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B.P.S. Mahila Vishwavidyalaya, Khanpur Kalan

B.P.S.I.H.L

COURSE CURRICULUM & SCHEME OF EXAMINATIONS w.e.f. 2017-18 and onwards.

M.Sc Home Science (Food and Nutrition)

Semester I

S. No.	Code	Course Title	Hours per Week			Total Credits	Max Marks		
							Internal Marks	External Marks	Total Marks
			L	T	P				
		Theory Courses							
1	MFN 2101	Introduction to Food Science	3	0		3	20	80	100
2	MFN 2103	Biochemistry-I	3	0		3	20	80	100
3	MFN 2105	Diet Therapy	3	0		3	20	80	100
4	MFN 2107	Computer Application	3	0		3	20	80	100
5	MFN 2109	Human Physiology	3	0		3	20	80	100
		Practical/Lab Courses:							
6	MFP 2101	Introduction to Food Science			3	1.5	10	40	50
7	MFP 2103	Biochemistry-I			3	1.5	10	40	50
8	MFP 2105	Diet Therapy			3	1.5	10	40	50
9	MFP 2107	Computer Application			3	1.5	10	40	50
		TOTAL	**15**	**0**	**12**	**21**	**140**	**560**	**700**

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COURSE CURRICULUM & SCHEME OF EXAMINATIONS w.e.f. w.e.f. 2017-18 and onwards.

M.Sc Home Science (Food and Nutrition)

Semester II

S. No.	Code	Course Title	Hours per Week			Total Credits	Max Marks		
							Internal Marks	External Marks	Total Marks
			L	T	P				
		Theory Courses							
1	MFN 2102	Advanced Food Science	3	0		3	20	80	100
2	MFN 2104	Human Nutrition I	3	0		3	20	80	100
3	MFN 2106	Food Microbiology	3	0		3	20	80	100
4	MFN 2108	Bio Chemistry II	3	0		3	20	80	100
		Practical/Lab Courses:							
6	MFP 2102	Advanced Food Science			6	3	10	40	50
7	MFP 2106	Food Microbiology			3	1.5	10	40	50
8	MFP 2108	Bio Chemistry II			3	1.5	10	40	50
		TOTAL	**12**	**0**	**12**	**18**	**110**	**440**	**550**

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B.P.S. Mahila Vishwavidyalaya, Khanpur Kalan

B.P.S.I.H.L

COURSE CURRICULUM & SCHEME OF EXAMINATIONS w.e.f. w.e.f. 2017-18 and onwards.

M.Sc Home Science (Food and Nutrition)

Semester III

S. No.	Code	Course Title	Hours per Week			Total Credits	Max Marks		
							Internal Marks	External Marks	Total Marks
			L	T	P				
		Theory Courses							
1	MFN 2201	Community Nutrition I	3	0		3	20	80	100
2	MFN 2203	Human Nutrition II	3	0		3	20	80	100
3	MFN 2205	Research methods and statistics	3	0		3	20	80	100
4	MFN 2207	Institutional Food Administration	3	0		3	20	80	100
		Practical/Lab Courses:							
6	MFN 2201	Community Nutrition I			6	3	10	40	50
7	MFN 2207	Institutional Food Administration			6	3	10	40	50
		TOTAL	**13**	**0**	**12**	**18**	**100**	**400**	**500**

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B.P.S. Mahila Vishwavidyalaya, Khanpur Kalan

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COURSE CURRICULUM & SCHEME OF EXAMINATIONS w.e.f. w.e.f. 2017-18 and onwards.

M.Sc Home Science (Food and Nutrition)

Semester IV

S. No.	Code	Course Title	Hours per Week			Total Credits	Max Marks		
							Internal Marks	External Marks	Total Marks
			L	T	P				
		Theory Courses :							
1	MFN 2202	Nutition for health and physical fitness	3	0		3	20	80	100
2	MFN 2204	Community Nutrition II	3	0		3	20	80	100
3	MFN 2206	Nutrition in Special Condition	3	0		3	20	80	100
4	MFN 2208 or MFN 2210	Food Product Development Project Work	3 4	0 0		3 4	20 150	80 0	100 150
		Practical/Lab Courses:							
6	MFP 2204	Community Nutrition II			6	3	10	40	50
7	MFP 2206	Nutrition in Special Condition			3	1.5	10	40	50
8	MFP 2208	Food Product Development			3	1.5	10	40	50
		TOTAL	**12**	**0**	**12**	**18**	**110**	**440**	**550**

Note:-

***The students who will secure more than 70% marks in sem I and II in aggregate would be allowed to pursue theses in a specialized area of students choice after which she will submit the project work. Research project will commence from third semester. The evaluation of the project work will be done internally on the basis of oral presentation, project report and viva-voce. Rest of the students will undertake a course work along with the relevant product development project.**

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B.P.S. Mahila Vishwavidyalaya, Khanpur Kalan

B.P.S.I.H.L

COURSE CURRICULUM & SCHEME OF EXAMINATIONS w.e.f. w.e.f. 2017-18 and onwards.

