Telangana State Council Of Higher Education, Govt. Of Telangana

B.Sc. CBCS Common Core Syllabi for All Universities in Telangana

B.Sc. Applied Nutrition and Public Health

FIRST YEAR SEMESTER I				
CODE	**COURSE TITLE**	**COURSE TYPE**	**HPW**	**CREDITS**
BS101	ENVIRONMENTAL STUDIES	AECC I	2	2
BS102	ENGLISH	CC- I A	4	4
BS103	SECOND LANGUAGE	CC -2 A	4	4
BS104	**BASICS OF BIOCHEMISTRY**	DSC- IA	4T+2P=6	4+1=5
BS105	OPTIONAL II	DSC -2A	4T+2P=6	4+1=5
BS 106	OPTIONAL III	DSC- 3A	4T+2P=6	4+1=5
	TOTAL			**25**
SEMESTER II				
BS 201	GENDER SENSITIZATION	AECC 2	2	2
BS 202	ENGLISH	CC- I B	4	4
BS 203	SECOND LANGUAGE	CC -2 B	4	4
BS 204	**NUTRITIONAL BIOCHEMISTRY**	DSC- IB	4T+2P=6	4+1=5
BS 205	OPTIONALII	DSC- 2B	4T+2P=6	4+1=5
BS 206	OPTIONAL III	DSC- 3B	4T+2P=6	4+1=5
	TOTAL			**25**
SECOND YEAR **SEMESTER III**				
BS 301	**FOOD SERVICE MANAGEMENT**	SEC - I	2	2
BS 302	UGC-FRAMED SYLLABUS	SEC - II	2	2
BS 303	ENGLISH	CC- IC	3	3
BS 304	SECOND LANGUAGE	CC -2C	3	3
BS 305	**FOOD SCIENCE & TECHNOLOGY**	DSC - IC	4T+2P=6	4+1=5
BS 306	OPTIONAL- II	DSC- 2C	4T+2P=6	4+1=5
BS 307	OPTIONAL- III	DSC- 3C	4T+2P=6	4+1=5
	TOTAL			**25**
SEMESTER IV				
BS 401	**QUANTITY FOOD PRODUCTION**	SEC – 3	2	2
BS 402	UGC-FRAMED SYLLABUS	SEC - 4	2	2
BS 403	ENGLISH	CC- I D	3	3
BS 404	SECOND LANGUAGE	CC -2 D	3	3
BS 405	**FAMILY & COMMUNITY NUTRITION**	DSC – 1D	4T+2P=6	4+1=5
BS 406	OPTIONAL- II	DSC- 2D	4T+2P=6	4+1=5
BS 407	OPTIONAL- III	DSC- 3D	4T+2P=6	4+1=5
	TOTAL			25
THIRD YEAR **SEMESTER V**				
BS 501	**ENGLISH**	CC-1 E	3	3
BS 502	**SECOND LANGUAGE**	CC-2E	3	3
BS 503	**FUNDAMENTALS OF FOOD & NUTRITION**	GE	4	4
BS 504	**A) CLINICAL DIETETICS** **(OR)** **B) FOOD SAFETY & QUALITY CONTROL**	DSE-1E	4T+2P=6	4+1=5

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1-42 Pages

BS 505	**OPTIONAL II A/B/C**	DSE – 2E	4T+2P=6	4+1=5
BS 506	**OPTIONAL II A/B/C**	DSE – 3E	4T+2P=5	4+1=5
	TOTAL			**25**
SEMESTER- VI				
BS 601	**ENGLISH**	CC-1F	3	3
BS 602	**SECOND LANGUAGE**	CC-2F	3	3
BS 603	**A) PUBLIC HEALTH, FOOD HYGIENE & SANITATION (OR) B) NUTRITION THERAPY IN CRITICAL CONDITIONS**	DSE – 1F	4T+2P=6	4+1=5
BS 604	OPTIONAL II A/B/C	DSE – 2F	4T+2P=6	4+1=5
BS 605	OPTIONAL II A/B/C	DSE – 3F	4T+2P=6	4+1=5
BS 606	PROJECT WORK / ADVANCED NUTRITION		4	4
	TOTAL			**25**
	TOTAL CREDITS			**150**

CC-Core Course
AECC- Ability Enhancement Compulsory Course
DSC- Discipline Specific Course
SEC- Skill Enhancement Course
DSE- Discipline Specific Elective
GE- General Elective
HPW- Hours per Week
P- Practical
T- Theory

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Proposed scheme for choice-based credit system in B. Sc. Applied Nutrition and Public Health

S.NO	COURSE CATEGORY	NO.OF COURSES	CREDITS PER COURSE	CREDITS
1.	AECC	2	2	4
2.	SEC	4	2	8
3.	CC	2	4 (I Year), 3 (II Year), 3 (III Year)	40
4.	DSC	20	5	60
6.	DSE	10	5	30
7.	GE	1	4	4
8.	PROJECT WORK/ CORE PAPER	1	4	4
	TOTAL	**37**		**150**
	CREDITS UNDER NON CGPA			
	NSS / NCC/ SPORTS/ EXTRA CURRICULAR		**UPTO 6 (2 IN EACH YEAR)**	
	SUMMER INTERNSHIP		**UPTO 4 (2 IN EACH YEAR)**	

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BSC APPLIED NUTRITION & PUBLIC HEALTH I YEAR

I SEMESTER

BS104 DISCIPLINE SPECIFIC COURSE IA- (DSC IA)

BASICS OF BIOCHEMISTRY

CREDITS 4 **60 HOURS**

CREDIT 1- INTRODUCTION TO NUTRITION & CARBOHYDRATES16 Hours

1.1 Introductory Nutrition, Definition of Nutrition, Food, Nutrients, or Proximate Principles, Nutritional needs of the body, specific role of nutrients, classification of foods, food groups.

1.2 **Carbohydrates** — Composition and chemistry, classification, sources, nutritional significance, digestion, absorption and metabolism - Glycolysis, TCA Cycle with bioenergetics.

