ETHIRAJ COLLEGE FOR WOMEN
(AUTONOMOUS)

CHENNAI

DEPARTMENT OF CLINICAL NUTRITION

AND DIETETICS

(SELF SUPPORTING)

UG

SYLLABUS FOR

BSC CLINICAL NUTRITION AND DIETETICS

2018-2021

ETHIRAJ COLLEGE FOR WOMEN
DEPARTMENT OF CLINICAL NUTRITION AND DIETETICS
Revised Syllabus from June 2018

Department ofClinical Nutrition and Dieteticsis revising syllabi with effect from the academic year 2018-2019, by revising CBCS and Part IV and Part V components as specified by the Government of Tamil Nadu. Part IV and Part V components will seek to build the capacity of the students and provide inputs for his/her social service and social analysis capabilities.

Every academic year is divided into two semester sessions. Each semester will have a minimum of 90 working days and each day will have five working hours. Teaching is organized into a modular pattern of credit courses. Credit is normally related to the number of hours a teacher teaches a particular subject. It is also related to the number of hours a student spends learning a subject or carrying out an activity.

REGULATIONS

1. ELIGIBILITY FOR ADMISSION:

Candidates for admission to the first year of the Degree of Clinical Nutrition and Dieteticscourse shall be required to have passed the Higher Secondary Examinations conducted by the Government of Tamil Nadu or an Examination accepted as equivalent thereto by the syndicate of the University of Madras.

2. ELIGIBILITY FOR THE AWARD OF THE DEGREE:

A candidate shall be eligible for the award of the Degree only if she has undergone the prescribed course of study for a period of not less than three academic years, passed the examinations of all the six semesters prescribed.

3. COURSE OF STUDY:

The main subject of study for Bachelor Degree shall consist of the following:

PARTI: Foundation Course exclusive for Languages.

PARTII : Foundation Course - English

PART III : Core Courses and Allied Subjects I and II – Job and Skill oriented entrepreneurship components.

PART-IV : Non Major Electives / Soft skills

PART-V : Extension Activities/ Sports/ NCC

4. PASSING MINIMUM:

A candidate shall be declared to have passed in each paper/ practical of the main subject of study wherever prescribed, if she secured NOT LESS THAN 40% of the marks prescribed for the examination.

5. CLASSIFICATION OF SUCCESSFUL CANDIDATES:

Part I, II, III & IV

Successful candidates passing the examination and securing the marks (i) 60 percent and above and (ii) 50 percent and above, but below 60 percent, in the aggregate shall be declared to have passed the examination in the FIRST and SECOND class respectively. All other successful candidates (above 40 and below 50 percent) shall be declared to have passed the examination in the THIRD class. Candidates who pass all the examinations (Part I, II, III & IV) prescribed for the course in the FIRST APEARANCE ITSELF ALONE is eligible for ranking.

COURSE PROFILE

SEMESTER I

Paper Code	Title of the Paper	Hours/ Week	Credits	CA	End Semester	Total
	Part - I Foundation Course Language	5	3	40	60	100
	Part – II English	5	3	40	60	100
CN18/1C/FSE	**Part – III (Core -1)** Food Science	7	5	40	60	100
CN18/2C/PR1*	**Practical 1 (Core -3)** Food Science and Physiology Practical	3	-	40	60	100
	Part III (Allied-1) Allied Chemistry I	4	4	40	60	100
	Allied Practical 1 Allied Chemistry Practical	2	-	40	60	100
CN18/1N/ART	**Part –IV (Non Major Elective) 1a/b/c:** Basic Tamil/Advanced Tamil/Art of Interior Decoration	2	2	-	50	50
	Soft skill 1	2	3	-	50	50
Total		**30**	**20**			

***Practical examination (CN15/2C/PR1) – Food Science and Physiology Practical will be conducted in the second semester.**

SEMESTER II

Paper Code	Title of the Paper	Hours/ Week	Credits	CA	End Semester	Total
	Part – I Foundation Course Language	5	3	40	60	100
	Part – II English	5	3	40	60	100
CN18/2C/PHY	**Part –III (Core – 2)** Physiology	7	5	40	60	100
CN18/2C/PR1*	**Practical 1 (Core -3)** Food Science and Physiology Practical	3	3	40	60	100
	Part –III (Allied -2) Allied Chemistry II	4	4	40	60	100
	Allied Practical 1 Allied Chemistry Practical	2	2	40	60	100
CN18/2N/BFP	**Part –IV (Non Major Elective)** **1a/b/c:**Basic Tamil/Advanced Tamil/Basics of Food Preservation	2	2	-	50	50
	Soft skill 2	2	3			
Total		**30**	**25**			
* **Practical examination (CN15/2C/PR1) – Food Science and Physiology practical will be conducted in the second semester**						

SEMESTER III

Paper Code	Title of the Paper	Hours/ Week	Credits	CA	End Semester	Total
	Part – I Foundation Course Language	5	3	40	60	100
	Part – II English	5	3	40	60	100
CN18/3C/HNU	**Part – III (Core -4)** Human Nutrition	7	5	40	60	100
CN18/4C/PR2*	**Practical 2 (Core- 6)** Human Nutrition and Nutrition Through Life Cycle Practical*****	3	-	40	60	100
CN18/3A/MIC	**Part –III (Allied- 3)** Microbiology	4	4	40	60	100
CN18/4A/PR1**	**Allied Practical** Microbiology and Nutritional Biochemistry Practical	2	-	40	60	100
	Part –IV (Skill Based) Environmental studies	2	2	-	50	50
	Soft skill 3	2	3			
Total		**30**	**20**			

***Practical examination (CN18/4C/PR2) – Human Nutrition and Nutrition through Lifecycle Practical will be conducted in the fourth semester.**

****Practical examination (CN18/4A/PR1) – Microbiology and Nutritional Biochemistry Practical will be conducted in the fourth semester.**

SEMESTER IV

Paper Code	Title of the Paper	Hours/ Week	Credits	CA	End Semester	Total
	Part – I Foundation Course Language	5	3	40	60	100
	Part – II English	5	3	40	60	100
CN15/4C/NLC	**Part – III (Core 5)** Nutrition Through Lifecycle	7	5	40	60	100
CN15/4C/PR2*	**Practical 2 (Core- 6)** Human Nutrition and Nutrition Through Life Cycle Practical	3	4	40	60	100
CN15/4A/NBC	**Part- III (Allied -4)** Nutritional Biochemistry	4	4	40	60	100
CN15/4A/PR1**	**Allied Practical** Microbiology and Nutritional Biochemistry Practical	2	2	40	60	100
	Part –IV (Skill Based) Value Education	2	2	-	50	50
	Soft skill 4	2	3			
Total		**30**	**26**			

***Practical examination (CN18/4C/PR2) – Human Nutrition and Nutrition through Lifecycle Practical will be conducted in the fourth semester.**

****Practical examination (CN15/4A/PR1) – Microbiology and Nutritional Biochemistry Practical will be conducted in the fourth semester.**

SEMESTER V

Paper Code	Title of the Paper	Hours/ Week	Credits	CA	End Semester	Total
CN18/5C/FM1	**Core -7** Food Service Management I	4	4	40	60	100
CN18/5C/HFS	**Core- 8** Human Development and Family Studies	5	4	40	60	100
CN18/5C/CLN	**Core -9** Techniques inClinical Nutrition	5	4	40	60	100
CN18/5C/MT1	**Core- 10** Medical Nutrition Therapy 1	5	4	40	60	100
CN18/5E/IDH	**Elective -1** Interior Decoration & Housekeeping	5	5	40	60	100
CN18/6C/PR3*	**Practical 3 (Core -14)** Food Service Management Practical	3	-	-	-	100
CN18/6C/PR4**	**Practical 4 (Core -15)** Medical Nutrition Therapy Practical	3	-	-	-	50
Total		**30**	**21**			

***Practical examination (CN18/6C/PR3) – Food Service Management Practical will be conducted in the sixth semester.**

****Practical examination (CN18/6C/PR4) – Medical Nutrition Therapy Practical will be conducted in the sixth semester.**

SEMESTER VI

Paper Code	Title of the Paper	Hours/ Week	Credits	CA	End Semester	Total
CN18/6C/FM2	**Core -11** Food Service Management II	4	3	40	60	100
CN18/6C/MT2	**Core -12** Medical Nutrition Therapy II	5	4	40	60	100
CN18/6C/SPN	**Core- 13** Sports Nutrition	5	4	40	60	100
CN18/6E/CMN	**Elective -2** Community Nutrition	5	5	40	60	100
CN18/6E/FPR	**Elective-3** Food Preservation	5	5	40	60	100
CN18/6C/PR3*	**Practical 3 (Core -14)** Food Service Management Practical	3	3	40	60	100
CN18/6C/PR4**	**Practical 4 (Core - 15)**Medical Nutrition Therapy Practical	3	3	-	50	50
Total		**30**	**27**			
***Practical examination (CN15/6C/PR3) – Food Service Management Practical will be conducted in the sixth semester.**						
****practical examination (CN15/6C/PR4) – Medical Nutrition Therapy Practical will be conducted in the sixth semester.**						
Credits at the end of VI semesters			**139**			
Part V (Extension activities)			**1**			
Total credits			**140**			

CREDIT ALLOTMENT FOR CORE, ALLIED AND PART IV SUBJECTS

Semester	Part I	Part II	Part - III		Elective	Part - IV				Part V
			Core credits (Theory+ practical)	Allied Credits (Theory+ practical)		NME	Soft skill	Skill based EVS	Skill based VE	Extension activities/ NCC/ Sports
I	3	3	5	4	-	2	3	-	-	-
II	3	3	5+3	4+2	-	2	3	-	-	-
III	3	3	5	4	-	-	3	2	-	-
IV	3	3	5+4	4+2	-	-	3	-	2	-
V	-	-	16	-	5	-	-	-	-	-
VI	-	-	11+6	-	10	-	-	-	-	1
Total	**12**	**12**	**60**	**20**	**15**	**4**	**12**	**2**	**2**	**1**

Total Credits: 140 (139+1)

COURSE PROFILE

Sem	Paper code	Title of the Paper	Hours /wk	Credits	CA	End Sem	Total
I		Foundation Course Language	5	3	40	60	100
I		English	5	3	40	60	100
I	**CN18/1C/FSE**	Food Science	7	5	40	60	100
I	**CN18/2C/PR1***	Food Science & Physiology Practical	3	-	40	60	100
I		Allied Chemistry I	4	4	40	60	100
I		Allied Chemistry Practical	2	-	40	60*	100
I	**CN18/1N/ART**	Art of Interior Decoration	2	2	-	50	50
I		Soft skill 1	2	3	-	50	50
II		Foundation Course Language	5	3	40	60	100
II		English	5	3	40	60	100
II	**CN18/2C/PHY**	Physiology	7	5	40	60	100
II	**CN18/2C/PR1***	Food Science & Physiology Practical	3	3	40	60	100
II		Allied Chemistry II	4	4	40	60	100
II		Allied Chemistry Practical	2	2	40	60*	100
II	**CN18/2N/BFP**	Basics of Food Preservation	2	2	-	50	50
II		Soft skill 2	2	3	-	50	50
III		Foundation Course Language	5	3	40	60	100
III		English	5	3	40	60	100
III	**CN18/3C/HNU**	Human Nutrition	7	5	40	60	100
III	**CN18/4C/PR2***	Human Nutrition& Nutrition Through Lifecycle Practical	3	-	40	60	100
III	**CN18/3A/MIC**	Microbiology	4	4	40	60	100
III	**CN18/4A/PR1****	Microbiology & Nutritional Biochemistry Practical	2	-	40	60*	100
III		Environmental Studies	2	2	-	50	50
III		Soft Skill 3	2	3	-	50	50
IV		Foundation Course Language	5	3	40	60	100
IV		English	5	3	40	60	100
IV	**CN18/4C/NLC**	Nutrition Through Lifecycle	7	5	40	60	100

Sem	Paper code	Title of the Paper	Hours /wk	Credits	CA	End Sem	Total
IV	**CN18/4C/PR2***	Human Nutrition & Nutrition Through Lifecycle practical	3	4	40	60*	100
IV	**CN18/4A/NBC**	Nutritional Biochemistry	4	4	40	60	100
IV	**CN18/4A/PR1***	Microbiology & Nutritional Biochemistry Practical	2	2	40	60*	100
IV		Value Education	2	2	-	50	50
IV		Sift Skill 4	2	3	-	50	50
V	**CN18/5C/FM1**	Food Service Management I	4	4	40	60	100
V	**CN18/5C/HFS**	Human development and Family Studies	5	4	40	60	100
V	**CN18/5C/CLN**	Techniques in Clinical Nutrition	5	4	40	60	50
V	**CN18/5C/MT1**	Medical Nutrition Therapy I	5	4	40	60	50
V	**CN18/5E/IDH**	Interior Decoration & Housekeeping	5	5	40	60	100
V	**CN18/6C/PR3***	Food Service Management & Quantity Food Production Practical	3	-	40	60*	100
V	**CN18/6C/PR4***	Medical Nutrition Therapy Practical	3	-	40	60*	100
V	**CN18/6C/FM2**	Food Service Management II	4	4	40	60	100
V	**CN18/6C/MT2**	Medical Nutrition Therapy II	5	4	40	60	100
V	**CN18/6C/SPN**	Sports Nutrition	5	3	40	60	100
VI	**CN18/6E/CMN**	Community Nutrition	5	5	40	60	100
VI	**CN18/6E/FPR**	Food Preservation	5	5	40	60	100
VI	**CN18/6C/PR3***	Food Service Management Practical	3	3	40	60*	100
VI	**CN18/6C/PR4***	Medical Nutrition Therapy Practical	3	3	40	60*	100
		Extension Activity		1			
		TOTAL		**140**			

*Practical examination is conducted internally in the even semester (II, IV, and VI).

