SEMESTER PRACTICAL EXAMINATION

Food and Nutrition

PRACTICAL

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE :- Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

1. Sensory acceptability of food products: Physical Attributes (Appearance, color, texture, taste and overall acceptansibility).
2. Texture measurement of food products by instrumental methods.
3. Preparation of food labelling.
4. Formulation for foods for target groups (weaning, pre-school children, geriatric, therapeutic foods etc.).
5. Processing of spices for traditional products.
6. Storage and shelf determination.
7. Estimation of iron in drumsticks
8. Estimation of Calcium in Ragi

General Component

Semester – II **MFB 510**

Sl. no.	Food Microbiology	Hrs
1.	**Microbiology:** Introduction, historical developments in food microbiology; prokaryotes and eukaryotes. **Microscopy**: Different types of microscopes, their construction and working principles. Simple microscope (dissection microscope), Compound microscope - bright field, dark field, phase contrast, stereomicroscope and fluorescence microscope. Principle, construction and applications of Scanning and Transmission electron microscopes. **Classification of microbes:** Haeckel's three- kingdom, Whittaker's five-kingdom classification and Cavalier-Smith's eight kingdom classification. Morphology of microbes. **Pure culture techniques-** Serial dilution, Pour plate, Spread plate, Streak plate and Micromanipulator technique Microbial growth, growth curve. Sources of microorganism in foods . Factors affecting heat resistance; Pasteurization and sterilization. Factors affecting growth-intrinsic and extrinsic factors controlling growth of microorganisms.	9
2.	**Disinfection & disinfectants:** Definition of terms - Disinfectants, antiseptics, sanitizers, Microbicides: virucide, algicide, fungicide and sporicide. Microbistatic: bacteriostatic and fungistatic. Use and mode of action - Alcohols, Aldehydes, Halogens, Phenols, Heavy metals, Quaternary Ammonium compounds and Sterilizing gases (ethylene oxide).	2
3.	**Food preservatives-** heating process, irradiation, low temperature storage, chemical preservatives and high-pressure processing of foods; control of water activity.	2
4.	**Foods microbiology and public health:** Food poisoning, types of food poisonings, important features etc; bacterial agents of food borne illness, food poisoning by *Clostridium- C. Botulinum, Salmonella-salmonellosis, Bacillus cereus*, and non bacterial agents of food borne illness: poisonous algae-types of illness, Study of Neurotoxic Shellfish Poisoning (NSP) and Diarrheic Shellfish Poisoning (DSP), and fungi-Aflatoxin (a brief account)**.**	5
5.	**Food spoilage:** Fruits and vegetables, spoilage of canned foods; methods of isolation and detection of microorganisms or their products in food; conventional methods; rapid methods, retention of microbes, (newer techniques)-immunological methods; fluorescent anti body, radioimmunoassay, principles of ELISA, PCR (Polymerase chain reactions**)**	4

6.	Indicators microorganisms; microbiological criteria of foods and their significance; the HACCP system and food safety used in controlling microbiological hazards, applications of hurdle technology for controlling microbial growth.	2
7.	**Microbiology of Fermented foods:** Cereals, Vinegar, Oriental foods, Alcoholic beverages.	2
8.	**Microbiology of milk & milk products:** cheese, butter, ice cream, and milk powder etc	2
9.	**Microbiology of cereal & cereal products:** bread, biscuits, confectionary etc	2

Sl. no.	**Practical**	**Hrs**
1.	Equipments used in microbiology laboratory,	15
2.	Study of microscope and observation of microbial slides,	
3.	Methods of sterilization and preparation of media, ,	
4.	Staining techniques- Simple, Negative and Gram's staining	
5.	Effects of environmental factors on growth of microorganisms,	
	Assignment-microbiological analysis of market samples- milk & milk products, fresh & processed fruits and vegetables, Cereal & bakery products	

MODEL QUESTION PAPER

CODE NO: **Semester - II**

Food Microbiology

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

PART-A

I. Write short notes for the following(any 5): **(5x2=10)**

1. ----------
2. ----------
3. ----------
4. ----------
5. ----------
6. ----------

PART-B

II. Answer any 4 of the following: **(4x5=20)**

1. ----------
2. ----------
3. ----------
4. ----------
5. ----------

PART –C

III. Answer any 4 of the following: **(4x10=40)**

IV.