CREDIT II- PROTEINS & NUCLEIC ACIDS **18 Hours**

2.1 **Proteins:** Composition and chemistry, classification sources, functions, digestion and absorption, denaturation. Nutritional significance of some amino acids.General properties of proteins, metabolism, deamination, transamination, decarboxylation.Outlines the supplementary value of amino acids. Deficiency of Protein — PEM definition, classification, and age groups affected

2.2 **Nucleic acids:** Composition — purine and pyrimidine bases DNA, RNA — structure and biological functions

CREDIT III- LIPIDS **14 Hours**

3.1 Composition Chemistry classification- simple, compound & derived lipids with functions, cholesterol functions & ranges

3.2Sources, chemical properties.

3.3Digestion and Absorption,

3.4Essential fatty acids-omega3 & omega 6: functions and deficiency,

3.5 Elements of fat analysis, Metabolism: Beta- oxidation of fatty acids. Types of Rancidity, Ketosis

CREDIT IV-ENERGY METABOLISM **12 Hours**

4.1 Types of energy, energy-yielding food factors, RDA & factors affecting RDA, Units of energy

4.2Principle of direct& indirect calorimetry

4.3 Determination of energy value of food using a bomb calorimeter.

4.4PFV (Physiological Fuel Value) of foods, RQ, SDA of food.

4.5 Determination of BMR and factors affecting BMR.

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REFERENCE BOOKS

1. Nutrition science- B Srilakshmi, New age international publishers, 2nd edition.
2. A textbook of biochemistry, Dr AVSS Rama Rao, 10th edition, UBS publishers Distribution Pvt. Ltd.
3. Biochemistry- U Satyanarayana, U chakrapani, Books and Allied Pvt Ltd
4. Helen A. Guthrie, Introductory Nutrition, Times Mirror Mosby
5. Swaminathan M, Advance Textbook on Food and Nutrition, Volume 1, The Bangalore printing and publishing co.,Ltd.
6. Mudambi SR and Rajagopal M V, Fundamentals of food and Nutrition, Willey Eastern Ltd.
7. Swaminathan M, Handbook of Food and Nutrition, The Bangalore Printing and Publishing Co. Ltd.

BSC APPLIED NUTRITION & PUBLIC HEALTH I YEAR

I -SEMESTER

BS104 DISCIPLINE SPECIFIC COURSE IA- (DSC IA)

BASICS OF BIOCHEMISTRY (Practical)

PERIODS: 15 **NO. OF CREDIT-1**

I. Introduction to Qualitative and Quantitative Analysis of Nutrients

IL. Carbohydrates:

1. Qualitative analysis of Glucose
2. Qualitative analysis of Fructose
3. Qualitative analysis of Maltose
4. Qualitative analysis of Sucrose
5. Qualitative analysis of Lactose
6. Qualitative analysis of Starch

III. Proteins

l. Qualitative analysis of Proteins

IV. Minerals

1. Qualitative analysis of Minerals

FINAL PRACTICAL EXAMINATION
SEMESTER I
B.Sc.(CBCS) APPLIED NUTRITION AND PUBLIC HEALTH
PAPER-I BASICS OF BIOCHEMISTRY

BATCH: _____ **DATE:** _____
TIME: 3 HOURS **MARKS: 50 MARKS**

MAJOR EXPERIMENT:

I. Analyse the given sample present in the test tube for the presence of Carbohydrates.

a) Identify – mono, di and polysaccharides (5M)
b) Aim and Principal (5M)
c) Detailed procedure (5M)
d) Reporting (5M)
e) Osazone Crystals (slide preparation) (5M)

MINOR EXPERIMENT:

II. Analyse the given sample for the presence of any two of the following sample (15 M)

a) Iron
b) calcium
c) phosphorus

(OR)

Analyse the given sample for the presence of protein (15M)

III. **Write principal of any one of the following** **(5M)**

a) Molisch's test
b) Benedict's Test
c) Barfoed's Test
d) Iodine test
e) Seliwanoff's test

IV. **Record** **(5M)**

BSC APPLLIED NUTRITION & PUBLIC HEALTH I YEAR

II SEMESTER

BS204 DISCIPLINE SPECIFIC COURSE IB- (DSC IB)

NUTRITIONAL BIOCHEMISTRY

CREDITS 4 **60 HOURS**

CREDIT I- VITAMINS **20 Hours**

1.1Fat soluble — A, D, E, K. History, Chemistry, physiological functions, sources, requirements, effects of deficiency.

1.2 Water soluble vitamins — B Complex — Thiamine, Riboflavin, Niacin, Pantothenic Acid, Folic Acid, Vitamin B 12, Biotin and Pyridoxine, Vitamin C- History, requirements, functions, sources, effect of deficiencies.

CREDIT II - MINERALS **16 Hours**

2.1 Calcium, Phosphorous, Iron, Fluorine, Iodine. History, Chemistry, physiological functions, sources, requirements, deficiency.

2.2 Role of Zinc and Selenium as antioxidants.

CREDIT III-WATER BALANCE AND ELECTROLYTE BALANCE 12 Hours

3.1 Functions of water,water compartments in the body, distribution of water & electrolyte in the body. Regulation of water balance(overhydration & dehydration), regulation of electrolyte balance(hypo & hypernatremia, hypo & hyperkalemia), RAAS(Renin Angiotensin Aldosterone system), water intoxication

3.2, Acid-base balance & imbalance,Japanese Water Therapy.

CREDIT IV-ENZYMES & HORMONES **12 Hours**

4.1**Enzymes** — Definition, classification, properties, mechanism of enzyme action, factors affecting enzyme action, enzyme inhibitions.

4.2**Hormones** — Major endocrine glands and their secretions, classification, the general mode of action, functions,hypo & hypersecretion of — Insulin, Thyroxin, growth hormone, sex hormones.

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1. Nutrition science- B Srilakshmi, New age international publishers, 2nd edition.
2. A textbook of biochemistry, Dr AVSS Rama Rao, 10th edition, UBS publishers Distribution Pvt. Ltd.
3. Biochemistry- U Satyanarayana, U chakrapani, Books and Allied (Pvt.Ltd)
4. Helen A. Guthrie, Introductory Nutrition, Times Mirror Mosby
5. Swaminathan M, Advance Textbook on Food and Nutrition, Volume 1, The Bangalore printing and publishing co.,Ltd.
6. Mudambi SR and Rajagopal M V, Fundamentals of food and Nutrition, Willey Eastern Ltd.
7. Swaminathan M, Handbook of Food and Nutrition, The Bangalore Printing and Publishing Co. Ltd.