EVALUATION PATTERN- THEORY

Sem	Paper Code	Title of the paper	Continuous Assessment				
			Test I	**Test II**	**Quiz/ Assignment Seminar/ Field Visit**	**Participatory Learning**	**Total**
I	**CN18/1C/FSE**	Food Science	10	10	10	10	40
II	**CN18/2C/PHY**	Physiology	10	10	10	10	40
III	**CN18/3C/HNU**	Human Nutrition	10	10	10	10	40
III	**CN18/3A/MIC**	Microbiology	10	10	10	10	40
IV	**CN18/4C/NLC**	Nutrition Through Lifecycle	10	10	10	10	40
IV	**CN18/4A/NBC**	Nutritional Biochemistry	10	10	10	10	40
V	**CN18/5C/FM1**	Food Service Management I	10	10	10	10	40
V	**CN18/5C/HFS**	Human Development and Family Studies	10	10	10	10	40
V	**CN18/5C/CLN**	Clinical Nutrition	10	10	10	10	40
V	**CN18/5C/MT1**	Medical Nutrition Therapy I	10	10	10	10	40
V	**CN18/5E/IDH**	Interior Decoration & Housekeeping	10	10	10	10	40
VI	**CN18/6C/FM2**	Food Service Management II	10	10	10	10	40
VI	**CN18/6C/MT2**	Medical Nutrition Therapy II	10	10	10	10	40
VI	**CN18/6C/SPN**	Sports Nutrition	10	10	10	10	40
VI	**CN18/6E/CMN**	Community Nutrition	10	10	10	10	40
VI	**CN18/6E/FPR**	Food Preservation	10	10	10	10	40

EVALUATION PATTERN- PRACTICAL

Sem	Paper Code	Title of the paper	Continuous Assessment				
			Odd semester (I/III/V)		Even semester (II/IV/VI)		Total
			Model	Participation	Model	Participation	40
II	**CN18/2C/PR1**	Food Science and Physiology Practical	10	10	10	10	40
IV	**CN18/4C/PR2**	Human Nutrition& Nutrition Through Lifecycle Practical	10	10	10	10	40
IV	**CN18/4A/PR1**	Microbiology & Nutritional Biochemistry Practical	10	10	10	10	40
VI	**CN18/6C/PR3**	Food Service Management Practical	10	10	10	10	40
VI	**CN18/6C/PR4**	Medical Nutrition Therapy Practical	10	10	10	10	40

STRUCTURE OF PART- IV PAPERS
(NON-MAJOR ELECTIVE/ SKILL BASED)

Semester	Paper Code	Title of the Paper	Maximum Marks
I	CN15/1N/ART	Art of Interior Decoration	50
II	CN15/2N/BFP	Basics of Food Preservation	50
III		Environmental Science	50
IV		Value Education	50

PATTERN FOR CONTINUOUS ASSESSMENT

Component	Time	Total marks	CA
Test I	2 hours	50 marks	10 marks
Test II	2 hours	50 marks	10 marks
Quiz / Assignment / Seminar / Field visit			10 marks
Participatory Learning			10 marks
Total			**40 marks**

RUBRICS FOR CONTINUOUS ASSESSMENT EVALUATION

Assignment	Appearance/ Content/ Originality/ Presentation/ Schematic Representation and Diagram/ Bibliography
Seminar	Organization/ Subject Knowledge/ Visual aids/ Confidence level/ Presentation
Field trip	Participation / Preparation/ Respect/ Attitude/ Leadership
Project	Preliminary work/ Design/ Content/ Presentation
Participatory learning	Answering questions/ Clearing doubts/ Participation in discussion/Attendance/ Communication and language

QUESTION PAPER PATTERN

Unless and otherwise specified in the syllabus for each paper, the pattern of question paper shall be as follows:

COMPONENT	NATURE OF THE QUESTION	MAXIMUM MARKS
Part A	Definition (10x2)	20 Marks
Part B	Understanding Description / Problems (5x8)	40 Marks
Part C	Application/ Analysis/ Synthesis/ Evaluation (2x20)	40 Marks

- Part A: Definition 10 questions, two from each unit.
- Part B: Five out of eight questions to be answered carrying 8 marks each. One question from each unit and remaining from mentioned units.
- Part C: Two out of four questions to be answered carrying 20 marks each.

*Practical examination will be conducted internally. **NO EXTERNAL EXAMINER**.

SEMESTER- I

FOOD SCIENCE

CORE-1 **Paper Code: ND18/1C/FSE // CN18/1C/FSE**

Teaching hours: 7hours/week (105 hours) **Credits: 5 LTP: 4 3 0**

OBJECTIVES

- ✓ To understand the importance of food groups based on the nutrient value to enable meal planning
- ✓ To learn the scientific basis of preliminary of food, and cooking methods to enhance conservation of nutrients and acceptability of food preparation.

COURSE OUTLINE

UNIT I:

Basics of Food and Cooking Methods: Food guide pyramid (ICMR) and Food plate (USDA). Classification of food based on nutrients. Functions of Food

Introduction to Food science: Preliminary preparation of food prior to cooking with special reference to conservation of nutrients and palatability.

Study of cooking methods: Dry heat method - broiling, grilling, frying and baking- its advantages and disadvantages; Moist method- boiling steaming, poaching, pressure cooking and stewing; Microwave cooking and solar cooking- merits and demerits.

Evaluation of food quality: Sensory characteristics of food, Food evaluation - Subjective method, Objective methods: chemical physical, physicochemical, and microscopic examination (25 HOURS)

UNIT II:

Cereal and Grains: Rice and wheat- structure, composition, nutritive value and processing; locally available millets- Ragi, Bajra, Foxtail, Kodo, Barnyard- composition and nutritive value.

Fermented products, dough and batter; Cooking of starch – moist heat method (gelatinization) dry heat method (dextrinisation); Maillard's reaction.

Pulses and legumes: Composition and nutritive value, processing– decortication, germination, parching & puffing, soya products, TVP. Toxic constituents in pulses; lathyrism and favism

Role of cereals and pulses in cookery

Nuts and oilseeds: Composition and nutritive value of some common nuts and oilseeds. (20 HOURS)

UNIT III: **Vegetables and Fruits**: Vegetables- Classification, composition, nutritive value, and storage of some common vegetables.

Pigments: Classification, effect of cooking on pigments, factors affecting pigments.

Role of vegetables in cookery

Fruits: Classification, composition and nutritive value. Browning of fruits

Milk: Composition, nutritive value and types. Milk products-Types and processing of fermented and non-fermented.

Milk cookery: Effect of heat, acid, enzymes, phenolic compounds, and salts; Role in cookery.

Beverages: Classification and uses in cookery. (20 HOURS)

UNIT IV: **Flesh Foods & Egg:**

Meat - composition, nutritive value, postmortem changes in meat, ageing, factors affecting tenderization of meat. Changes during cooking of meat

Fish- Classification, composition, nutritive value, selection, changes during cooking and spoilage.

Egg- structure, composition, nutritive value, storage, deterioration during storage-Physical and Chemical changes. Egg cookery- effect of heat, sugar, salt, acid, and starch on egg protein; Evaluation of egg quality; Role of egg in cookery. (20 HOURS)

UNIT V: **Fats and Sugars**:

Fat and oils: Sources, shortening, emulsification, flavour component, hydrogenation, rancidity, smoking point and factors affecting absorption of fat. Role of fat in cookery

Sugar and Jaggery: Types, stages of sugar cookery and crystallization of sugar

Common condiments and spices: Composition and uses in cookery

(20 HOURS)

REFERENCE BOOKS

1. Peckham G.C., Foundations of Food Preparation, The Macmillan Publishing Co., N.Y
2. Paul. C.C. and Palmer. R.H, Food Theory and Application John Wiley and Sons, N.Y
3. Griswold R.M., The Experimental study of Foods, Houghton Miffin Co., Boston
4. Helen Charley Food Science, John Wiley and Sons, N.Y
5. Norman. M. Potter and Joseph. H. Hotchkiss, Food Science, C.B.S. Publishers
6. Srilakshmi B. Food Science, New Age International Ltd., Publishers. 2001
7 N. ShakunthalaManay and N. ShadaksharaSwamy, Food Facts And Principle. New age International (P) Ltd., Publishers, 2001

WEBSITES AND e-LEARNING SOURCES

www.fao.org
www.wfp.org

QUESTION PAPER TEMPLATE
ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS)
CHENNAI-600008

(For candidates admitted from the academic year 2018)
B.Sc DEGREE EXAMINATION
I YEAR- II SEMESTER

Title of the paper: FOOD SCIENCE **Max. Marks: 100**
Paper Code: ND15/1C/FSE // CN15/1C/FSE **Time: 3 hours**

SECTION A

Definition (Answer all) **(10x2=20 marks)**
Two questions from each unit

SECTION B

Answer any FIVE questions. **(5x8= 40 marks)**
Each answer should not exceed 300 words.
One question from each unit and the remaining three questions from Unit II, Unit III and Unit IV respectively
(Understanding/Description / Problems)
Each question carries eight marks

SECTION C

Answer any TWO questions. **(2X20=40 marks)**
Each answer should not exceed 1500 words.

Four questions covering all five units.
(Application/ Analysis/Synthesis/ Evaluation)
Sub divisions may be given.
Each question carries twenty marks

SEMESTER –II

PHYSIOLOGY

CORE-2 **Paper Code: ND18/2C/PHY // CN18/2C/PHY**

Teaching hours: 7hours/week (105 hours) **Credits: 5** **LTP: 4 3 0**

OBJECTIVES:

To enable the students to

1. Understand the structure and physiology of various organs in the body
2. Understand the principles of Nutrition & Dietetics through the study of Physiology.

COURSE OUTLINE:

UNIT I: **Cell**: Structure and functions (Review). Tissues – classification, structure and functions of – epithelial, connective, muscular and nervous tissue (Review)

Blood: Composition, RBC, WBC, Platelets; structure and function; Blood Groups –Blood coagulation – Body defense against diseases.

Bones: Classification, structure, function and chemical composition of bone. Bone mineral density (20 HOURS)

UNIT II: **Nervous system**: Physiology of nerve and muscle – Conduction of nerve impulses along nerve and muscle fibres, physiology of muscle contraction, Synapse.

Central and Peripheral Nervous System: General Anatomy – Functions of cerebrum, cerebellum, medulla oblongata, pons, Spinal cord.

Autonomic nervous system: Sympathetic, parasympathetic – functions. (20 HOURS)

UNIT III: **Heart and Circulation**: Anatomy of Heart, Properties of cardiac muscle, Origin and conduction of heart beat – cardiac cycle, cardiac output and heart sounds; Blood pressure, Factors affecting blood pressure, ECG.

Respiratory System: Anatomy of respiratory organs, Gaseous exchange in lungs and tissues, Transport of oxygen and carbon dioxide, Muscles of inspiration and expiration. (25 HOURS)

UNIT IV: **Digestive System:** Anatomy of Gastrointestinal Tract, digestion and absorption of Carbohydrates, fats and proteins.

Excretory System: Structure of kidney, Urine Formation, Acid – base balance.

Skin: structure and function. Body temperature regulation (20 HOURS)

UNIT V: **Endocrine System:** Pituitary, Thyroid, Parathyroid, Adrenal Gland and Pancreas – List of Hormones with its functions.

Reproductive System: Anatomy of Reproductive organs (Review) Spermatogenesis and Oogenesis: menstrual cycle and ovarian cycle. Influence of hormones on fertilization, conception and lactation.