M.Sc Home Science (Food and Nutrition)

Consolidated Programme Details					
S.No.	Semester	Total Credits	External	Internal	Total Marks
1	I	21	560	140	700
2	II	18	440	110	550
3	III	18	400	100	500
4	IV	18	440	110	550
Total Credits/Marks		**75**	**1840**	**460**	**2300**

5/3/19

INTRODUCTION TO FOOD SCIENCE (MFN 2101) **SEM. I**

Credits: T 3 P 1
Periods/ week: 7
Total Marks: **100+50**
External—80+40
Internal--- 20+10

Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*

UNIT I

Carbohydrates in food

Sugar: Manufacturing process of sugar, stages of sugar cookery, sugar products.

Polysaccharides:

Starch: Structure, gelatinization, retrogradation, syneresis, gelation, modified food starches, dextrinization.

Non-starch Polysaccharides:Cellulose, hemicellulose and pectins- sources, characteristics in foods.

Cereals- Structure and composition of wheat and rice.

UNIT II

Protein in food.

Plant food – pulses, nuts and oilseeds, composition, antinutritional factors. Fermentation and germination in legumes, cooking quality of legumes.

Animal food-

Milk- composition , spoilage and care, Physical and chemical properties.

Meat, fish and poultry- structure and composition, evaluation of egg quality and grading, use of egg in cookery, Postmortem changes in meat.

UNIT III

Fruits and Vegetable- Classification and composition. Effect of heat on vegetable. Preservation of vegetable and fruits. Fruit Pigments. Browning Reactions

Fats and oils: Physical and chemical properties, Rancidity changes, fat substitutes, Antioxidants and

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Changes during frying and storage.

Relation of cookery to colloidal chemistry.

Definition of colloidal system altering degree of dispersion, Hydrophilic and hydrophobic colloids, stablization of colloidal system properties i.e. surface chemistry tension, adsorption, foam formation, rheology, gel formation and emulsion.

UNIT IV

Food processing method: soaking, sprouting, grinding, cutting, fermentation, boiling, steaming, roasting, broiling, braising, barbecuing, frying, baking, effecting composition and nutritive value of food.

Solar cooker, pressure cooker, microwave ovens, sensory evaluation of product.

Food additives: Definition, importance, classification and uses.

Leavening agents: Importance, classification, nature and use.

PRACTICAL

1. Weighing and measuring of food items–flours, cereals, pulses, sugar, oils and other liquid foods
2. Standardisation of recipes
3. Sensory evaluation of recipes
4. Gelatinosation properties of starches
5. Browning of fruits and vegetables
6. Effect of heat on fruits and vegetables
7. Effect of heat and acids on protein of milk
8. Effect of cooking on whole and split pulses and legumes
9. Effect of deep frying on batter from different flours
10. Determination of smoking point of fats and oils
11. Development of gluten in fermented dough

REFERENCES

1. Experimental Cookery- Low Bells.
2. Food Selection AND preparation- Sweetman, M.D.
3. Handbook of Food Preparation- A.N.Hime Ec. Asso.
4. Our Food – Swaminathan, M, and Bhagiam, R.K.
5. Experimental Foods – Swaminathan.
6. Food Science and Application- L Paul, C, Panling.
7. Food science- Mudambi, S.R. and Rao, S.M. 1994, Wiley Eastern Ltd. New Delhi.
8. Food Facts and Principles- Maney N.S. and Shudarshan Swamy M. 1996. New Age Interational Pub. Delhi.

5/3/19

BIOCHEMISTRY I (MFN 2103) **SEM.I**

Credits: T 3 P 1
Periods/week: 7
Total Marks: **100+50**
External—80+40
Internal--- 20+10

Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*

UNIT I

Carbohydrates: Sources, classification, chemistry and function. Dietary fiber and its function. Simple chemical reaction of carbohydrates.

Lipids: Sources, classification, chemistry and function. Saponification and iodine number of fat, Rancidity of fats.

UNIT II

Minerals: Sources, absorption, transport, utilization and function of magnesium, calcium, phosphorus, iron, iodine, copper and zinc.

Proteins: Amino acid as the structural monomer for proteins, Chemical reactions of amino acids, level of structural organization of protein.

Protein classification and biological functions, plasma protein and their function.