BSC APPLIED NUTRITION & PUBLIC HEALTH I YEAR

II -SEMESTER

BS204 DISCIPLINE SPECIFIC COURSE IB- (DSC IB)

NUTRITIONAL BIOCHEMISTRY (PRACTICAL)

NO. OF HOURS 15 **CREDITS-1**

I. Quantitative analysis of carbohydrates

Estimation of Reducing Sugar by Benedict's method

Estimation of Fructose by Roe's Resorcinol method

II. Estimation of protein by Biuret method

III. Fats

Determination of saponification number of oil.

IV. Vitamins

Estimation of ascorbic acid by 2,6, dichlorophenol, indophenols method in lemon/cabbage / green chillies.

V. Minerals.

Estimation of Calcium in the Ash solution of Green leafy vegetable by titrimetric method

FINAL PRACTICAL EXAMINATION
SEMESTER II
B.Sc APPLIED NUTRITION & PUBLIC HEALTH
PAPER (2): NUTRITIONAL BIOCHEMISTRY

TIME: 3 HOURS **MAX MARKS: 50 MARKS**

DATE: _____ **BATCH:** _____

MAJOR:

1. **Estimate the amount of any one of the following present in the given sample solution.** **(25 MARKS)**
   - **a)** Reducing sugar by Benedict's Method.
   - **b)** Proteins by Biuret Method.
   - **c)** Ascorbic acid by Dye Method.

GIVE THE

- ❖ Principle. **(6 MARKS)**
- ❖ Procedure. **(7 MARKS)**
- ❖ Observation and Calculation. **(12 MARKS)**

MINOR:

2. **Estimate the amount of calcium in the give sample.** **(15 MARKS)**
3. **Write the detailed procedure for the determination of saponification of oil.** **(5 MARKS)**
4. **Record.** **(5 MARKS)**

B.SC. IIYEAR
III-SEMESTER
PAPER-BS301, SEC- 1
FOOD SERVICE MANAGEMENT

NO. OF HOURS 30 **CREDITS 2**

CREDIT I: MANAGEMENT OF FOOD & FOOD SERVICE ESTABLISHMENTS **15Hours**

1.1 Principles of management, types of foodservice institution- commercial& Non-commercial
1.2 Food management: Construction of the menu, Importance of menu planning, types of menu- A 'la carte, table d'hote, combination & food service style

CREDIT II: SETTING UP A FOOD SERVICE CREDIT& FINANCIAL MANAGEMENT **11 Hours**

2.1 Setting up Food Service**:** layout & design, planning team, architectural features, process flow, time management.
2.2 Financial Management: Component of cost, Cost control, factors affecting losses.

RECOMMENDED BOOKS:

1. Catering Management – An Integrated Approach – MohiniSethi, Surjeet Malhan,3rd edition, New Age International Publishers.
2. Institutional Food Management –MohiniSethi, New Age International Publishers.

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B.SC. II YEAR
III-SEMESTER
BS 305, DSC-1C
PAPER III-FOOD SCIENCE & TECHNOLOGY (THEORY)
NO.OF HOURS:60 **CREDITS: 4**

CREDITI: BASICS OF FOOD SCIENCE, CEREALS & MILLETS 15Hours

1.1 Definition of food science and food technology. Brief objectives of cooking, and cooking methods.
1.2 Cereals & millets: Cereal - (Rice and wheat)-Structure, Nutritive value, Composition, role in cookery.
1.3 Millets- Types of millets – Jowar& Maize
1.4 Milling of wheat and corn.
1.5 Role of gluten in dough formation, factors affecting gluten formation.

CREDIT II: PULSES & LEGUMES, MILK & MILK PRODUCTS 15 Hours

2.1 Pulses & legumes: Nutritive value, germination, Anti-nutritional factors, elimination, the role of pulses in cookery.
2.2 Processing- Milling of pulses, legume protein concentrate, quick-cooking legumes.
2.3 Milk & milk products: types, nutritive value, composition, processing of milk, role in cookery
2.4 Different types of Fermented & non-fermented milk products.
2.5 Processing of Cheese & Curd.
2.6 Processing of Paneer&Khoa.

CREDIT III: FLESHY FOODS, SPICES, CONDIMENTS & BEVERAGES 15 Hours

3.1 Fleshy foods (a) Meat: sources & types, nutrient composition, post mortem changes & processing of Meat-Ageing, tenderization and curing.
(b) Fish: Classification & types of fish, selection of fish.
(c) Eggs: Structure, composition, nutritive value, the role of egg in cookery.
3.2 Spices and condiments: List of various spices and condiments in Indian Cookery- Cinnamon, Clove, Fenugreek Seed, Ginger, Garlic, Onion, Turmeric, Fennel Seeds- active compounds and medicinal values.
3.3 Beverages - Definition, Classification, Processing- black tea, green tea and wine.

CREDIT IV: VEGETABLES & FRUITS, SUGAR & JAGGERY, FATS & OILS 15 Hours

4.1Vegetables: classification, composition- pigments, organic acids, enzymes, flavour compounds, Nutritive value.
4.2 Fruits: definition, classification, composition- pigments, water content, cellulose &pectic substances, flavour constituents, polyphenols, nutritive value, changes during ripening, enzymatic browning.
4.3 Sugar &jaggery: sources, types, role in cookery.
4.4 Fats & oils: Sources, types, spoilage- rancidity, refining of oils, role in cookery.

RECOMMENDED BOOKS:

1. Textbook of Sri Lakshmi. B- food science 5th edition, New age international publishers, New Delhi – 110002, 2011
2. Norman potter N- food science, CBS publishers & distributors, New Delhi-110002, 2007
3. Food processing and preservation, G.Subbulakshmi and Shobha A.Udipi, New age international publishers, 2010.
4. Food preservation and processing, Manoranjan Kalia, Sangita Sood, Kalyani Publishers, New Delhi, 2018.