(20 HOURS)

REFERENCE BOOKS:

1. Guyton, A.C. & Hall (2001). Textbook of Medical Physiology. 10th Edition Harcourt Asia P.Ltd Singapore.
2. Guyton, A.C. & Hall (2001). Functions of the Human Body. WB Saunders Co. Philadelphia, Latest Edition.
3. Chakrabarti et al., Human Physiology. The New Book Stall, Calcutta.
4. Joshi, V.D. Physiology – Preparation Manual for Undergraduates. Churchill Livingstone. New Delhi.
5. Ganong, W. F. Review of medical Physiology. 21st Edition McGraw Hill Publishers.
6. Tortora. G&Grabowski, S.R. (2003). Principles of Anatomy & Physiology. 10th Edition USA: John Wiley & Sons.
7. Elaine N. Marieb (2004). Human Anatomy and Physiology, VI edition, Pearson edition.
8. Walter F. Boron, Emile L. Boulpaep (2009). Medical Physiology, Ii edition, Saunders elseivier.

WEBSITES AND e-LEARNING SOURCES:

1. http://members.aol.com/Bio50 - Human physiology lecture notes.
2. http://www.unomaha.edu/hpa - Human Physiology and anatomy.

QUESTION PAPER TEMPLATE
ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS)
CHENNAI-600008
(For candidates admitted from the academic year 2018)
B.Sc DEGREE EXAMINATION
I YEAR- II SEMESTER

Title of the paper: PHYSIOLOGY **Max. Marks: 100**
Paper Code: ND18/2C/PHY // CN18/2C/PHY **Time: 3 hours**

SECTION A

Definition (Answer all) **(10x2=20 marks)**

Two questions from each unit

SECTION B

Answer any FIVE questions. **(5x8= 40 marks)**
Each answer should not exceed 300 words.
One question from each unit and the remaining three questions from Unit II, Unit III and Unit IV respectively
(Understanding/Description / Problems)
Each question carries eight marks

SECTION C

Answer any TWO questions. **(2X20=40 marks)**
Each answer should not exceed 1500 words.

Four questions covering all five units.
(Application/ Analysis/Synthesis/ Evaluation)
Sub divisions may be given.
Each question carries twenty marks

SEMESTER I & II

FOOD SCIENCE AND PHYSIOLOGY PRACTICAL

CORE-3 **Paper Code: ND18/2C/PR1 // CN18/2C/PR1**
Teaching hours: 3 hours/week (45 hours) **Credits: 3 LTP: 0 0 3**

FOOD SCIENCE PRACTICAL:

1. Techniques in measurements of food stuffs, uses of standard measuring cups and spoons. Experimental foods and cookery practical.
2. Cereals :
    a. Microscopic study of different starches.
    b. Method of combining starch and boiling water
    c. Study of effect of dry heat and moist heat on starch
    d. Preparation of white sauce
    e. Gluten formation

    Different methods of cooking rice - straining, absorption, pressure cooking.
    Preparation of phulka, lime rice, vegetable fried rice, ragiadai, uppuma, string hoppers, puttu, idli and dosai,.
3. Pulses: Effect of hard, soft water, alkali, papaya, on the texture and the cooking time of grams and dhals.
    Preparation: sambhar, sundal, cereal and pulse combination - adai, dhokla, poli, sprouted gram salad.
4. Eggs: Coagulation of egg protein - egg white foam, effect of beating, addition of sugar, acid and effect of temperature on egg foam.
    Preparation – poached egg, omelette, scrambled egg, custard, steamed vanilla pudding.
5. Vegetables: Effect of shredding, dicing, addition of acid, alkali, covering, steaming and pressure cooking on different pigments and acceptability on vegetables.
    Preparation- Carrot cuchumber, cauliflower manchurian, avial, vegetable kofta, stuffed capsicum, baked vegetables.
6. Fruits: Browning of fruits and its prevention. Preparation of banana fritters, fruit jelly, date pudding, fruit salad, pine apple payasam.
7. Milk: Coagulation of milk proteins, preparation of paneer, curd.
    Preparation- paneer masala, firni, rice payasam, sweet lassi, shrikand,.
8. Beverages:Preparation of stimulating and nourishing beverages - coffee, tea, cocoa, milk shake, lassi, fruit punch, panagam.
9. Fats and oils: Comparison of smoking temperature of some fats and oils.
    Preparation- shallow fry- vegetable cutlet and deep fry; banana chips, vadai, diamond cuts
10. Sugar cookery: Different stages of crystallisation of sugar Preparation of recipes at different stages of sugar crystallisation - gulabjamun, , chocolate fudge, badhushah, coconut burfi, peanuts chikkis, caramel custard.

PHYSIOLOGY PRACTICAL:

1. Microscopic study of different tissues – epithelial, Connective, Muscular and Nervous.
2. Anatomy of Sheep's Brain.
3. Hemoglobin Estimation, WBC Count, RBC Count, Coagulation time, bleeding time, blood grouping., Anatomy of Sheep's Heart, Estimation of Blood Pressure, effect of exercise on respiratory rate, arterial blood pressure and pulse rate.
4. Microscopic structure of lung and trachea.
5. Microscopic structure of pancreas, stomach, small intestine, liver.
6. Microscopic structure of nephron.
7. Microscopic structure of thyroid, pituitary, adrenal, ovary, uterus, mammary gland and testis.

REFERENCE BOOKS:

FOOD SCIENCE:

1. Peckham G.C., Foundations of Food Preparation, The Macmillan Publishing Co., N.Y,
2. Paul. C.C. and Palmer. R.H, Food Theory and Application John Wiley and Sons, N.Y,
3. Griswold R.M., The Experimental study of Foods, Houghton Miffin Co., Boston,
4. Helen Charley Food Science, John Wiley and Sons, N.Y
5. Norman. M. Potter and Joseph. H. Hotchkiss, Food Science, C.B.S. Publishers
6. Srilakshmi B. Food Science, New Age International Ltd., Publishers. 2014
7. N. ShakunthalaManay and N. ShadaksharaSwamy, Food Facts And Principle. New age International (P) Ltd., Publishers, 2001

PHYSIOLOGY:

8. Chaudhuri, A.R. (2000). Textbook of Practical Physiology. Paras Publishing, Hyderabad.
9. Jain, A.K. (2003). Textbook of Practical Physiology. Paras Publishing, Hyderabad.
10. Bloom W & Fawcett, D.W.A. "Text book of Histology". W.B.Souders& co. latest Edition.

SEMESTER I

NON MAJOR ELECTIVE

ART OF INTERIOR DECORATION

Non Major Elective 1 **Paper code: CN18/1N/ART**
Teaching hours: 2 hours/week **Credits: 2 LTP: 1 1 0**
(30 hours)

OBJECTIVE:

- To help students understand principles of design, elements of decoration, and to learn to create beautiful surroundings and interiors.
- To help learn skills in using basic principles of art in home and to select the right materials for decoration.

COURSE OUTLINE:

UNIT I: Introduction to Interior Decoration- Good taste in art, elements of design, types of design, characteristics of good design. Principles of design- harmony, balance, proportion, rhythm and emphasis (10 HOURS)

UNIT II: Colour: qualities of colour, Prang colour chart, colour harmony, applying principles of design in colour and to create different effects and moods. (10 HOURS)

UNIT III: Furniture- Selection and arrangement**.** Window treatment- types of curtains and draperies. Accessories-Types; Flower arrangement-Types; Floor decorations-Types (10 HOURS)

REFERENCE BOOKS:

1. Goldstein H. and Goldstein V. Art in Everyday Life, Oxford and IBH pub co., ND,
2. Geethikakhanna, Art of interior design, Indica Publishers, Newdelhi,2004 (reprint)
3. ParvathySeethraman and ParveenPannu, Interior design and decoration, CBS publishers & distributors, New Delhi, 2014(reprint)

SEMESTER II

NON MAJOR ELECTIVE

BASICS OF FOOD PRESERVATION

Non Major Elective 2 **Paper Code: CN18/2N/BFP**
Teaching hours:2 hours/week **Credits: 2 LTP: 1 1 0**
(30 Hours)
OBJECTIVE:

- To enable the students to learn the basic principles of food preservation.
- To help the students to perceive the simple methods of preparing fruit and vegetable based preserves.

COURSE OUTLINE:

UNIT I: **Importance and principles of food preservation**, Methods of food preservation- traditional methods- salting, pickling, drying, jugging and potting. (10 HOURS)

UNIT II: **Preservation as sugar concentrate-** basic principles, pectin test and setting tests. Jam, Jelly and Marmalade- ingredients, equipment, preparation (any2) and storage.
Fruit Juice beverage – fruit juice, syrups, squashes and cordials- ingredients, equipment, preparation (any 2) and storage (10 HOURS)

UNIT-III: **Vegetable preserves**- pickles, chutneys, sauces and ketchup- preparation (any 2) and storage.
Packaging materials- types and functions (10 HOURS)

REFERENCE BOOKS:

1. RadhaPuri, Jam Jelly ,Marmalade, Sahni Publications , New Delhi – 110 007, 2004
2. ShankunthalaManay and Shadaksharaswamy, Foods: Facts and Principles, New Age International (p)Limited, Chennai –20, 2005
3. SudeshJood and Khetarpaul N (2002), Food preservation, Agrotech publishing, Udaipur.

SEMESTER III

HUMAN NUTRITION

CORE 4 **Paper Code: ND18/3C/HNU //CN18/3C/HNU**

Teaching Hours: 7hours/week (105 hours) **Credits: 4** **LTP: 4 3 0**

OBJECTIVES

- ✓ To understand and learn the functions, deficiency symptoms, food sources, and requirements of nutrients
- ✓ To understand and learn the functions, deficiency symptoms, food sources and requirements of nutrients

COURSE OUTLINE

UNIT I:

Importance of nutrition, History of nutrition. Energy: Definition - Calories, Joule, Calorimetry, direct and indirect calorimetry, respiratory quotient, Energy value of foods, physiological fuel values.

Energy needs of the body – BMR, RMR, definition, factors influencing BMR, the energy cost of physical activities and method of determination, calculation of total caloric requirements, factorial method for determining total energy needs.

Carbohydrates: definition, classification, functions, utilization and storage, Unavailable carbohydrate or dietary fibre, food sources, requirements. Role of fibre in human nutrition; Glycemic index and Glycemic load. (25 HOURS)

UNIT II:

Protein : Definition, Classification, Functions, Essential and Non-essential amino acids, requirements, evaluation of protein quality- PER, BV, NPU, chemical score& PDCAAS; supplementary value; nitrogen balance; food sources & requirement. Protein energy mal nutrition

Lipids: Definition, Classification, Functions, Essential fatty acids - sources and effects of deficiency; saturated fatty acids, cholesterol and its relation to CHD. Food sources & requirements

(20 HOURS)

UNIT III:

Minerals : (I) **Macro-minerals** – calcium and phosphorus : (a) Distribution in the body, functions, absorption and storage, excretion, blood level, role of parathyroid hormone, vitamin D and calcium (b) Ca : P ratio (c) food sources, RDA, effects of deficiency.

(II) **Micro minerals**- Iron - distribution in the body, functions, absorption, transport, storage, excretion, food sources, nutritional anaemia, nutritional siderosis. Zinc, Copper, Iodine: distribution,

function, RDA, food sources, deficiency and toxicity. Selenium-Vitamin E relationship, Chromium and glucose tolerance factor (20 HOURS)

.

UNIT IV: **Vitamins: Fat Soluble Vitamins**: Vitamin A & D–Measurements, function, absorption and transport, storage, RDA, food source, effects of deficiency, treatment of Vitamin A deficiency and prevention, hypervitaminosis, Vitamin E & K- functions, sources, effects of deficiency. (20 HOURS)

UNIT V: **Water:** Water balance, dehydration, water intoxication. Potassium, Sodium and Chloride: effects of imbalance (Deficiency and excess), distribution in the body, function, food sources, requirements.