UNIT III

Enzymes: Historical perspective, enzyme as biological catalyst, introductory account of IUB system of enzyme classification, concept of active site, specific activity, turnover number, unit of enzyme activity. Effect of substrate concentration on velocity of single substrate enzyme catalyzed reaction. Michaelis constant (km) and Maximal velocity (Vmax). Graphic method of km evaluation: line weaver burk plot. Effect of pH and temperature on enzyme catalysed reaction, various type of enzyme inhibition, isoenzymes

Biological oxidation: Enzyme of biological oxidation, Redox potential, respiratory chain, Oxidation phosphorylation, Mitchell's chemiosmotic hypothesis inhibitors of respiratory chain and Oxidative phosphorylation.

UNIT IV

Nucleic acid: Component of nucleic acid, structure of nucleic acids, and significance of DNA as a genetic material

Vitamins: Sources, absorbtion and biochemical role of vitamin A, D, E, K, Thiamin, Riboflavin, Niacin, Pyridoxin, Folic acid, Cynocobalamin and Ascorbic acid.

PRACTICAL

1. Preparation of standard solution.
2. Standardization of a method of blood glucose estimation
3. Estimation of blood glucose of a normal and diabetic person by the method of standardization.
4. Titrametric estimation of vitamin C in lemon juice or any other fresh food stuff
5. Standardization of methods for serum total protein and serum albumin.
6. Estimation of total protein and albumin by the method standardized for a well nourished and protein malnourished person.
7. Formal titration of amino acids
8. Standardization of a method for the determination of reducing sugar.

REFERENCES

1. Harpers Biochemistry- Robert K. Murthy
2. Textbook of biochemistry- West and Todd
3. Biochemical aspect of nutrition- S.X.C. Okoyo
4. Food chemistry- O.R. Fennama
5. Principles of Biochemistry- A.l.Lehninger
6. Outlines of biochemistry- E.E. Conn
7. Biochemistry- Voet and Voet

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DIET THERAPY (MFN 2105) **SEM.I**

Credits: T 3 P 1
Periods/week: 7
Total Marks: **100+50**
External—80+40
Internal--- 20+10

Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*

UNIT I

Metabolic changes, clinical manifestations, complications, dietary management and counselling for:
Obesity,
Underweight,
Diabetes,

UNIT II

Cardiovascular disorders
Metabolic changes, clinical manifestations, complications, dietary management and counselling for the disorders of :
Gastro-intestinal tract-constipation, diarrhoea, malabsorption syndrome

UNIT III

Liver- jaundice, hepatitis, cirrhosis
Gall bladder- cholelithiasis, cystic fibrosis

UNIT IV

Kidney-glomerulonephritis, nephrotic syndrome, renal failure
Fevers, burns and cancer
Nutrition in surgical conditions

5/8/19

PRACTICAL

Planning, preparation and serving of diets for common disorders; Using food exchanges in diet planning.

REFERENCES:

1. Mal-Nutrition and the Eyes Donala Sterari Mclaren Academic Press, New York and London.
2. Diabetes Mellitus – Williames and Wikins Co, USA
3. Nutrition andphysical fineness Bogert, L.I
4. Human Nutrition Mc Durtt Maxine
5. Applied Nutrition – Rajalakshini ,R.
6. hand book of diet therapy –Dorothea , Turner.
7. Human Nutrition and dieteties – Davidson .S. Passmore, R. Brock – J.F.andTURSWELL
8. Clinical Dietetices andNutrition –Antia F.P.
9. Food Science andTechnology ,pyke, Macnns.
10. .Modern Nutrition in Health and disease by Goodhearth R.S. Shills.
11. Food and Nutrition - Krause 1972, Saunder

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COMPUTER APPLICATIONS (MFN 2107) **SEM-I**

Credits: T 3 P 1
Periods/week: 7
Total Marks: **100+50**
External—80+40
Internal--- 20+10
Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*

UNIT I

General awareness of computers and its applications

UNIT II

Introduction to various input and output devices like key board, printers, CD ROM, Mouse, pen drive, floppy, monitors.

UNIT III

Introduction to DOS, MS-DOS, MS-Windows,
MS-Excel use of statistics and preparation of programs

UNIT IV

MS-Word- basic functions, word art, word pad, note pad

MS Power point
Internet- searching for review of literature, Mail, Browsers, Search engines

5/3/17

PRACTICAL:

1. Performing statistical calculations using excel programme like determination of measures of centeral tendency, dispersion and t- test.
2. Graphical presentation (using data onquantitative variables like height, weight, Haemoglobin level etc.), make at least five types of graphs,
3. Computer aided nutrition, Computer aided physical fitness, Body Mass analysis with computer.
4. Use of CD and pen drive for data transfer (students will submit a soft copy and a hard copy of power presentation and graphs)
5. Use of internet for data searching
6. Using paper setting activities and the use of printers
7. Maintain a practical file containing print outs of all the above functions.