SUGGESTED READING:

1. Shakuntala Manay N- Foods Facts & Principles, New Age International Publishers, New Delhi- 110002, 2005

B.SC. II YEAR
III-SEMESTER
BS305, DSC-1C
PAPER III- FOOD SCIENCE & TECHNOLOGY (PRACTICALS)

Total No. Of Practicals: 7

1. Demonstration of Standard Weights & Measures, Types of cut: Julienne, Chiffonade, Diagonal, Roll cut, Cubes and flower cut.
2. Cookery Practical's in:
   i. Cereals & Pulses.
   ii. Milk & Its Products, Fleshy Foods- Meat, Fish & Eggs.
   iii. Vegetables & Fruits.
4. Estimation of Gluten
5. Evaluation of Egg quality – candle test& floating test
6. Stages of sugar cookery:
   i. Thread – Gulabjamun
   ii. Softball- Barfi
   iii. Hard crack- Chikki

FINAL PRACTICAL EXAMINATION SEMESTER-III
B.Sc.(CBCS) APPLIED NUTRITION AND PUBLIC HEALTH
PAPER-III FOOD SCIENCE& TECHNOLOGY

BATCH:_____ **DATE:** _____

TIME: 2 HOURS **MARKS: 50 MARKS**

I. Write the detailed method of preparation for the recipe. Calculate the Nutritive Value for the serving. (15M)

II. Prepare and Display the recipe. (15M)

III. Evaluate the quality of egg (15M)
(OR)
Demonstrate the different stages of sugar cookery
(OR)
Estimate the gluten content of the given sample

IV. Practical Record (5M)

B.SC. II YEAR
IV-SEMESTER
BS 401, SEC-3
QUANTITY FOOD PRODUCTION

NO. OF HOURS - 30HOURS **CREDITS 2**

CREDIT I: QUANTITY FOOD PRODUCTION, PLANNING AND CONTROL
15 HOURS

1.1 Principles of food production-menu, ingredient control etc. Production control –use of standardized recipes.

1.2 Safeguarding food Production-Quality control in food preparation, control of the microbial quality of food.

CREDIT II: FOOD MANAGEMENT **15 HOURS**

2.1 Purchasing –market and the buyer, mode of purchasing, methods of purchase.Storage. Cooking Equipment.Records necessary for catering.

2.2 Methods of delivery –centralized, decentralized. Types of service-table/ counter, self, tray.

BOOKS RECOMMENDED

1. Catering Management – An Integrated Approach – Mohini Sethi, Surjeet Malhan, 3rd edition, New Age International Publishers.
2. Institutional Food Management –Mohini Sethi. New Age International Publishers.
3. Foodservice management, principles and practices, 13th edition- June Pyne Palacio, Monica thiece.,Pearson publishers

B.SC. II YEAR
IV-SEMESTER
BS405, DSC-1D
PAPER-IV FAMILY & COMMUNITY NUTRITION (THEORY)

NO. OF HOURS - 60HOURS **CREDITS 4**

CREDIT I: BASICS OF MEAL PLANNING **14 Hours**

1.1Definition of Balanced diets, RDA, Factors affecting RDA, ICMR recommendations.
1.2 Food pyramid, my food plate.
1.3 Food Exchange List (raw), food composition tables.
1.6 Principles& objectives of meal planning
1.5Nutrient requirement & meal planning for adults, changes in nutrient requirement according to sex, age & activity.

CREDIT II: NUTRITIONAL REQUIREMENT DURING PREGNANCY, LACTATION & INFANCY **16 Hours**

Nutrient requirement & RDA for

2.1 Expectant mother- physiological changes, dietary modification & complications.
2.2 Lactation- general dietary guidelines & role of special foods.
2.3 Infancy- growth & development, breastfeeding v/s artificial feeding, factors to be considered while preparing & introducing supplementary foods.

CREDIT III: NUTRIENT REQUIREMENT FOR PRE SCHOOLERS, SCHOOL GOING CHILD & ADOLESCENT **15 Hours**

Nutrient requirement & RDA for

3.1 Preschoolers- problems in feeding, factors affecting nutritional status.
3.2 School going child- the importance of breakfast, packed lunch &mid-day meal programs- ICDS, SNP.
3.3 Adolescence- eating disorder, anaemia, anaemia prophylaxis program.

CREDIT IV: NUTRITION REQUIREMENT FOR GERIATRIC GROUP & NUTRITIONAL ASSESSMENT **15 Hours**

4.1 Geriatrics- RDA & nutritional requirement during old age, physiological changes & dietary modification.
4.2 Nutritional Assessment- Methods of Assessment of Nutritional status, Anthropometric, Biochemical, Clinical methods & Diet surveys.

REFERENCE BOOKS:

1. Sri Lakshmi. B- Dietetics, New Age International Publishers, New Delhi-110002, 2011.
2. Sri Lakshmi.B- Nutrition Science, 5th Edition, New Age International Publishers, New Delhi- 110002, 2011.

SUGGESTED BOOKS:

1. Mahtab.S. Bamji, Kamala Krishnaswamy, G.N.V Brahmam- A text on Human Nutrition, 3rd edition, Oxford & IBH Publishing. Co. PVT. LTD. New Delhi

B.SC. II YEAR
IV-SEMESTER
BS405, DSC-1D
PAPER-IV FAMILY & COMMUNITY NUTRITION (PRACTICAL)

CREDIT 2 **TOTAL NO. OF PRACTICAL:10**

1. Planning of diets
    a. Adult- according to sex & activity.
    b. Pregnant & lactating women.
    c. School going child.
    d. Adolescents.
    e. Old age group.

2. Preparation of diets - 4 practical sessions.
3. Formulation & preparation of weaning mix.

FINAL PRACTICAL EXAMINATION

SEMESTER IV

APPLIED NUTRITION & PUBLIC HEALTH

PAPER (4): FAMILY & COMMUNITY NUTRITION

TIME: 3 HOURS **MAX MARKS: 50 MARKS**

DATE: _____ **BATCH:** _____

1. Write the RDA? **(5 Marks)**
2. Plan A Day's Diet For The Given Age Group And Calculate The Nutritive Value For Any ThreeNutrients Of Importance. **(25 Marks)**

   a. Adulthood

   b. Pregnant Women

   c. Lactating Mother

   d. School Going Child

   e. Adolescent

   f. Old Age Group

   i. **Planned Menu** **(10 Marks)**

   ii. **Calculate any three nutrients of importance** **(15 Marks)**
3. Preparation & Display of The Diet. **(15 Marks)**
4. Record. **(5 Marks)**