Water soluble vitamins: Vitamin C, B1, B2, niacin, vitamin B6, B12, Folic acid, Biotin and pantothenic acid - function, RDA, food sources, loss during processing and preparation of food, effects of deficiency. (20 HOURS)

REFERENCE BOOKS

1. Judith E. Brown, Nutrition now, West Publishing Company.
2. Eleanor Noss Whitney and Sharon RadyRolfes,Understanding Nutrition 8th edition, West Wordsworth.
3. Kathileen Mahan and Marian ArlinKrause's Food Nutrition & Diet therapy 8th edition, W.B.Sarenders company.
4. Guthrie H. Andrews - Introductory Nutrition C.V. Mosby Co., St. Lours.
5. M.Swaminathan"Principles of Nutrition and Dietetics", Bappeo 88, Mysore Road, Bangalore - 560 018.
6. William, Sue Rodwell - Nutrition and Diet Therapy5th edition, Mosbey Co., St.Louis.
7. Davidson S., Passmore R., Brock . J.F., and Truswell A.S., Human Nutrition and Dietetics. The English Language Book Society and Chruchill, Livingstone
8. Gopalan C., Ramanathan, P.V. Balasubramanian, S.C.,Nutritive value of Indian Foods, NIN, Hyderabad.
9. Robinson C.H., Normal and Therapeutic Nutrition. The Macmillan Co., New York,
10. Sumathi R. Mudambi and M.V. Rajagopal 2001 - Foods and Nutrition 4th edition, New Age International Ltd. Publishers.
11. Wardlaw M GordonPerspectives in nutrition 4th edition, McGraw Hill
12. Eleanor Noss Whitney and Sharon RadyRolfes, 2002. Understanding Nutrition 9th edition, West Wordsworth
13. Cataldo, DeBruyne and Whitney, Nutrition and Diet therapy- Principles and practice 5th edition, West/ Wadsworth, London.
14. Groff L James, Gropper S Sareen 2000. Advanced Nutrition and Human Metabolism 3rd edition, West/ Wadsworth, UK

WEBSITES AND e-LEARNING SOURCES

1. www.nutrition.gov- Service of National agricultural library, USD
2. www.nal.usda.gov/fnic- Food and Nutrition information centre.
3. www.nutrition.gov- Service of National agricultural library, USD

QUESTION PAPER TEMPLATE
ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS)
CHENNAI-600008
(for candidates admitted from the academic year 2018)

B.Sc DEGREE EXAMINATION
II YEAR- III SEMESTER

Title of the paper: HUMAN NUTRITION **Max. Marks: 100**
Paper Code: ND18/3C/HNU //CN18/3C/HNU **Time: 3 hours**

SECTION A

Definition (Answer all) **(10x2=20 marks)**
Two questions from each unit

SECTION B

Answer any FIVE questions. **(5x8= 40 marks)**
Each answer should not exceed 300 words.
One question from each unit and the remaining three questions from Unit II, Unit III and Unit IV respectively
(Understanding/Description / Problems)
Each question carries eight marks

SECTION C

Answer any TWO questions. **(2X20=40 marks)**
Each answer should not exceed 1500 words.

Four questions covering all five units.
(Application/ Analysis/Synthesis/ Evaluation)
Sub divisions may be given.
Each question carries twenty marks

SEMESTER III

MICROBIOLOGY

ALLIED- 3 **Paper Code –ND18/3A/MIC// CN18/3A/MIC**

Teaching Hours: 4 hours/week **Credits: 4 LTP: 3 1 0**

(60 hours)

OBJECTIVE:

- ✓ To enable the students to gain knowledge of general characteristics of micro-organisms and their role in food spoilage
- ✓ To gain knowledge of micro-organisms in health and diseases.

COURSE OUTLINE:

UNIT I: **Classification of microorganisms**: Morphology, Motility, Nutrition, Respiration and Reproduction of Bacteria, Viruses, Yeast & Moulds. (10 HOURS)

UNIT II: **Spoilage and contamination of common foods**:
a) Factors affecting growth of microorganisms-temperature, water activity, pH, redox potential.
b) Sources of contamination and spoilage of common foods - Cereal and cereal products, fruits and vegetables, egg, Meat and fish, milk and milk products (two each) (15 HOURS)

UNIT III: **Microorganisms in infection, resistance and immunity**:
a) Infection-modes of spread of Infection; Body Defense- Chemical and cellular;
b)Immunity: types- Active and Passive, Artificial and natural; Vaccines- live, dead and toxoids. (10 HOURS)

UNITIV: **Food poisoning and Food borne diseases**:
a)Food poisoning/ intoxication and food infection- definition. Bacterial food poisoning- Staphylococcus aureus, Clostridium botulinum, Clostridium perfringes, Bacillus cereus
b) Food Infection- Salmonellosis, Shigellosis, Cholera, Gastroenteritis; Measures to prevent food poisoning and food borne infections. (15 HOURS)

UNIT V: **Environmental Microbiology:**
a) Microorganisms found in water, soil, air and sewage- List of microorganisms and diseases caused; Test for sanitary quality of water: Total Bacterial count, Test for E-coli- MPN and Faecal Streptococci; Purification of water
b) Destruction of Microorganism: Sterilization and Disinfection – Methods (10 HOURS)

REFERENCE BOOKS

1. Frazier W.C.Food Micro biology, Tata McGraw – Hill publishing
2. Pelzar, J.Microbiology , Tata McGraw – Hill publishing
3. Park's K,Preventive and Social medicineBanarsid as Bhanot Publishing
4. Schlegel G.Hans, General Microbiology Cambridge University priers
5. James M.Jay, Modern Food Micro biology CBS publishers
6. Joshua Anna K, Micro biology Popular publishing house
7. Purohit, S.S"Microbiology – Fundamentals & applications", 6th Ed, Agro bices. Indiana, 2002
8. Stanier, R.X" The Microbial World", 5thed, Prentice Hall of India. New Delhi,
9. Anandakrishnan, C.P,Singh,R.B and Padmanabhan, P.N "Dairy Microbiology", Srilakshmi publications. Chennai,
10. Patel, A.H "Industrial Microbiology", Macmillan India Limited. New Delhi,
11. Casida, L.E "Industrial Microbiology", New Age International Pvt Ltd. New Delhi,
12. Garbutt J, Essentials of food microbiology, Arnold publication, New York.

WEBSITES AND e-LEARNING SOURCES:

- http//www.betterhealth.vic.an/bhcv2/bh.carticles.nsf – genetically modified foods.
- www.cfsan.fda.gov - Centre for food safety and applied nutrition
- http://www.microbiol.org - Microbiology network
- http://mic.sgnjournals.org - Microbiology journal

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(For candidates admitted from the academic year 2018)

B.Sc DEGREE EXAMINATION
II YEAR- III SEMESTER

Title of the paper: MICROBIOLOGY **Max. Marks: 100**
Paper Code: ND18/3A/MIC// CN18/3A/MIC **Time: 3 hours**

SECTION A

Definition (Answer all) **(10x2=20 marks)**
Two questions from each unit

SECTION B

Answer any FIVE questions. **(5x8= 40 marks)**
Each answer should not exceed 300 words.
One question from each unit and the remaining three questions from Unit II, Unit III and Unit IV respectively
(Understanding/Description / Problems)
Each question carries eight marks

SECTION C

Answer any TWO questions. **(2X20=40 marks)**
Each answer should not exceed 1500 words.

Four questions covering all five units.
(Application/ Analysis/Synthesis/ Evaluation)
Sub divisions may be given.
Each question carries twenty marks

SEMESTER IV

NUTRITION THROUGH LIFE CYCLE

CORE – 5 **Paper Code: ND18/4C/NLC// CN18/4C/NLC**

Teaching Hours: 7 hours/week **Credits: 5 LTP: 4 3 0**

(105 hours)

OBJECTIVES:

To enable the students to

- ✓ To gain knowledge on the nutritional needs of individuals at different age levels and stress conditions.
- ✓ Develop the basic concepts and gain experience in planning, preparing and serving of meals for various age groups at different income levels and stress conditions based on nutritional status.

COURSE OUTLINE:

UNIT I: Introduction to meal planning**:** Balanced diet, RDA - Food Guide Pyramid; Food plate (USDA); Principles of meal planning – steps involved in planning a diet.
Adult:- nutritional requirements, planning balanced diets for adult men and women, promoting healthy lifestyle through holistic approach - Diet, physical activity, stress management, yoga & mediation. (25 HOURS)

UNIT II: Pregnancy: Effect of nutrition on outcome of pregnancy, physiological demands of gestation, weight gain, nutrition needs, dietary plans and dietary problems, complication of pregnancy. Lactation: Physiology of lactation, nutritional requirements during lactation, concerns of breast feeding mother. Lactogogues. (20 HOURS)

UNIT III: Infancy: Breast feeding, complementary feeding, advantages and disadvantages, low cost complementary foods- Artificial feeding- Infant milk Substitutes. Low birth weight infants
Preschool: Growth and nutritional needs, problems in feeding patterns and food acceptance, PEM, Vitamin A. (20 HOURS)

UNIT IV: School Children**:** Physical development, factors affecting food needs, RDA, packed lunch. Childhood obesity;
Adolescence: Growth and development, Food Habits, nutritional requirements, Eating disorders, Nutritional Anaemia (20 HOURS)

UNIT V: Old Age: Biologic & Physiologic aspects of aging, nutritional disorders in the aged, factors affecting food selection, nutritional requirements. (20 HOURS)

REFERENCE BOOKS:

1. Wardlaw M Gordon Perspectives in nutrition 4th edition, McGraw Hill
2. Eleanor Noss Whitney and Sharon RadyRolfes,Understanding Nutrition 9th edition, West Wordsworth.
3. Kathleen mahan and Marian Arlin, Krause's Food Nutrition & Diet therapy 8th edition, W.B.Saunderscompany.
4. Guthrie H. Andrews – Introductory NutritionC.V.Mosby Co., St. Lours.
5. M.SwaminathanPrinciples of Nutrition and Dietetics,Bappeo 88, Mysore Road, Bangalore – 560 018.
6. William, Sue Rodwell– Nutrition and Diet Therapy5th edition, Mosby co., St. Louis.
7. Cataldo, DeBruyne and Whitney,Nutrition and Diet therapy – Principles and Practice 5th edition, West/ Wadsworth, London.
8. Gopalan C., Ramanathan, P.V. Balasubramanian, S.C., Nutritive value of Indian foods, NIN, Hyderabad.
9. Garrow JS, James WPT, Ralph A 2000. Human Nutrition and Dietetics 10th edition, Churchill Livingstone, NY.
10. Groff L James, Gropper S Sareen 2000. Advanced Nutrition and Human Metabolism 3rd edition, West / Wadsworth, UK.

WEBSITES AND e-LEARNING SOURCES:

1. www.nutrition.gov - Service of National agricultural library, USDA
2. www.nal.usda.gov/fnic - Food and Nutrition information centre.

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B.Sc DEGREE EXAMINATION
II YEAR- IV SEMESTER

Title of the paper: NUTRITION THROUGH LIFECYCLE **Max. Marks: 100**
Paper Code: ND18/4C/NLC// CN18/4C/NLC **Time: 3 hours**

SECTION A

Definition (Answer all) **(10x2=20 marks)**

Two questions from each unit

SECTION B

Answer any FIVE questions. **(5x8= 40 marks)**
Each answer should not exceed 300 words.
One question from each unit and the remaining three questions from Unit II, Unit III and Unit IV respectively
(Understanding/Description / Problems)
Each question carries eight marks

SECTION C

Answer any TWO questions. **(2X20=40 marks)**
Each answer should not exceed 1500 words.

Four questions covering all five units.
(Application/ Analysis/Synthesis/ Evaluation)
Sub divisions may be given.
Each question carries twenty marks

SEMESTER –IV

NUTRITIONAL BIOCHEMISTRY

ALLIED – 4 **Paper Code: ND18/4A/NBC// CN18/4A/NBC**
Teaching hours: 4hours/week **Credits: 4** **LTP: 3 1 0**
(60 hours)

OBJECTIVES:

To introduce the students to

- ✓ The principles and viewpoints of biochemistry.
- ✓ A basic understanding of the functions of biological systems in relation to nutritional biochemistry.

COURSE OUTLINE:

UNIT I: Introduction to biochemistry and its relation to nutrition:
Carbohydrates: Classification, glucose oxidation via glycolysis-aerobic, anaerobic (with structure), TCA (with structure), HMP(No Structure) Gluconeogenesis, glycogenolysis & biosynthesis of glycogen, blood glucose homeostasis, Cori Cycle. (15 HOURS)

UNIT II: **Proteins and Amino acids**:
Amino acids: Classification, chemical properties, chromatography separation techniques. Peptides: S tructure& nomenclature.
Protein: Classification, structure-primary, secondary, tertiary and quaternary, transamination, deamination-oxidative and non-oxidative, decarboxylation, urea cycle, fate of ammonia, glutamine synthesis. (10 HOURS)

UNIT III: **Lipid: Classification,** Chemical composition and properties of fat, beta-oxidation of fatty acids of oleic, linoleic and palmitic acid, desaturation of fatty acids, ketone bodies, ketogenesis.
Dietary cholesterol- cholesterol bio-synthesis (No Structure), regulation of cholesterol synthesis
Lipoproteins – Classification, their role and normal values.
Interrelationship between carbohydrates, fat and protein metabolism –hormonal regulation (15 HOURS)

UNIT IV: **Enzymes** – Classification, factors affecting enzyme activity, role of B-vitamins as coenzymes - TPP, FAD, FMN, NAD, NADP, Tetrahydrofolic acid, Biotin, Coenzyme A, B12, Pyridoxine. Enzymes of clinical importance- LDH, AST, ALT, Creatine kinase (10 HOURS)

UNIT V: **Inborn errors of metabolism**

Carbohydrate**:** fructose intolerance, galactosemia, glycogen-Type I Von Gierke's Disease.

Disorders of aromatic amino acids: Phenyl ketonuria, alkaptonuria, tyrosinosis.