REFERENCES

1. Gill Nasib Singh : essentials of computer and network technology , khanna books publishing co. new delhi
2. Donald sanders: computer today, McGraw –hill publishers
3. Davis : introduction to computer, McGraw –hill publishers
4. P.K Sinha and Priti Sinha; computer fundamentals

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HUMAN PHYSIOLOGY (MFN 2109) **SEM. I**

Credits: T 3 P 0
Periods/ week: 4
Total Marks**: 100**
External –80
Internal-- 20

Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*

UNIT I

Digestive system- digestive juices: mechanism of formation and functions, digestion of various foodstuffs and their absorption; liver structure and functions.

UNIT II

Respiratory system–respiration, oxygen and carbon-dioxide carriage by blood, role of respiration in blood, pH and acid-base equilibrium; regulation of body temperature and energy metabolism;

Circulatory system: structure of heart, general circulation of blood; blood composition and functions;

UNIT III

Structure of excretory system-excretion, role of kidney in acid-base equilibrium, stone formation and water exchange.

UNIT IV

Reproductive system-sex hormones, menstruation ovulation, physiological changes during pregnancy.

General study of nervous system.

REFERENCES

1. Human Physiology- A.J. Vander.
2. Principle of Anatomy and Physiology- Anagna Stakes.
3. Text book of Physiology Pattern
4. Bloom W. and Fabcott D.W.A. – Text book of Histology W.D.Saunders and Company

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ADVANCED FOOD SCIENCE (MFN 2102) **SEM. II**

Credits: T 3 P 2
Periods/week: 10
Total Marks: **100+50**
External—80+40
Internal--- 20+10
Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*

UNIT I

Processing technology of food:

Cereals: Wheat milling process, baking technology, production of bread. Barely malting Rice processing, parboiling of rice.

Pulses: Processing and milling in general, elimination of toxic factors.

UNIT II

Oilseeds: Pressing, solvent extraction, purification (degumming, refining, bleaching, deodorization), hydrogenation, and plasticising.

Fruits & Vegetables: Changes during ripening, canning.

UNIT III

Milk & Milk Products: Milk processing, separation and standardization, pasteurization, homogenisation.

Milk products: Fortified milk, skim milk, butter and cheese.

UNIT IV

Meat and Fish Products: - Ageing, tenderizing, curing, smoking, salting, pickling.

Fortification Technology: - Objectives, nutritional signification, selection of vehicle, fortification of salt, cereal products and dairy products.

Extruded Food: - An introduction to extrusion technology : its merits and demerits.

PRACTICAL

1. To study the time, temperature and water required for sprouting whole pulses and legumes.
2. To prepare Amylase Rich Foods (ARF) from cereals and to develop energy dense food products from it.
3. To demonstrate the method of preparing peanut butter.
4. To prepare simple extruded food products.
5. To undertake processing of legumes to remove the antinutrients and to develop food products from them.
6. Effect of fermentation on various types of milk proteins.
7. To test the acceptability of texssturized food as an alternative to meat.

REFERENCES:

1. Experimental Cookery- Low Bells.
2. Food Selection AND preparation- Sweetman, M.D.
3. Handbook of Food Preparation- A.N.Hime Ec. Asso.
4. Our Food – Swaminathan, M, and Bhagiam, R.K.
5. Experimental Foods – Swaminathan.
6. Food Science and Application- L Paul, C, Panling.
7. Food science- Mudambi, S.R. and Rao, S.M. 1994, Wiley Eastern Ltd. New Delhi.
8. *Food Facts and Principles- Maney N.S. and Shudarshan Swamy M. 1996. New Age Interational Pub. . Delhi.*

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HUMAN NUTRITION I (MFN 2104) **SEM. II**

Credits: T 3 P 0
Periods/week: 4
Total Marks:100
External –80
Internal---20

Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*

UNIT I

Body composition: concept of body composition, biochemical composition, body water, extra cellular fluid, measurement and calculation of body density using Archimedes principle and hydrometry. Calculation of percent body water and body fat from body density. Dilution techniques and calculation of indices of body composition. Lean body weight and fat free body weight. Concept of body cell mass. Application of body composition data.

UNIT II

Energy: concept of energy expenditures and their application. Non respiratory quotient. And its conversion to quantity of carbohydrate and fat (in grams) metabolized. Basal metabolism, BMR and its measurement. Calculation of surface area and monogram, SDA of food and its interpretation.

UNIT III

Carbohydrates: Glysemic index of foods. Sweeteners- nutritive and non-nutritive. Role of carbohydrates in health and disease.

Protein:- Protein quality, method of evaluating protein quality. Therapeutic application of specific amino acids. Branched chain , glutamine arginine, homocysteine, cysteine, taurine.