B.SC. APPLIED NUTRITION AND PUBLIC HEALTH III YEAR

V - SEMESTER

BS 503, GENERIC ELECTIVE -1 (GE 1)
FUNDAMENTALS OF FOOD AND NUTRITION

NO. OF HOURS: 60 **CREDITS: 4**

CREDITI: FUNDAMENTALS OF FOOD **15 Hours**

1.1 Definition of food, Types of foods- Nano foods, Convenience foods,

1.2 Texturized Foods, space Foods, Novel foods, Organic foods

CREDIT II: FUNDAMENTALS OF NUTRITION **15 Hours**

2.1 Definition of Nutrition

2.2 Digestion, absorption & assimilation of nutrients in the human gut

2.3 Benefits of intestinal microflora- Pre & probiotics.

CREDIT III. FOOD SAFETY AND QUALITY CONTROL **15 Hours**

3.1 Selecting and purchasing food

3.2 Understanding food labels

3.3 Storing raw foods and cooked foods

3.4 Definition of food adulteration and common adulterants present in food

CREDIT IV. HYGIENE AND SANITATION **15 Hours**

4.1 Definition of hygiene and sanitation

4.2 Personal hygiene of food Handler

4.3 Techniques of washing hands

4.4 Pest control and garbage disposal

REFERENCE BOOKS:

1. Sri Lakshmi. B, Nutrition Science, New age international Pvt. Ltd. publishers.
2. Srilakshmi B., Food Science, New Age International Pvt. Ltd publishers
3. Biochemistry- U Satyanarayana, U chakrapani, Books and Allied (Pvt . Ltd.)
4. The pink book –food smart by FSSAI
5. Catering Management – An Integrated Approach – MohiniSethi, Surjeet Malhan,3rd edition, New Age International Publishers.

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B.SC. APPLIED NUTRITION AND PUBLIC HEALTH III YEAR
V - SEMESTER
BS504 (A) - DISCIPLINE SPECIFIC ELECTIVE 1E (DSE 1E)
CLINICAL DIETETICS

NO. OF HOURS: 60 **CREDITS: 4**

CREDIT I: INTRODUCTION TO THERAPEUTIC DIETS 15 Hours

1.1 Principles of diet in diseases- objectives of diet therapy & role of a dietitian.

1.2 Therapeutic modification of normal diet (Texture), classification of diets according to nutrients.

1.3 Critical care nutrition- types of feeding; enteral feeding – types of food – Natural liquid foods, blenderized feeding and elemental diets, Parental- TPN, PPN.

1.4 Aetiology, Symptom, Dietary Management: Fevers, Typhoid & TB.

CREDIT II: DIET IN CHRONIC DISEASES 15 Hours

Aetiology, Symptom, Dietary Management in:

2.1 Obesity – theories of obesity, assessment, types and complications.

2.2 Underweight

2.3Hypertension.

2.4CVD: atherosclerosis.

2.5 Diabetes Mellitus – Types, Diagnosis, GI & GL Types of insulin and their action.

CREDIT III: DIET IN DISEASES OF ALIMENTARY SYSTEM 15 Hours

Aetiology, symptoms, dietary management: GI diseases-

3.1 Peptic ulcer – Mechanism of ulcer formation, diagnosis.

3.2 Constipation – types of constipation

3.3 Diarrhoea – types, Physiological disturbances in the body.

3.4 Irritable bowel syndrome

CREDIT IV: DIET IN DISEASES OF HEPATIC & EXCRETORY SYSTEM 15 Hours

Aetiology, symptoms, dietary management in

4.1Renal disorders- nephritis, nephrotic syndrome, acute renal failure, chronic renal failure. Dialysis - types of dialysis and dietary management

4.2 Liver disorders – Agents responsible for liver damage, Damage caused to the liver.

4.3 Infectious hepatitis - Types of hepatitis viruses

4.4 Cirrhosis of liver

REFERENCE BOOKS:

1. Sri Lakshmi.B – Dietetics, New Age International Publishers.
2. Antia FP. Clinical dietetics and Nutrition, 2nd Edition, Oxford University Press, Delhi.
3. Swaminathan- Advance textbook in Food& Nutrition Volume II, the Bangalore
4. Printing and publishing company.
5. Krause M, Katheleen. L Mahan and Sylvia Escott Stump, Food, Nutrition, & Diet
6. Therapy, 11 edition WB Saunders Company, Philadelphia, 2004
7. Joshi AS. Nutrition& Dietetics 2010, Tata Mc. Graw Hill.
8. Robinson C. H. Lawler M. R., Chenoweth W. L. &GarwickA E., Normal and
9. Therapeutic Nutrition, Mc Millan Publishing Company.

SUGGESTED BOOKS:

1. Modern Nutrition In Health And Disease by Maurice E. Shils, Moshe Shike, A.
2. Catharine Ross, Lippincott William and Wilkins publications
3. Sue Rodwell Williams, Nutrition and Diet therapy, Times Mirror/ Mosby, College Publishing st. Louis.
4. Kumud Khanna, textbook of nutrition and dietetics, phoenix publishing house, Pvt, Ltd. New Delhi
5. Guyton & Hall- textbook of medical physiology, 9th edition, W.B saunders& co.
6. Burtis G., Davis J. and Martin S. Applied Nutrition and Diet Therapy, W.B. SaundersCo.

B.SC. APPLIED NUTRITION AND PUBLIC HEALTH III YEAR
V - SEMESTER
BS504 (A) - DISCIPLINE SPECIFIC ELECTIVE 1E (DSE 1E)
CLINICAL DIETETICS (PRACTICALS)

NO. OF HOURS: 30

CREDITS: 2

I. Planning of diets & calculation of the nutritive value of the following diets

1.1 Routine hospital diets- clear, full fluid & soft diet.
1.2 Diet for peptic Ulcer-Soft & bland diet.
1.3 Degenerative disease- DM, atherosclerosis, HTN.
1.4 Renal disorder- Low sodium, moderate/low protein diet
1.5 Liver disorder- jaundice & cirrhosis.