Disorders of sulphur-containing amino acids: Homocystinuria

Nucleic acids- Nucleoside, Nucleotide, DNA and RNA – Structure and Functions

Biological oxidation-electron transport chain. (10 HOURS)

RECOMMENDED TEXT BOOK:

1. Shanmugam, Ambika, Fundamentals of biochemistry to medical students. NAV Bharat Printers & traders 56, Peters Road, Chennai 86.

REFERENCE BOOKS

1. R. Montgomery., Thomas.W. Conway, Arthur. A. Spector,Biochemistry-A care oriented Approach. Mosby Company.
2. G. P. Talwar., Srivastava, K. D.; Moudgil.Text book of biochemistry and Human biology. Prentice Hall of India (P)Ptd., New Delhi.
3. Robert. K. Murray, Darryl. K. Granner Peter. A Mays. Victor WRodwellHarpers Biochemistry Prentice Hall International Inc.
4. Conn. E. E. & Stump. P. K.., Outlines of biochemistry, Wiley Eastern (P) Ltd., New Delhi
5. Canteron. A. &Schepertz. B. , Biochemistry W.B Saunders Co. Philadelphia London
6. Pairley. J. L.&Kilgous .G. L. Essentials of biological chemistry. Reinhold publishing corporations, New York
7. GeraldsLitwack, A Laboratory manual. John Wiley sons Inc., New York
8. Mazur. A. & Harrow. B., Biochemistry – A Laboratory manual. John Wiley sons Inc., New York
9. Mahier&Corder. E. H., Basic biological chemistry , Kapes& Row, New York,
10. Varley, Practical clinical biochemistry , William Heinemam Medical books – London Ltd.,
11. West. E. S. Todd. W. R., Moses. R.S. & Van Bruggon. J. S. ,Text book of Biochemistry , The MacMillan Co., New York
12. William. P. J. An introduction to biochemistry, Nostrsand Co., Inc. London

Websites and e-learning resources:

1. http//www.gwu.edu/~mpb-metabolic pathways of biochemistry
2. http//www.indstate.edu/thcme/mwking/inborn.html-inborn errors of metabolism
3. http//www.worthington-biochem/introBiochem/introEnzymes.html-enzymes
4. http//en.wikipedia.org/wiki/Biochemistry-biochemistry encyclopedia

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(For candidates admitted from the academic year 2018)

B.Sc DEGREE EXAMINATION
II YEAR- IV SEMESTER

Title of the paper: NUTRITIONAL BIOCHEMISTRY **Max. Marks: 100**
Paper Code: ND18/4A/NBC// CN18/4A/NBC **Time: 3 hours**

SECTION A

Definition (Answer all) **(10x2=20 marks)**
Two questions from each unit

SECTION B

Answer any FIVE questions. **(5x8= 40 marks)**
Each answer should not exceed 300 words.
One question from each unit and the remaining three questions from Unit II, Unit III and Unit IV respectively
(Understanding/Description / Problems)
Each question carries eight marks

SECTION C

Answer any TWO questions. **(2X20=40 marks)**
Each answer should not exceed 1500 words.

Four questions covering all five units.
(Application/ Analysis/Synthesis/ Evaluation)
Sub divisions may be given.
Each question carries twenty marks

SEMESTER III &IV

HUMAN NUTRITION AND NUTRITION THROUGH LIFE CYCLE PRACTICAL

PRACTICAL 2 (CORE -6) **Paper Code: ND15/4C/PR2// CN15/4C/PR2**
Teaching hours: 3 hours/week **Credits: 4** **LTP: 0 0 3**
(45 hours)

HUMAN NUTRITION PRACTICAL:

1. Quantitative Estimation of Reducing Sugar
2. Quantitative estimation of Calcium.
3. Quantitative estimation of Vitamin C.
4. Quantitative estimation of Phosphorous.
5. Quantitative estimation of Iron.
6. Assessment of BMR and Calorie requirement by factorial approach
7. Determination of Chemical Score for protein rich recipes

REFERENCE BOOKS

1. Varley, Practical clinical biochemistry, William Heinemam Medical books – London Ltd.,
2. West. E. S. Todd. W. R., Moses. R.S. & Van Bruggon. J. S. ,Text book of Biochemistry , The MacMillan Co., New York
3. William. P. J. An introduction to biochemistry, Nostrsand Co., Inc. London 1972.
4. Edusanjalbiochemist.blogspot.in

NUTRITION THROUGH LIFE CYCLE PRACTICAL:

1. Preparation of Complementary feed.
2. Planning and preparation of diets for different activity levels and income group.
   a) Pre-school child
   b) School going children
   c) Adolescents
   d) Adult
   e) Expectant mother
   f) Nursing mother
   g) Old age
3. Planning and preparation of diets (low and medium cost) for deficiency diseases-
   a) PEM
   b) Vitamin A deficiency
   c) Nutritional anemia

SEMESTER –III & IV

MICROBIOLOGY & NUTRITIONAL BIOCHEMISTRY PRACTICAL

ALLIED PRACTICAL: 1 **Paper Code: ND18/4A/PR1//CN18/4A/PR1**
Teaching Hours: 2hours/week **Credits: 2 LTP: 0 0 2**
(30 hours)

MICROBIOLOGY PRACTICAL:

1. Examination of yeast, moulds and bacteria
2. Examination of organisms using Gram staining technique
3. Examination of organisms using simple staining technique
4. Motility of bacteria using hanging drop technique
5. Demonstration of sterilization of glassware using hot air oven, auto clave

NUTRITIONAL BIOCHEMISTRY PRACTICAL

1. Qualitative test for carbohydrates - glucose, fructose, lactose, maltose
2. Qualitative test for proteins - albumin, globulin, casein and gelatin
3. Qualitative test for individual amino acids-Tyrosine, Cysteine, Methionine,Tryptophan.
4. Qualitative test for minerals

REFERENCE BOOKS

1. Varley, Practical clinical biochemistry , William Heinemam Medical books – London Ltd.,
2. West. E. S. Todd. W. R., Moses. R.S. & Van Bruggon. J. S. ,Text book of Biochemistry , The MacMillan Co., New York
3. William. P. J. An introduction to biochemistry, Nostrsand Co., Inc. London.
4. Edusanjalbiochemist.blogspot.in

SEMESTER V

FOOD SERVICE MANAGEMENT I

CORE -7 **Paper Code –ND18/5C/FM1// CN18/5C/FM1**

Teaching Hours: 4hours/week (60 hours) **Credits: 4** **LTP: 3 1 0**

OBJECTIVE:

- ✓ To help the students to understand the various sectors of food service units
- ✓ Become skilled in planning and design of food service units
- ✓ Develop skills in quantity food purchase production, preparationand service.
- ✓ Understand the concept and principles of organization management.

COURSE OUTLINE:

UNIT I: **Food Service Industry**:

a) **Sectors of Food Service Industry**: Commercial- hotels, restaurants, Popular catering- fast food, take away, franchising, leisure attractions, Transport catering, Outdoor catering. Non-Commercial-Industrial catering, welfare catering-old age homes, prisons, religious institutions and Institutional catering.

b) **Food service systems**: Conventional, Cook chill/ Cook Freeze, Commissary and Assembly Service. (15 HOURS)

UNIT II: **Organization management**:

Types of organization, Principles, Functions and Tools of management – Organization chart, Job description, Job specification, Job analysis, Work schedule, Budget and Leadership styles. (10 HOURS)

UNIT III: **Planning and Layout of physical plant**: Planning and organizing of spaces: Kitchen area, storage area, service area, receiving, pre-preparation, dishwashing and garbage disposal area. Concepts of work flow and work simplification technique (10 HOURS)

UNIT IV: **Menu Planning and Standardization:**

a) Menu: Definition, Functions of menu, Types of menu, French classic menu sequence, writing menu, and menu display; Factors considered in menu planning.

b) Standardization of recipes: definition, advantages, enlargement of recipes, portion control and effective use of leftovers.

(15 HOURS)

UNIT V: **Food Purchase and Storage:**

a) Food Purchase: Buying and Receiving methods.

b) Food Storage: Types of storage; Maintenance of store records- Requisition slips, Order form, Stock book, Invoice, Goods received book, Inventories

c) Role of computer applications in kitchen and purchase

(10 HOURS)

REFERENCE:

1. Mohinisethi and Surjeethmalhan ,"Catering management an integrated approach", New age international publishers, III edition, 2015
2. Mohinisethi and Sujeethmalhan ,Institutional Food management", New age international publishers, III edition, 2015
3. Casado,A.M, "House keeping Management", John Wiley and sons limited, 2000
4. R.Singaravelavan, "Food and Beverage Service ",Oxford university press, I edition,2011
5. Kalsigsis, C and Thomas , C, "Design and equipment for food service -A management view", John Wiley and sons limited, 1999
6. Lillicrap, D, R and Cousins, J, A, "Food and beverage service"
7. Jones, P, "Introduction to hospitality operations (An Indispensable guide to the industry.), Cassell publications, London, 1996
8. West,B,Wood, Food service in institutions, New York,
9. Nathaniel, B.S, ", Catering management for hotels, restaurants, Institutions, Sujeet publications, New Delhi, 1991
10. Jones,P, "Food service operations", Cassell publications, London,

WEBSITES AND e-LEARNING SOURCES:

1. http//housekeeping.about.com/
2. http//www.ccohs.ca/oshanswers/hsprograms/house.html
3. https://en.wikipedia.org/wiki/Foodservice
4. http://www.nfsmi.org/documentlibraryfiles/PDF/20080228031334.pdf

QUESTION PAPER TEMPLATE
ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS)
CHENNAI-600008
(For candidates admitted from the academic year 2018)

B.Sc DEGREE EXAMINATION
IIIYEAR- V SEMESTER

Title of the paper: FOOD SERVICE MANAGEMENT I **Max. Marks: 100**
Paper Code: ND18/5C/FM1// CN18/5C/FM1 **Time: 3 hours**

SECTION A

Definition (Answer all) **(10x2=20 marks)**
Two questions from each unit

SECTION B

Answer any FIVE questions. **(5x8= 40 marks)**
Each answer should not exceed 300 words.
One question from each unit and the remaining three questions from Unit II, Unit III and Unit IV respectively
(Understanding/Description / Problems)
Each question carries eight marks

SECTION C

Answer any TWO questions. **(2X20=40 marks)**
Each answer should not exceed 1500 words.

Four questions covering all five units.
(Application/ Analysis/Synthesis/ Evaluation)
Sub divisions may be given.
Each question carries twenty marks

SEMESTER V

HUMAN DEVELOPMENT AND FAMILY STUDIES

CORE- 8 **Paper Code: ND18/5C/HFS// CN18/5C/HFS**

Teaching Hours: 5 hours/week (75 hours) **Credits: 4 LTP: 4 1 0**

OBJECTIVES:

To enable students to

- ✓ Understand the major concepts in human development
- ✓ Develop a scientific attitude towards behavior pattern in individual, family and community life.

COURSE OUTLINE:

UNIT I: **Prenatal development**- Conception- test tube baby, signs of pregnancy, stages of prenatal development - Prenatal care, management of normal pregnancy, hygiene, diet and medical supervision, multiple pregnancy Labor-signs and stages of labor, types of birth, post-natal care of mother, adjustments of new born to temperature, breathing, feeding and elimination. (15 HOURS)

UNIT II: **Infancy [birth to 2yrs]**: Development- physical, motor, social, emotional, cognitive and language, Effects of stimulation- care of infants - feeding, bathing, clothing, sleeping, toilet training and immunization. Maternal deprivation

Early childhood [2-6 yrs]: Development- physical, motor, social, emotional, cognitive and language. Importance of play and play activities, behaviour problems- causes and treatment. Paternal deprivation (15 HOURS)

UNIT III: **Late childhood [6-12 yrs]**: Development- physical, motor, social, emotional, cognitive, moral and language, styles of parenting.

Adolescence [12-18 yrs]: Development - physical, motor, social, emotional, moral and cognitive; adjustment problems; sex education

(15 HOURS)

UNIT IV: **Adulthood [18-60 yrs]**- characteristics and developmental tasks, marriage and family as basic institution, functions of marriage, adjustments in marriage –-sex, finance, career, society and in-laws. family lifecycle-adjustment in different stages, critical family situations and its effect on children. (15 HOURS)

UNIT V: **Old age [60 yrs and above**]: physical and psychological changes, problems of the aged, family attitude towards the aged, place of the aged in Indian society. (15 HOURS)

Related experience

- Visit to a nursery school.
- A survey on adjustment problems between husband and wife
- Survey on in-law relationships
- Survey on problems of old age

REFERENCE:

1. Elizabeth Hurrlock, Developmental Psychology.
2. Dixan, D.S., Stain, M.T Encounter with Children- Paediatric Behaviour and Development, 2nd Edition, St.Lus.
3. Berk, L.E. (2001) Child Development, 3rd Edition, Prentice Hall of India Pvt Ltd, New Delhi.
4. Menon, K.M.K., Palaniappan, (2000) Mudaliar and Menon's Clinical Obstetrics, 9th Edition, Orient Longman, Chennai.
5. Devadas, R.P., Jaya,N. A Textbook on Child Development, MacMillan India Ltd, NewDelhi.
6. Kaplan, P.S. A Child's Odyssey - Child and Adolescent Development, West Publishing Company, St. Paul.
7. Park, K. Textbook of Preventive and Social Medicine, 14th Edition, Banarasidas Bharat Publishers, Jabalpur.
8. Christersen, H.T. Johnson, K.P Marriage and Family, Ronald Press Company, 3rd Edition.
9. Goode, W.J The Family, Prentice Hall of India Pvt. Ltd, NewDelhi.
10. Kapadia, K.M. Marriage and Family in India, Oxford University Press, Bombay.
11. Laudir, J.T. Laudis, M.D. Marriage and Family, 6th Edition, Prentice Hall of India Pvt Ltd, New Delhi.