1. ----------
2. ----------
3. ----------
4. ----------
5. ----------

II SEMESTER PRACTICAL EXAMINATION

Food Microbiology

PRACTICAL

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE :- Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

Equipments used in microbiology laboratory, study of microscope, observation of microbial slides, preparation and sterilization of media, methods of sterilization, staining techniques, effects of environmental factors on growth of microorganisms,

Assignment-microbiological analysis of market samples- milk & milk products, fresh & processed fruits and vegetables, Cereal & bakery products

General Component

Semester - II **MFB 520**

Sl. no.	Biostatistics	Hrs
1.	Statistical concepts: Data structure, sampling methods, collection, classification and tabulation of data, graphical and diagrammatic representation, histogram, frequency polygon, frequency curve, bar graph, pie chart etc.	4
2.	Measure of Central Frequency: Mean, median, mode.	2
3.	Measure of dispersion of data: Range, semi-interquartile range, mean deviation, standard deviation, standard error, coefficient of variation, confidence limits.	5
4.	Types of distribution of data: Normal, Binomial, Poisson.	7
5.	Z-test, t-test, ANOVA, multiple comparisons, LSD and DMRT, Chi-square test.	4
6.	Regression estimate, correlation coefficient.	4
7.	Experimental designs, data transformation.	4

Sl. no.	Practical	Hrs
1.	Analytical Problems / calculations	15

MODEL QUESTION PAPER

CODE NO: Semester - II

Biostatistics

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

PART-A

V. Write short notes for the following(any 5): **(5x2=10)**

7. ----------
8. ----------
9. ----------
10. ----------
11. ----------
12. ----------

PART-B

VI. Answer any 4 of the following: **(4x5=20)**

6. ----------
7. ----------
8. ----------
9. ----------
10. ----------

PART –C

VII. Answer any 4 of the following: **(4x10=40)**
VIII.

6. ----------
7. ----------
8. ----------
9. ----------
10. ----------

II SEMESTER PRACTICAL EXAMINATION

Biostatistics

PRACTICAL

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE :- Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

1.Analytical Problems / calculations

Semester – III **MFC 510**

Sl no.	Information Communication Technology	Hrs
1.	The humanitarian supply chain - Definition, system of organizations, people, technology, activities, information and resources involved in moving a product or service from supplier to customer.	5
2.	Beneficiary Identification – Challenge in food assistance to ensure that assistance goes to the right beneficiaries. Charitable organisations and NGO's involved in disaster management world over.	5
3.	Role of Mobile Technologies, handheld devices, RFID, scanners in HLRC as well as in SCM of food industry from farm to fork. Building blocks of ICT and role of Big Data, IOT, Data mining, Mapping technology, smart systems.	5
4.	Explain the Role of SCM system and all its components in food manufacturing organisations. How can ICT help to maintain the quality of Raw materials in food supply chain?	5
5.	Role of ICT in systems such as LIFO/FIFO/JIT/QR/VMI and **cost optimisation** in SCM system of a food manufacturing setup.	5
6.	Role of ICT in QSR industry. Importance of cold chain maintenance to maintain quality of Raw materials from farm to fork. Role of ICT in monitoring cold chain maintenance.	5
7.	Explain communication and types. Role of communication through modern media/technologies. Discipline and courtesies to be followed in official communication to maintain decorum.	5

SL.no.	Practical	Hrs
1.	Software use in mapping Technology, Tracking, web portals in crisis management in case of a disaster.	2
2.	Requirement development for food processing unit SCM software.	3
3.	Application of software for SCM system and ERP.	5

MODEL QUESTION PAPER

CODE NO: Semester – II

Information Communication Technology

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

PART-A

IX. Write short notes for the following(any 5): **(5x2=10)**

13. ----------
14. ----------
15. ----------
16. ----------
17. ----------
18. ----------

PART-B

X. Answer any 4 of the following: **(4x5=20)**

11. ----------
12. ----------
13. ----------
14. ----------
15. ----------

PART –C

XI. Answer any 4 of the following: **(4x10=40)**
XII.
11. ----------
12. ----------
13. ----------
14. ----------
15. ----------

II SEMESTER PRACTICAL EXAMINATION

Information Communication Technology

PRACTICAL

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE :- Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

I. Software use in mapping Technology, Tracking, web portals in crisis management in case of a disaster.
II. Requirement development for food processing unit SCM software.
III. Application of software for SCM system and ERP.