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UNIT IV

Lipids:- Functions of EFA. Role of n-3,n-6 fatty acids in health and disease. Requirements of total fat and fatty acids. Trans fatty acids. Prostaglandings

REFERENCES:

1. Modern Nutrition in Health & disease - Goodhearty , R.S.
2. Recommended dietary allowance for indian - I.C.M.R.1980
3. Nutrition & Development -Winick 1973, Univ. of Calombia.
4. Biology of Nutrition - Eclames 1972, Palaniuma press
5. Food & Nutrition - Krause 1972, Saunders.
6. Proteins &Human Food 1970, Lowrie, Avi. Pub.Co.
7. Nut.&Physical , fitnees - Bogert L.J.
8. Principles of Nut - Wilson , L.D. & FISHER . K.H.
9. Standardized diets for Hospital - National Nut. Advisory committee
10. Nutrition in Health &Disease - Cooper ,L. Barher ,L. Mitehell ,Hand Rynherean

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FOOD MICROBIOLOGY **SEM. II**

Credits: T 3 P 1
Periods/week: 7
Total Marks: **100+50**
External—80+40
Internal--- 20+10

Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*

UNIT I

Introduction to microbiology: Important micro flora of air, water and soil.
Microbial growth and factor affecting the microbial growth in food
Nutritional requirement, nutrition types, culture media, and its types, physical condition during cultivation.

UNIT II

Role of microorganism in fermented food.
Genetically modified food
Bacterial food poisoning: characteristics of bacteria, sources of infection, sign and symptoms
Salmonella, Staphylocoocal, Clostridium botulinum

UNIT III

Elementary knowledge of food borne infection
Bacillary dysentery,
Enteric fever,
Cholera,
Diarrhoea.
Sources, food commonly involved preventive measures of above infections.

Food spoilage and preservation: Sources of contamination and microbial spoilage of different food products:

UNIT IV

Milk and milk products
Egg and poultry
Fish and other seafoods
Cereal and cereal products

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PRACTICAL

- Cleaning and sterilization procedure of glassware
- To study construction, working and principal of autoclave
- Elementary knowledge of oven and incubator
- Preparation of common laboratory media
- Study of growth of microorganism
- Techniques of culturing on liquid and solid media
- Isolation of bacteria in pure culture
- Growth characteristics of bacteria
- Determination of microbial number
- Plate and slide count
- Bacteriological analysis of water and milk.

REFERENCES

1. Food microbiology- frazier and West Hoff
2. General microbiology- Pawar and Pawar
3. Food microbiology- Adam
4. An introduction to microbiology- P. Tauro
5. Food microbiology- James M. H. Jay
6. Food microbiology- Prescott, Harley, Klein
7. General microbiology- Stanier

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SEM. II

BIOCHEMISTRY II
Credits : T 3 P 1
Periods/week : 7
Total Marks: **100+50**
External—80+40
Internal--- 20+10

Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*
-

UNIT I

Comparative study of Glycolysis, alcoholic fermentation as a variant of glycolytic pathway. Direct oxidation (HMP shunt) pathway of glucose metabolism.
Gluconeogensis. All aspect of regulation of blood glucose level. TCA (kreb's) cycle and its significance as amphibiotic pathway.
Comparative study of oxidation pathway of fatty acid catabolism.

UNIT II

Role of carnitine in oxidation of fatty acids.
An overview of protein catabolism in relation to protein nutrition. General reaction of protein metabolism
Biosynthesis of urea - urea cycle (kreb's Hanslet cycle). Biosynthesis of protein. Metabolism of uric acid and its nutritional importance.

UNIT III

Metabolism of ketone bodies metabolism of cholesterol. Lipoprotein metabolism in brief and its relationship with lipid transport and atherosclerosis.

Basic concept of clinical biochemistry and its scope in diagnosis of diseases. Collection and preservation of biological fluids.pattern of functional and non functional enzymes of blood plasma in health and diseases with specific mention to serum lipase, amylase, cholinesterase, alkaline and acid phosphotases, serum transminases, lactate dehydrogenase (CDH) and creatine phosphotase.

UNIT IV

Introduction to functional biochemistry of liver- A brief description of liver functional tests.

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PRACTICAL

2. Estimation of total, free and conjugated, bilirubin in blood serum
3. Estimation of total and lipoprotein cholesterol in blood serum
4. Estimation of tri glycerides in blood serum
5. Assay of alkaline phosphatase activity in serum
6. Assay of activity of transminases (SGOT, SGPT) in serum
7. Assay of trypsin activity inhibitor by some legume anti nutritional factors
8. Separation of amino acids by paper chromatography
9. Effect of pH conc, time temperature of incubation on enzyme activity.
10. Isolation and estimation of casein from milk. Quantitative estimation of protein by Kjeldahl's. Biuret and lowery's method.