Websites and e-learning sources:

1. www.mhschool.com/benziger/online/family/parent/children.html
2. www.unt.edu/cpe/module/blk.2sty.html
3. www.uky.edu/subject/family.html
4. www.aifs.gov.au/institute/pubs/fm2003/fm64/booknotes.pdf
5. www.aifs.gov.au/istitute/pubs/fm/fm53cj.p

QUESTION PAPER TEMPLATE
ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS)
CHENNAI-600008
(For candidates admitted from the academic year 2018)
B.Sc DEGREE EXAMINATION
III YEAR- V SEMESTER

Title of the paper: HUMAN DEVELOPMENT AND FAMILY STUDIES **Max. Marks: 100**
Paper Code: ND18/5C/HFS// CN18/5C/HFS **Time: 3 hours**

SECTION A

Definition (Answer all) **(10x2=20 marks)**
Two questions from each unit

SECTION B

Answer any FIVE questions. **(5x8= 40 marks)**
Each answer should not exceed 300 words.
One question from each unit and the remaining three questions from Unit II, Unit III and Unit IV respectively
(Understanding/Description / Problems)
Each question carries eight marks

SECTION C

Answer any TWO questions. **(2X20=40 marks)**
Each answer should not exceed 1500 words.

Four questions covering all five units.
(Application/ Analysis/Synthesis/ Evaluation)
Sub divisions may be given.
Each question carries twenty marks

SEMESTER -V

TECHNIQUES IN CLINICAL NUTRITION

CORE- 8 **Paper Code: CN18/5C/CLN**
Teaching Hours: 5 hours/week **Credits: 4 LTP: 4 1 0**
(75 hours)

OBJECTIVE:

To introduce the students:

- ✓ To obtain knowledge regarding metabolic processes of normal and diseased organs and tissues in order to diagnose diseases and the tools for the same.
- ✓ To be familiar with the dietary/ behavior modifications based on physiological changes occurring in diseased conditions.
- ✓ To gain skills to become laboratory technician.

COURSE OUTLINE:

UNIT I: Basic concepts of instrumentation in nutrient separation and analysis, chromatography, electrophoresis and photo instrumentation-colorimeter, spectrophotometer and flame photometer. (15 HOURS)

UNIT II: Enzyme assays as a diagnostic tool in acute pancreatitis, liver damages, bone disorder, myocardial infarction and muscle wasting. Inborn Errors of metabolism–Phenylketonuria, Albinism, Galactosemia and Alcaptonuria (15 HOURS)

UNIT III: Liver function tests- basic concepts, LFT test based on bile pigment levels in blood and urine, plasma protein changes in liver diseases, differential diagnosis for jaundice. (15 HOURS)

UNIT IV: Basic description of kidney function tests- sugar, urea, creatinine and electrolytes in serum- creatinine clearance tests, phenol red test, serum uric acid, serum total protein, serum albumin, serum globulin, and AG ratio. (15 HOURS)

UNIT V: Test for Diabetes Mellitus: Fasting glucose, Postprandial glucose, IGT, OGTT, Initial glucose challenge test, HBA1C, Insulin sensitivity test, Fructosamine test (15 HOURS)

REFERENCE:

1. Wardlaw Gordon M. And Margaret Kessel, perspectives in nutrition, 5th ed, McGraw Hill Pub, Boston London Sydney, 2000
2. Antia F.P and Philip Abraham , Clinical Dietetics and Nutrition, 4th ed., oxford university press, delhi, 2001
3. Zilver and Pannell, Clinical Biochemistry
4. Hoffpann, Clinical Biochemistry
5. Deb. A.C, Concepts of biochemistry, books and Allied pvt ltd, Calcutta,
6. Talwar G.P , Sri Vatsa L.N and Moudglk.D - textbook of biochemistry and human biology- 3rd ed, prentice hall ofIndiapvt ltd, ND, 2003

QUESTION PAPER TEMPLATE
ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS)
CHENNAI-600008
(For candidates admitted from the academic year 2018)

B.Sc DEGREE EXAMINATION
IIIYEAR- V SEMESTER

Title of the paper: Techniques in clinical nutrition **Max. Marks: 100**
Paper Code: CN18/5C/CLN **Time: 3 hours**

SECTION A

Definition (Answer all) **(10x2=20 marks)**
Two questions from each unit

SECTION B

Answer any FIVE questions. **(5x8= 40 marks)**
Each answer should not exceed 300 words.
One question from each unit and the remaining three questions from Unit II, Unit III and Unit IV respectively
(Understanding/Description / Problems)
Each question carries eight marks

SECTION C

Answer any TWO questions. **(2X20=40 marks)**
Each answer should not exceed 1500 words.

Four questions covering all five units.
(Application/ Analysis/Synthesis/ Evaluation)
Sub divisions may be given.
Each question carries twenty marks

SEMESTER V

MEDICAL NUTRITION THERAPY I

CORE - 9 **Paper Code: CN18/5C/MT1**

Teaching hours: 5 hours/week **Credits: 4 LTP: 3 2 0**

(75 hours)

OBJECTIVE:

To introduce the students:

- ✓ To obtain knowledge regarding metabolic processes of normal and diseased organs and tissues in order to diagnose diseases and the tools for the same.
- ✓ To be familiar with the dietary/ behavior modifications based on physiological changes occurring in diseased conditions.

COURSE OUTLINE:

UNIT I: **Basic Concepts:** Definition of terms – Health, Recommended Dietary Allowances (RDA) and Balanced Diet (Review)
Therapeutic Diet: Routine Hospital Diets: Clear fluid, Full fluid, Semisolids, Soft diet and Regular diet. Different methods of feeding: Oral Feeding, Tube feeding and parenteral feeding
Nutrition Care Process (NCP): Nutritional Assessment of Patients, Psychology in feeding patient, Steps in diet counseling, Patient education and Follow up; NCP team, Classification of Dietitian and responsibility of Dietitian. (15 HOURS)

UNIT II: **Diet in Fevers and Infection:** Fever – Definition, Classification of fevers, Causes and Dietary management in Influenza, Typhoid, Malaria, Tuberculosis and Dengue
Diet in Food Allergy: Food Allergy- Definition, Classification, Common food allergies, tests and dietary treatment- Elimination Diets (15 HOURS)

UNIT III: a) **Nutrition in Weight management:** Etiology, symptoms, dietary management and complications in Obesity and Underweight.
b) Gout- Nature and occurrence of uric acid, causes, symptoms and dietary management (10 HOURS)

UNIT IV: **Diseases of the Gastrointestinal tract**- Etiology, Symptoms and dietary management in diarrhea, constipation, gastritis, peptic ulcers, colitis, mal absorption syndrome – tropical sprue, celiac disease and lactose intolerance. (20 HOURS)

UNIT V: **Diseases of the liver, gall bladder, and Pancreas**- Etiology, symptoms, nutritional implication and dietary management of Hepatitis, Cirrhosis, Hepatic Coma, Cholecystitis, Cholelithiasis and Pancreatitis. (15 HOURS)

RECOMMENDED TEXT BOOK

1. Sue Rodwell Williams (2001). Nutrition & Diet Therapy. CV. Mosby St. Louis

REFERENCE BOOKS

1. Mahan et al.,(2011). Krause's Food Nutrition & Diet Therapy. WB Saunder's Co. Philadelphia.
2. Garrow et al. (2000). Human Nutrition & Dietetics, 10th Edition, Churchill Livingston.
3. Guthrie, Helen (2002). Introductory Nutrition. CV Mosby Co.St. Louis.
4. Gopalan, C. Balasubramaniam, SV Ramasastri&VisveswaraRao.(2004). Diet Atlas . ICMR, New Delhi. India
5. SyliviaEscott – Stump (2012), Nutrition and Diagnosis – related Care. 7thed, Lipponcott Williams and Wilkins, Canada.
6. Mary Marian et al.,(2008) Clinical Nutrition for surgical patients (2008), Jones and Bartlett Publishers, Canada
7. Joshi Y.K (2008), Basics of Clinical Nutrition, 2ns Ed, JP Mecial Publishers PvtLts, New Delhi.

Websites and e-learning resources

1. www.nal.usda.gov – Food & Nutrition Information Centre.
2. www.eatright.org – American Dietetic Organisation.
3. www.nin.org- National Institute of Nutrition, Hyderabad, India
4. www.icmr.org – Indian Council for medical Research.

QUESTION PAPER TEMPLATE
ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS)
CHENNAI-600008
(for candidates admitted during the academic year 2015-2018)
B.Sc DEGREE EXAMINATION
III YEAR- V SEMESTER

Title of the paper: MEDICAL NUTRITION THERAPY I **Max. Marks: 100**
Paper Code: CN18/5C/MT1 **Time: 3 hrs**

SECTION A

Definition (Answer all) **(10x2=20 marks)**
Two questions from each unit

SECTION B

Answer any FIVE questions. **(5x8= 40 marks)**
Each answer should not exceed 300 words.
One question from each unit and the remaining three questions from Unit II, Unit III and Unit IV respectively
(Understanding/Description / Problems)
Each question carries eight marks

SECTION C

Answer any TWO questions. **(2X20=40 marks)**
Each answer should not exceed 1500 words.

Four questions covering all five units.
(Application/ Analysis/Synthesis/ Evaluation)
Sub divisions may be given.
Each question carries twenty marks

SEMESTER V

INTERIOR DECORATION AND HOUSEKEEPING

ELECTIVE- 1 **Paper Code: ND18/5E/IDH// CN18/5E/IDH**
Teaching Hours: 5hours/week (75 hours) **Credits: 5** **LTP: 4 1 0**

OBJECTIVES:

To enable students to:

- ✓ Gain understanding of the basic art principles and to develop aesthetic sense.
- ✓ Learn to make good colour combinations in the interiors
- ✓ To understand the basic principles in making effective flower arrangement.
- ✓ To understand common housekeeping procedures and practices.

COURSE OUTLINE

UNIT I: Art in daily living: Importance of good taste, Objectives of Interior design,
a) Elements of design**:** line, shape, size, colour, texture, pattern and light; Types and characteristics of design
b) Principles of design**:** harmony, balance, rhythm, proportion and emphasis (15 HOURS)

UNIT II: **a)** Colour**:** Qualities of colour-hue, value, intensity; colour harmony.
b) Flower arrangement**:** Flowers for different arrangements, types of flower arrangement
c) Lighting: principles, types of lighting (15 HOURS)

UNIT III: a) Furniture: Selection and arrangement of furniture for different rooms
b) Furnishing materials: types; factors considered in their selection.
c) Floor coverings: Selection & types- hard and soft,
d) Window treatment: curtains and draperies.
e) Accessories: Selection, types, use and care. (15 HOURS)

UNIT IV: Organization of the housekeeping department: Importance of the housekeeping department, Layout and Organization of Housekeeping Department, qualification and personal qualities of a housekeeper; Interdepartmental co-operation (15 HOURS)

UNIT V: Cleaning tools and equipment: cleaning agents, cleaning methods, stain removal, types of cleaning- daily, weekly and annual.Bed making Procedure. Care of public & private areas in establishments;
Linen room: plan, layout, linen control, receiving, issuing, storage of clean linen, Selection, purchase and linen hire. (15 HOURS)

REFERENCES

1. Dorothy S.and Darlene .M. Introduction to Interior Design Macmillan publishing company, New York,
2. Goldstein H. and Goldstein V. Art in Everyday Life, Oxford and IBH pub co., ND
3. New Decoration Book- Better Homes and Gardens, Marshall Cavendish Books Ltd,
4. Enaksh Bhavani, Decorative Designs and Craftmanship of India,
5. Premavathy Seetharaman, Interior design and decoration.
6. Joan Branson, Hotel, Hostel and Hospital Housekeeping.
7. Sudhir Andrews, Hotel Housekeeping.