General Component

Semester - III **MFC 520**

Sl. no.	PRODUCT DEVELOPMENT AND ENTRPREUNERSHIP	Hrs
1	Sensory evaluation of foods - Importance, need and application for product formulation, Basic tastes, threshold tests for basic tastes, Sensory panel, type, selection and training. Types of sensory tests- Subjective and objective sensory evaluation. Instrumental tests for sensory attributes – color, texture and odor.	8
2	Product Development - Designing new product – types and drawing forces, Need for product development. Stages of product development, Consumer research. Role of sensory evaluation in consumer product acceptance.	5
3	Entrepreneurship - Starting and managing an enterprise - Steps in preparing a business plan, Components of management, Developing managerial skills, Managing a food industry. Factors influencing entrepreneurship groups Qualities of an entrepreneur	6
4	Consumer Behaviour & Marketing - Factors influencing food purchases, product acceptance, purchasing trends. Changing food trends.	3
5	Special food processing technologies and novel food ingredients – Membrane technology (reverse osmosis and ultra-filtration), agglomeration, agitation, air classification, extrusion, automation in food industries.	8

Sl. no.	Practical	Hrs
1	Sensory analysis: Different types of sensory tests for basic tastes and sensory attributes of products.	5
2	Project on different sensory techniques and responses utilizing prepared food products, analysis and presentation of sensory data.	3
3	Stepwise development of a new food product, standardization, acceptability studies and submission of project report.	4
4	Survey on types of convenience foods / consumer behaviour / analysis of food labelling.	3

MODEL QUESTION PAPER

CODE NO: MFC 520 Semester – III

PRODUCT DEVELOPMENT AND ENTRPREUNERSHIP

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

PART-A

XIII. Write short notes for the following(any 5): **(5x2=10)**

19. ----------
20. ----------
21. ----------
22. ----------
23. ----------
24. ----------

PART-B

XIV. Answer any 4 of the following: **(4x5=20)**

16. ----------
17. ----------
18. ----------
19. ----------
20. ----------

PART –C

XV. Answer any 4 of the following: **(4x10=40)**

XVI.

16. ----------
17. ----------
18. ----------
19. ----------
20. ----------

III SEMESTER PRACTICAL EXAMINATION

PRODUCT DEVELOPMENT AND ENTRPREUNERSHIP PRACTICAL

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE: - Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

I. Different types of sensory tests
II. Methods of Sensory analysis for basic tastes and sensory attributes of products.
III. Stepwise development of a new food product, standardization and acceptability studies.
IV. Survey on types of convenience foods.
V. Market survey and identification of consumer behaviour.
VI. Survey on types of analysis of food labelling.
VII. Preparation of project reports on different sensory techniques and responses utilizing prepared food products
VIII. Presentation of the project proposed and analysis of sensory data.

General Component

Semester – IV **MFD 510**

Sl. No.	Food Marketing	Hrs
1.	Food Marketing: Definition, meaning, characteristics of rural and urban marketing	3
2.	Opportunities and challenges marketing food products by small scale entrepreneurs	2
3.	Rural marketing segmentation, rural consumer behavior, changing trends in rural consumer selection and decision, marketing process and influential factors, marketing needs for export products.	5
4.	Urban marketing segmentation, urban consumer behavior, changing trends in urban consumer selection and decision, marketing process and influential factors	5
5.	Product design, innovativeness presentation, services, prices, method of pricing, network for sourcing raw materials and distribution of products in both rural and urban area.	4
6.	Designing advertisement, campaign, sales promotion, choice of media, techniques, personal selling and publicity	4
7.	Online Marketing: Target population, product packing, distribution through courier and other mode of transportation.	3
8.	Food packaging, labelling for consumer acceptability	2
9.	Relevant of marketing information system, market research in accessing consumer behavior	2

Sl. No.	Practical	Hrs
1.	Regulatory aspects and food hygiene and safety for packing and marketing of food products. Costing of food products. Visit to marketing federation, cooperatives APMCs and other marketing organization and institution for familiarization of	15

	marketing strategy, handling and transportation of fresh package products, perishable goods and self stable and transport table. Financial management, securing financial support, advancing the products for marketing, bulk and retail sales, recalling the products recovery of advances.	