REFERENCES

1. Harpers Biochemistry- Robert K. Murthy
2. Textbook of biochemistry- West and Todd
3. Biochemical aspect of nutrition- S.X.C. Okoyo
4. Food chemistry- O.R. Fennama
5. Principles of Biochemistry- A.l.Lehninger
6. Outlines of biochemistry- E.E. Conn
7. Biochemistry- Voet and Voet

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COMMUNITY NUTRITION **SEM III**

Credits : T 3 P 2
Periods/week :10
Total Marks: **100+50**
External—80+40
Internal--- 20+10

Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*

UNIT I

Introduction to community nutrition: Definition of important concepts

Geriatric nutrition: Rising needs of geriatric nutrition in India, metabolic changes during old age and nutrient needs.

UNIT II

Prevalence, etiology, biochemical and clinical manifestation, prevention of therapeutic measures for:

Protein Energy malnutrition

Vitamin A deficiency

Vitamin D deficiency

UNIT III

Prevalence, etiology, biochemical and clinical manifestation, prevention of therapeutic measures for:

Iodine deficiency

Flourosis

Scurvey

UNIT IV

Beri beri, Pellegra

Identification of target group for nutrition intervention

5/3/17

Programmes for improving nutritional status

PRACTICAL

Development of low cost recipes for various nutrient deprived patients

Development of low cost recipes for above based on substitute food of better quality

REFERENCES:

1. Human nutrition –MC Durff , Maxine
2. Applied Nutrition- Rajalakshmi R.
3. Nutrition in India : V.N.
4. Biology of nutrition- Elements 1972 Platinum Press
5. Text book of Human Nutrition : Bamji M.S., Pralhad Rao, N and Vinodini Reddy (Ed) Oxford and IBH publishing Co. Pvt. Ltd. New Delhi.
6. *Mal-Nutrition & the Eyes Donala Sterari Mclaren Academic Press, New York & London.*
7. Hand book of diet therapy –Dorothea , Turner.
8. Human Nutrition & dieteties – Davidson .S. Passmore, R. Brock – J.F.&TURSWELL.
9. Clinical Dietetices &Nutrition –Antia, F.P.
10. Modern Nutrition in Health & disease by Goodhearth R.S. Shills.
11. Recommended dietary allowance for indian - I.C.M.R.1980
12. Nutrition & Development -Winick 1973, Univ. of Calombia.

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HUMAN NUTRITION II **SEM. III**

Credits: T3 P 0
Periods/week: 4
Total Marks:100
External –80
Internal---20

Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*

UNIT I

Vitamin: Food sources, function, Physiological pharmacological and theraputic effects, toxicity and deficiency with respect to the following:-

Fat soluble: Vitamins A, D, E&K.

Water soluble: Thiamine, riboflavin, niacin, biotin, pyridoxine, folic acid, pantothenic acid, ascorbic acids, cyanocobalamin, choline, inositol.

UNIT II

Minerals: Sources, bioavailability, function requirements, RDI/ESADDI, deficiency and toxicity, interactions with other nutrients.

Macro minerals: calcium, phosphorus, magnesium, sodium, potassium and chloride.

Micro minerals: Iron, copper, zinc, manganese, iodine, fluoride.

Regulation of food intake: Hunger and appetite, gastro intestinal factors in the regulation. Role of hypothalamus, glucose utilization in the body and fat stored in the body as regulators of food intake, regulation of body weight.

UNIT III

Nutrition interrelationship: Concept of nutritional interrelationship, protein-energy, carbohydrates-fat. Niacin- tryptophan pyriodoxine relationship, effect of carbohydrates, fats and protein on vitamin requirements, effect of protein quality and quantity on protein utilization.

UNIT IV

Non-nutritive food components: Polyphenols, tannins, phytates, phytoestrogenes.

A brief overview of nutrition and mental development.

Nutrition and stress:- Stress types, Body'response (endocrine and metabolic) to short term and long term stress. Role of nutrition in stress coping.

REFERENCES:

1. Modern Nutrition in Health & disease - Goodhearty , R.S.

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2. Recommended dietary allowance for indian - I.C.M.R.1980
3. Nutrition & Development -Winick 1973, Univ. of Calombia.
4. Biology of Nutrition - Eclames 1972, Palaniuma press
5. Food & Nutrition - Krause 1972, Saunders.
6. Proteins &Human Food 1970, Lowrie, Avi. Pub.Co.
7. Nut.&Physical , fitnees - Bogert L.J.
8. Principles of Nut - Wilson , L.D. & FISHER . K.H.
9. Standerdised diets for Hospital - National Nut. Advisory committee

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RESEARCH METHODS AND STATISTICS **SEM III**

Credits: T 3 P 0
Periods/week: 4
Total Marks: **100**
External –80
Internal---20

Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*

UNIT I

Qualitative and quantitative research in Food and Nutrition –an overview

Design strategies in research- Descriptive Studies

Brief overview of types of descriptive studies

Correlation studies

Cross sectional surveys

UNIT II

Use of descriptive studies in research

Hypothesis formulation from descriptive studies

Issues in the design and conduct of descriptive studies

Brief overview of types of Analytical studies

Observational studies

Case control studies

UNIT III

Sampling: importance and types

Methods of data collection:

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Interview, Observation and Questionnaire method.
Reliability and validity of measuring instruments: Concept and methods

Report writing

UNIT IV

Meaning and objectives of statistics. Measures of centeral tendency and variability

Normal distribution: Importance and properties, Skewness and kurtosis,

Test of goodness of fit (X^2 test), t-test

Analysis of variance: one way (simple)

Correlation: Meaning and significance,Product Moment ,Rank Difference

REFERENCES:

1. Gupta, S.P. Statistical Methods, Sultan Chand & Sons, 1972.
2. George A.Forguson,Statistical Analysis in Psychology and Education, MeGraw Hill Book Co.1965.
3. Scrimshaw, N.S. and Gleason, G.R. (1992) Rapid Assessment Procedures. Qualitative Methodologies for Planning and Evaluation of Health- related Programmes. International Nutrition Foundation for Developing Countries, Boston.
4. Cook T.D. and Relchardt, C.S. (1979): Qualitative and Quantitative Methods in Evaluation Research Sage Publications. London.
5. Patton , M.Q. (1980): Qualitative Evaluation Method. Sage Publications.
6. Morgan, D. (1993): Sucessful Focus Groups.Sage Publications.
7. Mienert, C.L.(1986) Clinical Trials: Designs, Conduct and Analysis. Oxford, New York.

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INSTITUTIONAL FOOD ADMINISTRATION **SEM III**

Credits: T 3 P 2
Periods/week: 10
Total Marks: **100+50**
External—80+20
Internal--- 40+10
Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*

UNIT I

Food service management:

Principles, functions and tools of effective food service management

Characteristics of various types of food services

Types of service: Table service and dining room management.

UNIT II

Personnel and financial management
Recruitment, induction, training, motivation and performance appraisal
Food cost analysis
Books, record and record keeping.

Menu planning
Principals involved in menu planning
Techniques of writing menus
Types of menus

UNIT III

Organization of different spaces:

Kitchen spaces
Storage spaces
Service areas

UNIT IV

Equipments planning
Determining Equipment

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VA

Selection and placement
Maintenance of equipments

PRACTICAL

Organising, preparation and serving of snacks and meals for 50 people, visits to food service institutions.

Planning menus for quantity

Banquet
Packed meals
Restaurant

REFERENCES

1. Food Service in Institution- Wood.
2. Food Service in Institution- West, Bessie, Brooks.
3. Hand book of Food Preparation- A.M. Home Economics Association.
4. Food Selection and Preparations-Sweetman, M.D. 4, Mackellar.
5. School Lunch Room Service- Oliver B. Watson.
6. Food Service Planning Layout Equipment- Lender B. Ketshevar and Margret E. Terrell.
7. Human Nutrition and Dietetics – Davidson and Passmore.

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NUTRITION FOR HEALTH & PHYSICAL FITNESS **SEM IV**

Credits : T 3 P 0
Periods/week : 4
Marks : 100
External –80
Internal---20

Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*

UNIT I

Definitions, Components and assessment criteria of age: specific fitness.

UNIT II

Review of different energy systems for endurance and power activity: Fuels and nutrients to support physical activity
Shifts in carbohydrate and fat metabolism. Mobilization of fat stores during exercise.

UNIT II

Nutrition in Sports specific requirement. Diet manipulation. Pre-game and Post-game meals.
Diet and exercise regime for management of obesity,

UNIT IV

Critical review of various dietary regimes for weight reduction, Prevention of weight cycling
Prenatal and postnatal fitness through diet and exercise.

REFERENCES:

1. Mahan , L.K & Ecott – stump S. (2000) ; Krauses Food nutrition and diet Therapy, 10th Edition , W.B.Saunders Ltd.
2. Sizer, F. & Whitnet E. (2000): Nutrition – Concept &Contraversies, 8th edition , Wadsworth Thomon Publishing Co.
3. Whitney . E.N & Rolfes , S.R.(1999): Understanding Nutrition , 8th Edition , West /, Wadsworth An International Thomsan Publishing Co.
4. 4.Ira Wolisky (Ed)(1998): Nutrition in Exercise and Sports, 3rd edition , CRC Press
5. 5.Parkizkova , J. nutrition , Physical activity and Health in early life Ed. Wolinsky , I., CRC Press.
6. 6.Shills , M.E., Olson , J.A ., Shike , N. and Ross , A.C.(Ed) (1999): Modern nutrition in Health and Disease , 9th edition , Williams & Willkins.