QUESTION PAPER TEMPLATE
ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS)
CHENNAI-600008
(For candidates admitted from the academic year 2018)

B.Sc DEGREE EXAMINATION
IIIYEAR- V SEMESTER

Title of the paper: INTERIOR DECORATION AND HOUSEKEEPING **Max. Marks: 100**
Paper Code: ND18/5E/IDH//CN18/5E/IDH **Time: 3 hours**

SECTION A

Definition (Answer all) **(10x2=20 marks)**
Two questions from each unit

SECTION B

Answer any FIVE questions. **(5x8= 40 marks)**
Each answer should not exceed 300 words.
One question from each unit and the remaining three questions from Unit II, Unit III and Unit IV respectively
(Understanding/Description / Problems)
Each question carries eight marks

SECTION C

Answer any TWO questions. **(2X20=40 marks)**
Each answer should not exceed 1500 words.

Four questions covering all five units.
(Application/ Analysis/Synthesis/ Evaluation)
Sub divisions may be given.
Each question carries twenty marks

SEMESTER VI

FOOD SERVICE MANAGEMENT II

CORE -10 **Paper Code: ND18/6C/FM2//CN18/6C/FM2**

Teaching Hours: 4hours/week (60 hours) **Credits: 3** **LTP: 3 1 0**

OBJECTIVE:

- ✓ To understand the concept and principles of financial management and human resource management.
- ✓ To be knowledgeable about service areas and equipments used in food service areas.
- ✓ To understand the basic principles of sanitation and safety.

COURSE OUTLINE:

UNIT I: **Financial Management:**

a) Elements of cost, Food cost, Labor cost and overhead cost and Break even analysis.
b) Basic concept of Book Keeping: Transactions, Types- Single entry and Double entry system of book keeping, Book of Accounts – Journal, Ledger, subsidiary books, difference between Journal and Ledger; trial balance and balance sheet
c) Food cost pricing: Methods of pricing and factors affecting pricing. (10 HOURS)

UNIT II: **Human Resource Management**:

a) Recruitment, Selection, Induction, Training, Supervision, Performance appraisal, Promotion, Demotion, Transfer, Retirement, Termination and Dismissal of employees.
b) Laws Governing Food Service Establishment pertaining to employees –Labor laws (15 HOURS)

UNIT III: **Food and Beverage Service:**

a) Styles of Service: Table service/ waiter service**,** self-service, specialized service, assisted service and single point service.
b) Rules for laying a table, waiting at table, Attributes of food and beverage personnel, Inter-personal skills of food and beverage personnel. (10 HOURS)

UNIT IV: **Equipments:**

a) Definition, classification- based on weight or size, order of use and mode of operation and factors considered in the selection of equipment
b) Pre-preparation Equipment- Dough making machine & bread slicer, vegetable cutting machine. Cooking Equipment – Gas ranges with ovens, fryer, Rotisserie.
c) Holding Equipment – Bain-marie and chafing dishes. Service equipment- Flatware, cutlery and hollow ware.

d) Clearing & collection Equipment- Electric food trolleys & clearing trolleys. Washing Equipment – electric dishwasher and Glassware washing. (15 HOURS)

UNIT V: **Hygiene and safety:**

a) Definition of hygiene, Personal hygiene, food hygiene, and environmental hygiene; Types of Pests and Pest control - Methods; Garbage disposal – Methods, HACCP.

b) Accidents -Causes and Prevention (10 HOURS)

REFERENCE BOOKS:

1. Mohinisethi and Surjeethmalhan ,"Catering management an integrated approach", New age international publishers, III edition, 2015
2. Mohinisethi and Surjeeth malhan ,Institutional Food management", New age international publishers, III edition, 2015
3. Sudir Andrews," Food and Beverage Service" Tata McGraw hill publishing company limited.Ii edition, 2009
4. Bobby George ,"Food and Beverage Service ",Jaico Publishing House, I edition,2005
5. R.Singaravelavan, "Food and Beverage Service ",Oxford university press, I edition, 2011
6. Kalsigsis, C and Thomas , C, "Design and equipment for food service -A management view", John Wiley and sons limited
7. Lillicrap, D, R and Cousins, J, A, "Food and beverage service"
8. Jones, P, "Introduction to hospitality operations (An Indispensable guide to the industry.), Cassell publications, London
9. West,B,Wood, Food service in institutions, New York
10. Nathaniel, B.S, ", Catering management for hotels, restaurants, Institutions, sujeet publications, New Delhi
11. Jones,P, "Food service operations", Cassell publications, London
12. Powers, J.M, "Food service planning and control" US
13. Spears,C.M and vaden.G,a, "Food Service organizations- a Managerial and systems approach", Macmillan publishing company New York
14. Kotschewar,L and Terral, M.E, "Food service planning layout and equipment.,John Wiley and sons limited

WEBSITES AND e-LEARNING SOURCES:

1. http//.wikipedia.org/wiki/Interior decoration.
2. http//www.infoplease.com/ce6/society/a0825323.html
3. http//housekeeping.about.com/
4. http//www.ccohs.ca/oshanswers/hsprograms/house.html.

QUESTION PAPER TEMPLATE
ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS)
CHENNAI-600008
(For candidates admitted from the academic year 2018)

B.Sc DEGREE EXAMINATION
III YEAR- VI SEMESTER

Title of the paper: FOOD SERVICE MANAGEMENT II **Max. Marks: 100**

Paper Code: ND18/6C/FM2//CN18/6C/FM2 **Time: 3 hrs**

SECTION A

Definition (Answer all) **(10x2=20 marks)**
Two questions from each unit

SECTION B

Answer any FIVE questions. **(5x8= 40 marks)**
Each answer should not exceed 300 words.
One question from each unit and the remaining three questions from Unit II, Unit III and Unit IV respectively
(Understanding/Description / Problems)
Each question carries eight marks

SECTION C

Answer any TWO questions. **(2X20=40 marks)**
Each answer should not exceed 1500 words.

Four questions covering all five units.
(Application/ Analysis/Synthesis/ Evaluation)
Sub divisions may be given.
Each question carries twenty marks

SEMESTER VI

MEDICAL NUTRITION THERAPY II

CORE-11 **Paper Code: CN18/6C/MT2**
Teaching Hours: 5 hours/week **Credits: 4 LTP: 3 2 0**
(75 hours)

OBJECTIVE

- ✓ To obtain knowledge on the role of diet in disease conditions.
- ✓ To gain experience in planning, preparing and serving therapeutic diets.

COURSE OUTLINE:

UNIT I: **Diet in Diabetes Mellitus:**
Diabetes Mellitus- Incidence and predisposing factors, symptoms, types and tests for detection, insulin and its types, Hypoglycemic agent, Dietary management of Pre-diabetes, Type I DM and Type II DM and Complications of diabetes- Acute and Long term. Glycemic Index & Glycemic Load- Definition, Low Glycemic Foods in the treatment of Diabetes (15 HOURS)

UNIT II: **Diet in Cardiovascular Disorders:** Incidence, etiology, symptoms, role of specific nutrients, dietary management in hypertension and atherosclerosis.
Hyperlipidemia: Definition, Classification of lipoprotein, Types of hyperlipidemia and dietary management. (15 HOURS)

UNIT III: **Diet in Renal diseases:** Basic renal function - etiology, symptoms, nutritional implications and dietary treatment of Nephritis, Nephrosis and End stage Renal Disease. Dialysis: Types of dialysis, Dietary treatment for dialysis patient. Kidney transplantation: Screening of patient and donor, dietary treatment for kidney transplanted patient. Urolithiasis and Nephrolithiasis: types of stones and dietary management (20 HOURS)

UNIT IV: **Nutrition in Stress management:**
Diet in Burns – Definition, Classification of Burns, Metabolic alterations, Rule of nines and Dietary management in Burns
Diet in Surgery – Pre operative and Post-operative diets
(10 HOURS)

UNIT V: **Nutrition and Cancer**: Etiology, Pathophysiology, Stages in carcinogenesis, Nutrients for Cancer Prevention, Medical Nutrition therapy and Nutritional impact of Cancer Treatment
Food & drug interactions: Effect of drugs on food and nutrition-nutrient absorption, nutrient metabolism and nutrient excretion, Modification of drug action by food and nutrients. (15 HOURS)

RECOMMENDED TEXT BOOK

1. Sue Rodwell Williams (2001). Nutrition & Diet Therapy. CV. Mosby St. Louis

REFERENCE BOOKS

1. Mahan et al.,(2011). Krause's Food Nutrition & Diet Therapy. WB Saunder's Co. Philadelphia.
2. Garrow et al. (2000). Human Nutrition & Dietetics, 10th Edition, Churchill Livingston.
3. Guthrie, Helen (2002). Introductory Nutrition. CV Mosby Co.St. Louis.
4. Gopalan, C. Balasubramaniam, SV Ramasastri&VisveswaraRao.(2004). Diet Atlas . ICMR, New Delhi. India
5. SyliviaEscott – Stump (2012), Nutrition and Diagnosis – related Care. 7thed, Lipponcott Williams and Wilkins, Canada.
6. Mary Marian et al.,(2008) Clinical Nutrition for surgical patients (2008), Jones and Bartlett Publishers, Canada
7. Joshi Y.K (2008), Basics of Clinical Nutrition, 2ns Ed, JP Mecial Publishers Pvt Lts, New Delhi.

Websites and e-learning resources

1. www.nal.usda.gov – Food & Nutrition Information Centre.
2. www.eatright.org – American Dietetic Organisation.
3. www.nin.org- National Institute of Nutrition, Hyderabad, India
4. www.icmr.org – Indian Council for medical Research.

SEMESTER VI

SPORTS NUTRITION

CORE- 15 **Paper Code: ND18/6C/SPN// CN18/6C/SPN**

Teaching Hours: 5 hours/week **Credits: 4 LTP: 3 2 0**

(75 hours)

OBJECTIVES

To enable the students

- ✓ To help students gain knowledge about the role of nutrients in athletic performance
- ✓ To develop skills in planning diets for various performance events

COURSE OUTLINE

UNIT 1: Introduction and energy requirements - Fitness- definition, benefits, components, conditioning by training, aerobic & anaerobic activities. Energy and Performance -Energy definition, role of ATP and its inter conversion, storage of carbohydrate, protein and fat in the body, important fuels for exercise, human energy systems. Fatigue during aerobic and anaerobic activities and prevention (15 HOURS)

UNIT II: Role of Carbohydrates in sports- Relationship between muscle glycogen and performance, importance of glycemic index in athletes, high GI and low GI foods , pre and post exercise carbohydrate meals, glycogen replenishment, carbohydrate loading. (10 HOURS)

UNIT III: Role of protein, fat, vitamins minerals and antioxidants in exercise.

a. Protein requirements during endurance and strength training, meeting protein needs, bioavailability of proteins, protein requirement in vegetarian athletes, effect of excess protein intake on athlete's health.
b. Body fat and performance, its advantages, assessment of body composition, desirable body fat percentage for athletes. Role of dietary fat in performance, Fat loading.
c. Effect of exercise on vitamins and mineral requirements, recommendation for vitamins and minerals in athletes. Antioxidants and the role in exercise. (20 HOURS)

UNIT IV: Fluid requirements & Ergogenic aids.-

a) Fluid requirements of exercise, dangers of dehydration and overhydration, hyponatremia, sports drinks -types , fluid concentration, weather and fluid intake, role of non alcoholic drinks, diet drinks, carbonated beverages in athletes.

b) Ergogenic aids: Classification, commonly used ergogenic aids- protein supplements, vitamin and mineral supplements,

imbalances due to supplements, natural versus synthetic vitamin supplements. (15 HOURS)

UNIT V: Nutritional issues and recommendations for athletes

a. Female athlete triad - Performance in athletes with eating disorders-anorexia nervosa and continuance of training, amenorrhea in athletes, causes , risk factors, amenorrhea and bone loss , iron deficiency anemia and sports anemia, causes, symptoms, latent iron deficiency, role of iron supplements, special recommendations for pregnancy, body fat level and fertility, weight gain during pregnancy, nutritional guidelines.
b. Nutritional needs of athletes with special needs- Diabetic athlete, young and elderly, travelling athlete. (15 HOURS)

Activity

a. Preparation of sports drinks
b. Planning diets for different performance events – foot ball, sprinting, swimming and weight lifting

Visits

Visit to YMCA
Visit to a National stadium to observe the performance of athletes.