MODEL QUESTION PAPER

CODE NO: Semester – IV

Food Marketing

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

PART-A

XVII. Write short notes for the following(any 5): (5x2=10)

25. ----------
26. ----------
27. ----------
28. ----------
29. ----------
30. ----------

PART-B

XVIII. Answer any 4 of the following: (4x5=20)

21. ----------
22. ----------
23. ----------
24. ----------
25. ----------

PART –C

XIX. Answer any 4 of the following: (4x10=40)

21. ----------
22. ----------
23. ----------
24. ----------
25. ----------

IV SEMESTER PRACTICAL EXAMINATION

PRACTICAL

Food Marketing

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE :- Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

1.Regulatory aspects and food hygiene and safety for packing and marketing of food products. Costing of food products

2.Visit to marketing federation, cooperatives APMCs and other marketing organization and institution for familiarization ofmarketing strategy, handling and transportation of fresh package products, perishable goods and self stable and transport table.

3.Financial management, securing financial support, advancing the products for marketing, bulk and retail sales, recalling the products recovery of advances.

General Component

Semester – IV **MFD 520**

Sl. No.	Food Standards, Regulatory Affairs and IPR Issues	Hrs
1.	Introduction to concepts of food quality, food safety, food quality assurance and food quality management; objectives, importance and functions of quality control, Current challenges to food safety	3
2.	Principles of food quality assurance, total quality management (TQM)–good manufacturing/management practices, good hygienic practices, good lab practices, general awareness and role of management practices in quality control	3
3.	Microbial quality control: determination of microorganisms in foods by cultural, microscopic, physical, chemical methods. Statistical quality control in food industry Food adulteration, nature of adulterants, methods of evaluation of food adulterants and toxic constituents	3
4.	Food safety management, applications of HACCP in food safety, concept of food trace ability for food safety, Food safety and Standards Act 2006: salient provision and prospects	3
5.	Role of national and international regulatory agencies, Bureau of Indian Standards (BIS), AGMARK, Food Safety and Standards Authority of India (FSSAI)	3
6.	Introduction to WTO agreements: SPS and TBT agreements, Codex Alimentarious Commission ,, International organization for standards (ISO) and its standards for food quality and safety (ISO 9000 series, ISO 22000, ISO 15161,ISO 14000)	5
7.	Food safety in USA, USFDA, Legislation in Europe: Directives of the official journal of the EU, council regulations, food legislation in UK. Regulating methods for food analysis, case studies. Enforcers of Food Laws Approval Process for Food Additives ,Nutritional Labeling	5
8.	Concept of property, rights, duties and their correlation; History and evaluation of IPR; Copyrights and related rights. Distinction among Various forms of IPR. Patent rights/protection and	5

	procedure; Infringement or violation; Remedies against infringement; Indian Patent Act 1970 and TRIPS; Geographical indication and Industrial design	
Sl. No.	**Practical**	**Hrs**
1.	Study of food regulations in various countries ; study of nutritional labeling of packaged food items by visiting food market, Visit the websites of FSSAI, BIS, AGMARK, ISO, Codex Alimentarius Commission , USFDA Study of patent law in India and the procedure for grant of patent in India	15

MODEL QUESTION PAPER

CODE NO: Semester – IV

Food Standards, Regulatory Affairs and IPR Issues

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

PART-A

XX. Write short notes for the following(any 5): (5x2=10)

31. ----------
32. ----------
33. ----------
34. ----------
35. ----------
36. ----------

PART-B

XXI. Answer any 4 of the following: (4x5=20)

26. ----------
27. ----------
28. ----------
29. ----------
30. ----------

PART –C

XXII. Answer any 4 of the following: (4x10=40)

26. ----------
27. ----------
28. ----------
29. ----------
30. ----------

IV SEMESTER PRACTICAL EXAMINATION

PRACTICAL

Food Standards, Regulatory Affairs and IPR Issues

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE :- Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

1. Study of food regulations in various countries ;

2.study of nutritional labeling of packaged food items by visiting food market, Visit the websites of FSSAI, BIS, AGMARK, ISO, Codex Alimentarius Commission , USFDA

3.Study of patent law in India and the procedure for grant of patent in India