II. Preparation of diets- 4 practical sessions

III. Anthropometric assessment – Height, Weight, BMI, Waist – Hip ratio, Body fat.

FINAL PRACTICAL EXAMINATION SEMESTER-V

B.Sc.(CBCS) APPLIED NUTRITION AND PUBLIC HEALTH

PAPER-VCLINICAL DIETETICS

BATCH:_____ **DATE:** _____

TIME: 3 HOURS **MARKS: 50 MARKS**

1. **Write The Modified RDA for The Given Condition** **(5Marks)**
2. **Plan A Day's Diet for The Given Condition** **(10 Marks)**
   a) Peptic Ulcer
   b) Diabetes Mellitus with Obesity
   c) Atherosclerosis
   d) Hypertension
   e) Glomerulonephritis
   f) Nephrotic Syndrome
   g) Jaundice
   h) Cirrhosis of Liver
3. **Calculate The Any THREE Nutrients of Importance & conclusion table (12 Marks)**
4. **Preparation of Selected Meal and Display** **(8 Marks)**
5. **Assess your anthropometric measurements and write a brief report on it.**
   (10 Marks)
6. **Certified Record** **(5 Marks)**

B.SC. APPLIED NUTRITION AND PUBLIC HEALTH III YEAR
V- SEMESTER
BS504 (B) - DISCIPLINE SPECIFIC ELECTIVE- 1E (DSE 1E)
FOOD SAFETY AND QUALITY CONTROL

NO. OF HOURS: 60 **CREDITS: 4**

CREDIT I INTRODUCTION TO FOOD SAFETY 15 Hours

1.1 Food safety issues; physical, chemical and microbiological contaminants, bovine spongiform encephalopathy (BSE), genetically modified organisms and genetically modified foods. Food safety system, definitions and terminology in Quality Management Systems.

1.2 History of quality control and quality management. Quality management theories and their authors

CREDIT II PHYSICAL AND CHEMICAL CONTAMINANTS 15 Hours

2.1 Metals, mineral (soil, engine oil, stones), plant (leaves, twigs, pods and skins), animal (hair, bone, excreta, blood, insects, larvae).

2.2 Safety evaluation of food ingredients. Major pathways by which chemical residues and contaminants enter the food chain.

2.3 Agrochemicals and veterinary drugs, packaging materials, process equipment and Ingredient impurities.

CREDIT III NATURAL TOXIC SUBSTANCES &ADDITIVES 15 Hours

3.1 Mycotoxins,Marine and Freshwater toxins (formally known as Phycotoxins), Plant toxins and toxic plants, Toxic Mushrooms,

3.2 Nature, properties and function of various classes of food additives (colourants, flavours, sweeteners, thickening and gelling agents, and antioxidant preservatives).

3.3 Radioactivity – residues as contaminants and residues from irradiation

CREDIT IV MICROBIAL FOOD SAFETY & CONTROL OF FOOD SAFETY 15 Hours

4.1 **Microbial food safety:** The significance of foodborne disease.

4.2 Protozoa; *Cryptosporidium parvum.* Toxigenic fungi; mycotoxins of *Aspergillus*.

4.3 Foodborne viruses; gastroenteritis viruses.

4.4 **Control of Food Safety and Quality Management:** Protecting public health and eliminating risk. Farm to table strategy and animal traceability.

4.5 Good Manufacturing Practices (GMPs); Hazard Analysis and Critical Control Point (HACCP) concept; Quality Management Systems: ISO 9000.

REFERENCE BOOKS:

1. Jacob M., Safe Food Handling - A training guide for the Manager, WHO, Geneva.
2. Mudambi S.R., Rao S.M. and Rajagopal M.V. Food Science, New AgeInternational
3. Publishers.
4. Patil, P.V. Food Contamination and Safety, Aavishkar Publishers, Distributors,
5. Jaipur, India.
6. Nicholas Johns, Managing Food Hygiene, Mac Millan Publishing Co.
7. Hobbs, B.C. and Gilbert R.J. Food Poisoning and Food Hygiene, The EnglishLanguage,Book Society and Edward Arnold Publishers Ltd.

B.SC. APPLIED NUTRITION AND PUBLIC HEALTH III YEAR

V – SEMESTER,

BS504 (B) - DISCIPLINE SPECIFIC ELECTIVE- 1E (DSE 1E)

FOOD SAFETY AND QUALITY CONTROL (PRACTICALS)

NO. OF HOURS: 30 **CREDITS 2**

1. Examine and judge the appropriateness of packaging of food to ensure compliance with Indian laws for canned, bottled & tetra packs.
2. A market survey of 3 processed product food (any 3) with respect to standards (nutritionallabelling, certification etc.) to be able to judge the status of claims and misleading descriptions.
3. Prepare a record file adding the various type of packaging material, write a report on the type of packaging material, characteristics and stability, nutritional labelling of 15 packaging materials.
4. Examining food contamination by microorganism using direct examination and cultural technique.
5. Detection of artificial colour by TLC method.

B.SC. APPLIED NUTRITION AND PUBLIC HEALTH III YEAR

V – SEMESTER,
BS504 (B) - DISCIPLINE SPECIFIC ELECTIVE- 1E (DSE 1E)
FOOD SAFETY AND QUALITY CONTROL (PRACTICALS)

BATCH:_____ **DATE:** _____

TIME: 3 HOURS **MARKS: 50 MARKS**

1. Identify the given packaging material, write a report on packaging material and food law/ guidelines with respect to packaging material.
   15M
   a) Tetra packs
   b) Cans
   c) Bottles
2. Read the label of the given food product and write the report on nutritional, labelling, logo and ingredients/ additives.
   10M
3. Examining food contamination by microorganism using direct examination and cultural technique.

   OR

   Detection of artificial color by TLC method.
   15M
4. Record
   10M

B.SC. APPLIED NUTRITION AND PUBLIC HEALTH III YEAR
VI - SEMESTER
BS 603 (A) - DISCIPLINE SPECIFIC ELECTIVE DSE 1F
PUBLIC HEALTH, FOOD HYGIENE & SANITATION

NO. OF HOURS: 60 **CREDITS: 4**

CREDITI: INTRODUCTION TO PUBLIC HEALTH & MEDICAL ENTOMOLOGY
15 Hours

1.1 Definition of Public Health, Hygiene, Social and preventive medicine.

1.2 Epidemiological triad, Mode of diseases transmission & disease cycle.

1.3 Epidemiological methods- steps, advantages & disadvantages. Descriptive, Analytical, Experimental epidemiology.

1.4 Medical Entomology, Control of household pest with special reference to mosquito, housefly Environmental, chemical, biological and generic control.

CREDIT II: FOODBORNE DISEASE **15 Hours**

2.1 Food Borne Disorders: Foodborne infections- Typhoid, Paratyphoid cholera, infective hepatitis, amoebiasis

2.2 Foodborne intoxications- Disorders caused by; Natural toxins – Aflatoxin, Saponin, chemical toxins and Microbiological toxins in food- Staphylococcal intoxication, Botulism, Clostridium perfringens, Mycotoxins, control of foodborne illness.