REFERENCE BOOKS:

1. Anita Bean, The Complete Guide To Sports Nutrition , A& C Black Publishers, 2000.
2. Melvin H Williams, Nutrition for health, fitness and sport, 5h edMcGraw Hill, Boston
3. Asker Jeukendrup and Michael Gleeson, Sports Nutrition- An introduction to energy production and performance, Human Kinetics publishers, 2004.
4. William D, Mc Ardle, Frank I, Katch and Victor L. Katch, Sports and Exercise Nutrition. 4thed, Lippincott Williams and Wilkins

WEBSITES AND e-LEARNING SOURCES:

1. www.acsm.org
2. www.ausport.govt.au
3. www.sportsci.org
4. www.gssiweb.com
5. www.acefitness.org

QUESTION PAPER TEMPLATE
ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS)
CHENNAI-600008
(For candidates admitted from the academic year 2018)

B.Sc DEGREE EXAMINATION
III YEAR- VI SEMESTER

Title of the paper: SPORTS NUTRITION **Max. Marks: 100**
Paper Code: ND18/6C/SPN//CN18/6C/SPN **Time: 3 hrs**

SECTION A

Definition (Answer all) **(10x2=20 marks)**
Two questions from each unit

SECTION B

Answer any FIVE questions. **(5x8= 40 marks)**
Each answer should not exceed 300 words.
One question from each unit and the remaining three questions from Unit II, Unit III and Unit IV respectively
(Understanding/Description / Problems)
Each question carries eight marks

SECTION C

Answer any TWO questions. **(2X20=40 marks)**
Each answer should not exceed 1500 words.

Four questions covering all five units.
(Application/ Analysis/Synthesis/ Evaluation)
Sub divisions may be given.
Each question carries twenty marks

SEMESTER VI

COMMUNITY NUTRITION

ELECTIVE 2 **Paper Code: ND18/6E/CMN// CN18/6E/CMN**

TEACHING HOURS: 5hours/week **Credits: 5** **LTP: 4 1 0**

(75 hours)

OBJECTIVES:

- ✓ To enable the students to understand the importance of nutrition in national progress and the significance of assessment of nutritional states.
- ✓ To recognize the solutions to overcome problems of malnutrition in the community and the role of national and international agencies in this area.

COURSE OUTLINE:

UNIT I: Nutrition and Health in National Development: Nutritional problems confronting our country, Sustainable Development Goals, Causes of malnutrition in India, Food and Nutrition Security, Sustainable diets, Balance between food and population growth. (15 HOURS)

UNIT II: Nutritional Assessment: Sampling techniques, Identification of risk groups, Methods of Assessment of Nutritional Status: Direct assessment –Anthropometry, Biochemical estimations, Clinical and Dietary assessment; Indirect Assessment- Food balance sheets and Agricultural data, Ecological parameters and Vital Health Statistics (10 HOURS)

UNIT III: a) National Nutrition Programmes to combat malnutrition: Prophylactic programs – Vitamin A, Iron & Folic acid, Iodine; Pulse Polio, Revised National Tuberculosis Control Programme- DOTS, National AIDS control Programme; ICDS, School feeding Programmes, Nutrition Intervention during Emergencies; Immunization and its importance (15 HOURS)

b) National and International agencies in Community Nutrition: FAO, WHO, UNICEF, ICMR, ICAR, NIN, CFTRI, MSSRF, Food & Nutrition Board, Social Welfare Boards – Central & State. (15 HOURS)

UNIT IV: a) Importance of Breast feeding: Promotion of successful breastfeeding, Government policies, Exclusive Breastfeeding, Wet nursing, Breast milk banks, IMS Act; Weaning foods: Planning, formulating and preparation;

	Importance of correct and timely weaning, low cost complementary foods b) Nutrition and Infection**:** Relationship (10 HOURS)
UNIT V:	a) Nutrition Education Program: Objectives, Planning, Implementation and Evaluation; Communication Strategies – Role of Audio visual aids b) Recent advances in community Nutrition; Fortification and enrichment of foods (10 HOURS)
Related Experiences:	A) Assessment of Nutritional status of vulnerable groups B) Nutrition Education Programme for vulnerable groups

REFERENCE BOOKS:

1. M.SwaminathanPrinciples of Nutrition and Dietetics, Bappeo 88, Mysore Road, Bangalore – 560 018.
2. Gopalan C., Ramanathan, P.V. Balasubramanian, S.C., 2010 – Nutritive value of Indian foods, NIN, Hyderabad.
3. Bamji, Textbook of Human nutrition, 2005
4. Park K, Park's T3extbook of preventive medicine, 2005
5. SurajGupte(2006), Textbook of Pediatric Nutrition, Pawaninder P Vij Publishers, New Delhi
6. Jelliffe. D.B., "The assessment of Nutritional status on the community", - WHO monograph cd's – no.Geneva
7. Reh, Emma, ", Manual On Household Food Consumption Surveys", FAO Nutritional studies, No.18, Rome.
8. Shanthi Gosh, , "The feeding and care of infants and young children" Voluntary Health association of India – New Delhi.
9. Ebraham. G.J. "Nutrition in mother and child health: London, macmillanRitchey. S.J. and J. Taper. , Maternal and child Nutrition, Harper and row publishers, New York.
10. McLarea, D.S. (Ed.). Nutrition in the community, John Wiley and sons.
11. Shukla P.K. Nutritional Problems of India- Prentice Hall of India Pvt. Ltd., New Delhi.
12. Sheila ChanderVir (2011), Public Health Nutrition in developing countries , (Part I) Woodhead Publishing, New Delhi.
13. Sheila ChanderVir (2011), Public Health Nutrition in developing countries , (Part II) Woodhead Publishing, New Delhi.
14. WHO, The Management of Nutrition in Major Emergencies, AITBS Publishers, New Delhi.

Websites:

1. www.nin.org- National Institute of Nutrition, Hyderabad, India
2. www.icmr.org – Indian Council for medical Research.

QUESTION PAPER TEMPLATE
ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS)
CHENNAI-600008
(For candidates admitted from the academic year 2018)

B.Sc DEGREE EXAMINATION
III YEAR- VI SEMESTER

Title of the paper: COMMUNITY NUTRITION **Max. Marks: 100**
Paper Code: ND18/6E/CMN// CN18/6E/CMN **Time: 3 hrs**

SECTION A

Definition (Answer all) **(10x2=20 marks)**
Two questions from each unit

SECTION B

Answer any FIVE questions. **(5x8= 40 marks)**
Each answer should not exceed 300 words.
One question from each unit and the remaining three questions from Unit II, Unit III and Unit IV respectively
(Understanding/Description / Problems)
Each question carries eight marks

SECTION C

Answer any TWO questions. **(2X20=40 marks)**
Each answer should not exceed 1500 words.

Four questions covering all five units.
(Application/ Analysis/Synthesis/ Evaluation)
Sub divisions may be given.
Each question carries twenty marks

SEMESTER VI

FOOD PRESERVATION

ELECTIVE 3 **Paper Code: ND18/6E/FPR//CN18/6E/FPR**
Teaching Hours: 5 hours/week **Credits: 5** **LTP: 4 1 0**
(75 hours)

OBJECTIVES

- ✓ Understand the need for food preservation
- ✓ Obtain knowledge of various types of preservation techniques
- ✓ Obtaining knowledge on packaging and food standards.

COURSE OUTLINE

UNIT I: Introduction-Importance and principles of preservation, food spoilage - causes of spoilage, spoilage of various foods and food products. (15 HOURS)

UNIT II: Methods of food preservation: Traditional methods-salting, pickling and drying.
Preservation as sugar concentrates - Jams, Jelly, Marmalades and Preserves.
Fruit Juice Beverages - Preparation and preservation. Preparation of candied fruits (15 HOURS)

UNIT III: Methods of food preservation**:**
Use of high temperatures- Drying and sterilization, canning, pasteurization, Blanching
Use of Low temperatures - Refrigeration and freezing, Irradiation (15 HOURS)

UNIT IV: Food additives – definition, uses of additives, characteristics of chemical additives, intentional food additives, permitted amounts; Food standards –BIS,AGMARK, FSSAI 2006.
Food adulteration – types of adulterants, intentional adulterants, incidental adulterants. (15 HOURS)

UNIT V: Convenience foods – processing & preservation techniques - ready-to-cook, ready-to-use, ready-to serve and ready-to-eat.
Packaging: Functions of Packaging, packing materials and forms, special packaging - military and space foods and intelligent packaging. (15 HOURS)

REFERENCE BOOKS:

1. Subbulakshmi.G,Shoha A Udipi, Food Processing and Preservation, New Age Internation (P) Ltd, Publishers. 2001
2. Sivasankar.B, Food Processing and Preservation, Prentice Hall of India (P) Ltd, New Delhi.2008
3. ShakuntalaManay.N, M.Shadaksharaswamy, Food Facts and Principles, 3rd edition, New Age International (P) Ltd.2008
4. NIIR BOARD, Manual of Modern Technology on Food Preservation, Asia Pacific Business Press Inc, New Delhi.
5. SudeshJood and NeelamKhetarpaul, Food Preservation, Agro Tech Publishing Academy, Udaipur.2002
6. NeelamKhetarpaul, Food Processing and Preservation,Daya Publishing House, New Delhi.2005
7. Hausner.A, Preserved Foods and Sweetmeats, Biotech Books, New Delhi. 2005

QUESTION PAPER TEMPLATE
ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS)
CHENNAI-600008
(For candidates admitted from the academic year 2015-2018)

B.Sc DEGREE EXAMINATION
III YEAR- VI SEMESTER

Title of the paper: FOOD PRESERVATION **Max. Marks: 100**
Paper Code: ND18/6E/FPR// CN18/6E/FPR **Time: 3 hrs**

SECTION A

Definition (Answer all) **(10x2=20 marks)**
Two questions from each unit

SECTION B

Answer any FIVE questions. **(5x8= 40 marks)**
Each answer should not exceed 300 words.
One question from each unit and the remaining three questions from Unit II, Unit III and Unit IV respectively
(Understanding/Description / Problems)
Each question carries eight marks

SECTION C

Answer any TWO questions. **(2X20=40 marks)**
Each answer should not exceed 1500 words.

Four questions covering all five units.
(Application/ Analysis/Synthesis/ Evaluation)
Sub divisions may be given.
Each question carries twenty marks

SEMESTER V & VI

FOOD SERVICE MANAGEMENT PRACTICAL

CORE-11 **Paper Code – ND18/6C/PR3// CN15/6C/PR3**

Practical Hours: 3hours/week **Credits: 3 LTP: 003**

(45 hours)

OBJECTIVES:

To enable the students

- ✓ To learn the functioning of food industry and
- ✓ To learn to step up the ingredients for different cuisines

FOOD SERVICE MANAGEMENT I

1. Visit to sectors of food industry – any 2 commercial and non-commercial sectors.
2. Standardization of two portions of North Indian, South Indian and Chinese Cuisine.

FOOD SERVICE MANAGEMENT II

1. Quantity production of standardized North Indian, South Indian and Chinese Cuisine.

REFERENCE BOOKS:

1. Mohinisethi and Sujeethmalhan ,"Catering management an integrated approach", New age international publishers, III edition, 2015
2. Mohinisethi and Sujeethmalhan, Institutional Food management", New age international publishers, III edition, 2015
3. Sudir Andrews," Food and Beverage Service" Tata McGraw hill publishing company limited.Ii edition, 2009
4. Bobby George ,"Food and Beverage Service ",Jaico Publishing House, I edition,2005
5. R.Singaravelavan, "Food and Beverage Service ",Oxford university press, I edition,2011
6. Kalsigsis, C and Thomas , C, "Design and equipment for food service -A management view", John Wiley and sons limited
7. Lillicrap, D, R and Cousins, J, A, "Food and beverage service"

WEBSITES AND e-LEARNING SOURCES:

1. http//.wikipedia.org/wiki/Interior decoration.
2. http//www.infoplease.com/ce6/society/a0825323.html
3. http//housekeeping.about.com/
4. http//www.ccohs.ca/oshanswers/hsprograms/house.html.

SEMESTER V& VI

MEDICAL NUTRITION THERAPY PRACTICAL

CORE- 15 **Paper Code: CN18/6C/PR4**

Teaching hours: 3 hours/ week ` **Credits: 3 LTP: 003**

(45 hours)

OBJECTIVES:

To enable the students

- ✓ To learn the diet planning for therapeutic conditions

MEDICAL NUTRITION THERAPY I

1. Planning and preparing clear fluid full fluid and soft diet.
2. Planning and preparing diet for fever patient- typhoid and tuberculosis.
3. Planning and preparing diet for obesity and underweight.
4. Planning and preparing diet for diarrhea, constipation and ulcer
5. Planning and preparing diet for hepatitis and cirrhosis of liver.
6. Report on the visit to the dietary department of hospital.

MEDICAL NUTRITION THERAPY II

1. Planning and preparing diet for Hypertension and Atherosclerosis.
2. Planning and preparing diet for Diabetes mellitus with insulin and without insulin
3. Planning and preparing diet for Gout
4. Planning and preparing diet for Nephritis, Nephrosis and ESRD with dialysis
5. Planning and preparing diet for Cancer
6. Planning and preparing diet in Burns
7. Presentation of two case study done in hospital internship (15 days Internship to be done before the completion of II year in a teaching hospital)