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7. McArdle , W. Katch , F. and Katch, V.(1996) Exercise Physiology, Energy nutrition and Human Performance , 4th Edition , Williams and Willkins , Philadelphia

SEM IV

COMMUNITY NUTRITION
Credits : T 3 P 2
Periods/week : 10
Total Marks: **100+50**
External—80+40
Internal--- 20+10

Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*

UNIT I

Nutrition surveillance and planning

Assessment of Nutritional status of the Community

Clinical,

Biochemical,

Anthroponetric measurement

And dietary surveys.

UNIT II

Programmes for improvement of Nutritional status: objectives and operation of feeding programmes for vulnerable section in India. ANP, SNP, Mid Day Meal programme. Balwadi nutrition programme. Current nutrition programmes.

UNIT III

Nutrition Education:

Methods

Planning and execution

Evaluation and follow up

5/5/17

UNIT IV

National Nutrition Policy.

Food security

PRACTICAL

1. Designing and preparation of nutrition education teaching aids for the community.
2. Assess your own nutritional status.

REFERENCES:

1. Human nutrition –MC Durff , Maxine
2. Applied Nutrition- Rajalakshmi R.
3. Biology of nutrition- Elements 1972 Platinum Press
4. Text book of Human Nutrition : Bamji M.S., Pralhad Rao, N and Vinodini Reddy (Ed) Oxford and IBH publishing Co. Pvt. Ltd. New Delhi.
5. *Mal-Nutrition & the Eyes Donala Sterari Mclaren Academic Press, New York & London.*
6. Hand book of diet therapy –Dorothea , Turner.
7. Human Nutrition & dieteties – Davidson .S. Passmore, R. Brock – J.F.&TURSWELL a.s.
8. Clinical Dietetices &Nutrition –Antia, F.P.
9. Modern Nutrition in Health & disease by Goodhearth R.S. Shills.
10. Recommended dietary allowance for indian - I.C.M.R.1980
11. Nutrition & Development -Winick 1973, Univ. of Calombia.
12. Food & Nutrition - Krause 1972, Saunders.

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NUTRITION IN SPECIAL CONDITIONS **SEM IV**

Credits : T 3 P 1
Periods/week : 7
Total Marks: **100+50**
External—80+40
Internal--- 20+10

Total nine questions will be set

- *Question no. 1 will be compulsory consisting of 5 short type questions covering each unit*
- *The remaining eight questions will be set from unit I-IV, two questions from each unit.*
- *The candidate will require to attempt five questions. Question number I will be compulsory, remaining four questions will be attempted by selecting one question from each unit.*

UNIT I

Chronic alcoholism: effect on digestion and absorption,alcohol nutrient interaction and dietary management
Nutrition in special physiological conditions: pregnancy,lactation.

UNIT II

Nutrition management in emergencies and disaster (flood and famine etc)
Immune disorder- AIDS
Inborn errors of metabolism: Alkaptonuria, Galactosemia, Phenylketonuria

UNIT III

Therapeutic modification of normal diet and psychological aspects
Mode of feeding
Enteral feeding: indication for use and composition of enteral feeds

UNIT IV

Parenteral feeding: indications for use and composition, advantages and complication
Nutritional concept in alternative medical sciences like Ayruved, naturopathy etc.

PRACTICAL

Planning, preparation of diets for various conditions as explained in theory syllabus

REFERENCES:

1. Text book of Human Nutrition : Bamji M.S., Pralhad Rao, N and vinodint Reddy (Ed) Oxford and IBH publishing Co. Pvt. Ltd. New Delhi.
2. Human Nutrition & dieteties – Davidson .S. Passmore, R. Brock – J.F.&TURSWELL a.s.
3. Clinical Dietetices &Nutrition –Antia, F.P.
4. Recommended dietary allowance for indian - I.C.M.R.1980

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PRACTICAL

1. Market and consumer survey to identify new products
2. Product development from different food groups and their sensory evaluation by different methods.
3. Observation of working of any food production unit for minimum 5-7 days

Reference:

1. Food Science experiments and applications – Mohini Sethi, CBS Publishers & Distributors
2 A guide to calculating shelf life of food products www.nzfs.govt. hz/processed – food – retail – sale/shelf- life/ shelf life 1-2
3 Sacharow & Griffin, Food Packing – AVI Publications.
4 Stanley & Sacharow Food Packaging
5 Bhatia. S.C. Canning &Preservation of Fruits & Vegetables – New Delhi, India
6 Amerine, M.A. Pangborn, R.M. Roessler, E.B (1965) Principles of Sensory Evaluation. Academic Press, New York
7 BIS 6273 (1972) Guide for Sensory Evaluation of Foods optimum Requirement Part –I Bureau, of Indian Standards, Manate Bhavan, New Delhi
8 Fuller, G.W. (1994) New Food Product Development: From Concept of Market Place CRC Press, New York

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