CREDIT III: HEALTH EDUCATION **15 Hours**

3.1 Health and Nutrition- education-definition, components, principles of health education, methodology- individual, group and mass methods use of audiovisual aids.

3.2 Primary health care system with special reference to Maternal and Child HealthCare.

3.3 Primary health system functioning in rural areas, health indicators mortality(Infant & maternal), morbidity, disability and various health organizations,

3.4 Malaria and AIDs Control-NHP, WHO, UNICEF, ICDS.

3.5 Immunizing agents, hazards of immunisation, National Immunisation schedule.

CREDIT IV: FOOD ADULTERATION & STANDARDS **15 Hours**

4.1 Food adulteration: Types of adulterants: Incidental adulteration – Microorganisms, Metallic and Packaging. Intentional adulteration - common, adulterants.

4.2 Food standards and food laws – PFA, Essential Commodities Act – FPO, MPO, MMPO, Deoiled meal flour control, vegetable product control order, Standards of weights and measures rules.

4.3 National and International standards - FSSAI, FFRC, Agmark, Codex Alimentarius, HACCP, ISO Certification, BIS.

4.4 Consumer guidance society, consumer rights, consumer courts, central facility for assessing food adulteration, Role of food inspectors.

SUGGESTED BOOKS

1. Food hygiene & sanitation- Roday.S, Tata Mc Graw Hill publishing company ltd.
2. Mohini Sethi, catering management, New age international publishers.
3. Sri Lakshmi.B – Food science, New Age International Publishers.
4. Park K (2011). Park's Textbook of Preventive and Social Medicine, 21stEditionM/sBanarasi das Bhanot Publishers, Jabalpur, India.

B.SC. APPLIED NUTRITION AND PUBLIC HEALTH
III YEAR
VI SEMESTER
BS603 (A) - DISCIPLINE SPECIFIC ELECTIVE- DSE 1F
PUBLIC HEALTH, FOOD HYGIENE AND SANITATION (PRACTICAL)

NO. OF HOURS: 30
CREDITS: 2

I. Identification of adulterants in various classes of food samples
a) Cereals and pulses
b) Milk and milk products – milk, curd, khoa
c) Ghee, oil, butter.
d) Spices and condiments- chilli powder, turmeric, pepper, asafetida, dhania, Salt, whole and powdered spices
e) Sugar, honey and jaggery, tea coffee and miscellaneous foods

II. Preparation of 3 audiovisual aids like Flashcard/PowerPoint, poster and models related tohealth and nutrition.

III. Formulation and preparation of a low-cost nutritious recipe
IV. Field visit. Report writing on a field visit.

FINAL PRACTICAL EXAMINATION SEMESTER-V NOVEMBER-2019

B.Sc.(CBCS) APPLIED NUTRITION AND PUBLIC HEALTH

BS 603(A)

PAPER-VI PUBLIC HEALTH, FOOD HYGIENE AND SANITATION

BATCH: _____ **DATE:** _____

TIME: 2 HOURS **MARKS: 50 MARKS**

1. **Identify the adulterants present in the given milk sample** **(15 mark)**
2. **Identify the adulterants present from given set of sample(any 2 samples)** **(10mark)**
   a) Cereals and pulses
   b) Spices and condiments
   c) Milk and products
   d) Fats and oils
   e) Sweeteners
   f) Beverages
3. **Audio Visual Aids.** **(20 mark)**
4. **Certified record** **(5 mark)**

B.SC. APPLIED NUTRITION AND PUBLIC HEALTH III YEAR

VI – SEMESTER
BS603 (B), DSE – I (F), PAPER – VIII
NUTRITION THERAPY IN CRITICAL CONDITIONS

NO. OF HOURS: 60 **CREDITS: 4**

CREDITI: ADVANCE CARE IN NUTRITION **15 Hours**

1.1 Pre &post-operative care.
1.2 Nutritional assessment of critically ill patients.
1.3 Diet in gastritis: symptoms of gastritis, dietary management
1.4 Burns: Degree of burns, fluid & electrolyte replacement & dietary management

CREDIT II: DIET IN DEGENERATIVE DISEASES **15 Hours**

2.1Cancer- definition, types, cancer therapy, & dietary management of cancer patients.
2.2Hyperlipidemia & congestive heart failure: etiology, symptoms & dietary management. Surgical procedures: CABG.
2.3 Respiratory Disorders: Pneumonia, COPD.

CREDIT III: DIET IN RENAL DISEASE **15 Hours**

3.1 Diet in renal disorders: causes, symptoms & dietary treatment in ARF, CRF. Types of dialysis, renal calculi- types & dietary management.
3.2 Gout: causes, symptoms & diet

CREDIT IV: DIET IN DISEASES OF LIVER, GALL BLADDER, PANCREAS – MALABSORPTION SYNDROME **15 Hours**

Etiology, symptoms & dietary management:
4.1 Hepatic coma, Cholelithiasis, cholecystitis& pancreatitis.
4.2 Diet in disturbance of small intestine & colon: spruce, celiac disease, & disaccharide Intolerance- symptoms & dietary management

REFERENCE BOOKS:

1. Sri Lakshmi.B – Dietetics, New Age International Publishers.
2. Antia FP. Clinical dietetics and Nutrition, 2nd Edition, Oxford University Press,Delhi.
3. Swaminathan- Advance textbook in Food& Nutrition Volume II, the Bangaloreprinting and publishing company.
4. Krause M, Katheleen. L Mahan and Sylvia Escott Stump, Food, Nutrition, & DietTherapy, 11 edition WB Saunders Company, Philadelphia, 2004
5. Joshi AS. Nutrition& Dietetics 2010, Tata Mc. Graw Hill.
6. Robinson C. H. Lawler M. R., Chenoweth W. L. &GarwickA E., Normal and Therapeutic Nutrition, Mc Millan Publishing Company.

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1. Modern Nutrition In Health And Disease by Maurice E. Shils, Moshe Shike, A.
2. Catharine Ross, Lippincott William and Wilkins publications
3. Sue Rodwell Williams, Nutrition and Diet therapy, Times Mirror/ Mosby, College
4. Publishing st. Louis.
5. Kumud Khanna, textbook of nutrition and dietetics, phoenix publishing house, Pvt, Ltd. New Delhi
6. Guyton & Hall- textbook of medical physiology, 9th edition, W.B saunders& co.Burtis G., Davis J. and Martin S. Applied Nutrition and Diet Therapy, W.B.Saunders Co.

B.SC. APPLIED NUTRITION AND PUBLIC HEALTH III YEAR

VI – SEMESTER
DSE – I (F), PAPER – VIII PRACTICALS
NUTRITION THERAPY IN CRITICAL CONDITIONS

NO. OF HOURS: 30 **CREDITS: 2**

- Planning and preparation of diets for Hyperlipidemia.
- Planning and preparation of diets for Congestive Heart Failure.
- Planning and preparation of diets for Acute Renal failure and Chronic Renal failure.
- Planning and preparation of diets for patients with chronic renal failure undergoing Dialysis.
- Planning and preparation of diets for Renal calculi.
- Planning and preparation of diets for Surgery

FINAL PRACTICAL EXAMINATION SEMESTER-VI

B.Sc.(CBCS) APPLIED NUTRITION AND PUBLIC HEALTH

PAPER-VI NUTRITION THERAPY IN CRITICAL CONDITIONS

BATCH:_____ **DATE:** _____

TIME: 2 HOURS **MARKS: 50 MARKS**

1. **Write The Modified RDA for The Given Condition** **(5Marks)**
2. **Plan A Day's Diet for The Given Condition** **(10 Marks)**
   a) Hyperlipidemia
   b) Congestive Heart Failure
   c) Acute Renal Failure
   d) Chronic Renal Failure
   e) Chronic Renal failure with dialysis
   f) Renal Calculi
   g) Surgery
3. **Calculate The Any Two Nutrients of Importance& conclusion table** **(15 Marks)**
4. **Preparation of Selected Meal and Display** **(15 Marks)**
5. **Certified Record** **(5 Marks)**

B.SC. APPLIED NUTRITION AND PUBLIC HEALTH III YEAR
VI SEMESTER
PROJECT/ADVANCED NUTRITION BS 606

CREDITI: BASICS OF FOOD TECHNOLOGY & SPOILAGE 15 Hours

1.1 Food Technology and its application, Role of Food technology in combating malnutrition in developed countries.

1.2 Role of biotechnology and microbiology in food technology.

1.3 Food spoilage and nutrient losses during storage- physical, chemical and microbial spoilage of foods, agents causing food spoilage.

CREDIT II: TECHNIQUES IN FOOD PRESERVATION 15 Hours

2.1 Food Preservation- the importance and general principles of food preservation.

2.2 Home scale methods of food preservation like drying, refrigeration, pickling, use of sugars.

2.3 Flow chart for:

- Mango pickle
- Jelly
- Amlakamurabba

2.4 Commercial methods of food preservation - Preservation by high temperature-Canning, low temperature-Freezing, dehydration-(Sun drying, spray drying, foam mat drying). Concentration- Vacuum drying, radiation, chemicals and use of preservatives.

CREDIT III - FOOD PACKAGING & LABELLING 15 Hours

3.1 Functions of packaging, requirement of packaging, classification of packaging material – pack, intermediate pack, bulk pack.

3.2 Materials used for packaging – metal, aluminium, glass, paper, plastic and films, laminates, wooden packaging, edible food wraps.

3.3 Packaging of specific foods- cereals, meat and fish and fruits and vegetables.

3.4 Laws related to packaging.

3.5 Nutritional labelling - labelling food provision in existing food laws.

CREDIT IV- NEWER APPROACHES IN FOOD TECHNOLOGY 15 Hours

4.1 Functional foods and antioxidants – definition, classification, role in health and disease

4.2 Classification of neutraceuticals based on food source – photochemical as neutraceuticals, microbes as nutraceuticals, dietary fibre, animal products as nutraceuticals.

SUGGESTED BOOKS:

1. Textbook of Sri Lakshmi. B- food science 5th edition, New age international publishers, New Delhi – 110002, 2011
2. Norman potter N- food science, CBS publishers & distributors, New Delhi-110002, 2007
3. Food processing and preservation, G.Subbulakshmi and Shobha A.Udipi, New age international publishers, 2010.
4. Food preservation and processing, Manoranjan Kalia, Sangita sood, Kalyani Publishers, New Delhi, 2018.
5. Food hygiene & sanitation- Roday.S tataMcGraw hill publishing company ltd.

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FACULTY OF SCIENCE

B.SC I SEMESTER(CBCS) EXAMINATION,

SUBJECT: APPLIED NUTRITION & PUBLIC HEALTH

COMMON MODEL QUESTION PAPER FOR DSC AND DSE, GE

TIME: 3HRS **MAX MARKS: 80**

PART A (8x4=32M)

(SHORT ANSWER TYPE)

NOTE: ANSWER ANY EIGHT OF THE FOLLOWING QUESTIONS

1. CREDIT I
2. CREDIT I
3. CREDIT I
4. CREDIT II
5. CREDIT II
6. CREDIT II
7. CREDIT III
8. CREDIT III
9. CREDIT III
10. CREDIT IV
11. CREDIT IV
12. CREDIT IV

PART –B

(ESSAY ANSWER TYPE)

NOTE: ATTEMPT ALL THE QUESTIONS

(4x12=48M)

13 (a) CREDIT I

(or)

(b) CREDIT I

14 (a) CREDIT II

(or)

(b) CREDIT II

15 (a) CREDIT III

(or)

(b) CREDIT III

16 (a) CREDIT IV.

(or)

(b) CREDIT IV

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FACULTY OF SCIENCE

B.Sc. (CBSC) II YEAR SEMESTER EXAMINATIONS 2018

SUBJECT: APPLIED NUTRITION AND PUBLIC HEALTH

COMMON MODEL QUESTION PAPER FOR SECS

~~PAPER-IV~~ (SEC -1,2,3 and 4)

Time: 1 ½ Hours Max. Marks:40

Note: Answer all questions. All questions carry equal marks.

PART –A (2×5=10)

1. A) CREDIT I

OR

B) CREDIT I

2. A) CREDIT II

OR

B) CREDIT II

PART – B (2×15=30)

3. A) CREDIT I

OR

B) CREDIT I

4. A) CREDIT II

OR

B) CREDIT II

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