

MAHARSHI DAYANAND UNIVERSITY Rohtak
Programme Structure w.e.f session 2016-17
B.voc in Sports, Nutrition and Physiotherapy (3years Degree Programme)
Under credit system (CS)

Paper Code	Subjects	Evaluation Scheme				Credit	General or Skill Component
		Internal Assessment	University exam	Practical	Total		
		Marks	UE	PR	T	Th+P=T	
FIRST SEMESTER (2016-17)							
BVSNP101	Communication Skills-English-1	20	80	100	200	2+2=4	General
BVSNP102	Anatomy-1	20	80	100	200	2+2=4	General
BVSNP103	Physiology-1	20	80	100	200	2+2=4	General
BVSNP104	Human Nutrition	20	80	100	200	3+3=6	Skill
BVSNP105	Diet & Nutrition for Sports-1	20	80	100	200	3+3=6	Skill
BVSNP106	Hospital Management	20	80	100	200	2+1=3	Skill
BVSNP107	Environmental Science	Internal qualifying paper as per UGC guidelines					General
BVSNP108	Training by Industrial Partners	Report	Viva- voce	TOT		1+2=3	Skill
		100	100	200	200		
		Grand Total			1400	12+18=30	
Second Semester							
BVSNP201	Communication Skills-English-2	20	80	100	200	2+2=4	General
BVSNP202	Anatomy-2	20	80	100	200	2+2=4	General
BVSNP203	Physiology-2	20	80	100	200	2+2=4	General
BVSNP204	Physiotherapy in Sports	20	80	100	200	3+3=6	Skill
BVSNP205	Ethics in Physiotherapy	20	80	100	200	1+1=2	Skill

BVSNP206	Exercise Therapy-1	20	80	100	200	3+3=6	Skill
BVSNP207	Training by Industrial Partners	Report	Viva-voce	TOT		2+2=4	Skill
		100	100	200	200		
		Grand Total			1400	12+18=30	
Third Semester (2017-2018)							
BVSNP301	Food Science & Microbiology	20	80	100	200	2+2=4	General
BVSNP302	Food Service Management	20	80	100	200	2+2=4	General
BVSNP303	Dietetics	20	80	100	200	2+2=4	Skill
BVSNP304	Diet & Nutrition for Sports-2	20	80	100	200	2+2=4	Skill
BVSNP305	Basic Nursing & First Aid	20	80	100	200	2+2=4	General
BVSNP306	Electrotherapy-1	20	80	100	200	3+3=6	Skill
BVSNP307	Training in Hospital	Report	Viva	TOT		2+2=4	Skill
		100	100	200	200		
		Grand Total			1400	12+18=30	
Fourth Semester							
BVSNP401	Catering Management for Sports events	20	80	100	200	2+2=4	Skill
BVSNP402	Weight Management & Fitness Theory	20	80	100	200	2+2=4	General
BVSNP403	Sports Psychology & Counseling	20	80	100	200	2+2=4	General
BVSNP404	Stress Management	20	80	100	200	2+2=4	General
BVSNP405	Exercise Therapy-2	20	80	100	200	2+3=5	Skill
BVSNP406	Electrotherapy -2	20	80	100	200	2+3=5	Skill
BVSNP407	Training in Hospital	Report	Viva	TOT		2+2=4	Skill
	Case Study	100	100	200	200		
		Grand Total			1400	12+18=30	
Fifth Semester (2018-2019)							
BVSNP501	Computer Application-1	20	80	100	200	2+2=4	General

BVSNP502	Human Nutrition & Metabolism-1	20	80	100	200	2+2=4	General
BVSNP503	Community Nutrition	20	80	100	200	2+2=4	General
BVSNP504	Nutritional problems in India	20	80	100	200	3+3=6	Skill
BVSNP505	Exercise Therapy-3	20	80	100	200	2+2=4	Skill
BVSNP506	Electrotherapy-3	20	80	100	200	2+2=4	Skill
BVSNP507	Training	Report	Viva-Voce	TOT	-	2+2=4	Skill
		100	100	200	200	12+18=30	
	Grand Total				1400		
Sixth Semester							
BVSNP601	Computer Application-2	20	80	100	200	2+2=4	General
BVSNP602	Human Nutrition & Metabolism-2	20	80	100	200	2+2=4	General
BVSNP603	Yoga therapy	20	80	100	200	1+1=2	General
BVSNP604	Naturopathy	20	80	100	200	1+1=2	General
BVSNP605	Exercise Therapy-4	20	80	100	200	3+3=6	Skill
BVSNP606	Electrotherapy-4	20	80	100	200	3+3=6	Skill
BVSNP607	Training	Report	Viva Voce	TOT		3+3=6	Skill
		100	100	200	200		
	Grand Total				1400	12+18=30	

(Note: TOT means TOTAL)

B. vocational (Sports Nutrition & Physiotherapy)
SEMESTER -1
BVSNP101 Communication Skills –English

Max.Marks: 200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-I

Introduction: Basics of communication:- Phonetic transcription, communication and its various definitions , Features, Process , communication model and theories. Seven C's of effective communication, barriers to communication.

Unit-2

Types of Communication:-Verbal and non verbal communication, Gestures & expressions.

Listening skills: - Process of Listening, Barriers to Listening, Types of Listening, Benefits of Effective Listening. **Reading skills:** - (comprehensive Reading).

UNIT-3

Presentation skills, Interview skill, Public Speaking, Persuasive Speaking. Spellings & pronunciation; Preparing ,organizing and presenting the speech, special occasion speeches.

Unit-4

How to improve vocabulary prefix & suffix, Synonyms, antonyms, one word substitution, Précis. Idioms and Phrases.

Practical

- Classroom Practice
- Greeting and introducing.
- Practising Short Dialogues.
- Group Discussions, Seminars/Paper-Presentations.
- Listening News/Conversations/Telephonic Conversation.

Suggested Readings:

- Sethi, J & et al. A Practice Course in English Pronunciation, Prentice Hall of India, New Delhi.
- Sen, Leena. Communication Skills, Prentice Hall of India, New Delhi.
- Prasad, P. Communication Skills, S.K. Kataria & Sons
- Bansal, R.K. and J.B. Harrison. Spoken English, Orient Language.
- Roach Peter. English Phonetics and Phonology.
- A.S. Hornby's. Oxford Advanced Learners Dictionary of Current English, 7th Edition

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-I
BVSNP102 ANATOMY-1

Max.Marks: 200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit -1

- (A) **General Anatomy:** Introduction to Anatomy, terms and terminology, Regions of Body Cavities and Systems. Surface anatomy –musculo-Skeletal, vascular, cardiopulmonary system General Embryology.
- (B) **Applied anatomy:** Musculoskeletal system: - Connective tissue & its modification, tendons, membranes, special connective tissue. Bone structure, blood supply, growth, ossification, and classification. Muscle classification, structure and functional aspect. Joints – classification, structures of joints, movements, range, limiting factors, stability, blood supply, nerve supply, dislocations and applied anatomy.

Unit -2

- (A) **Upper extremity:** Bony architecture –Humerus, Radius, ulna and Clavicle or collar bone.
Joints – structure of shoulder joint, elbow joint, wrist joint and their range of movements
Muscles – origin, insertion, actions, nerve supply of deltoid, trapezius and teresmajor .
Major nerves of upper limb – Axillary nerve, Radial nerve and ulnar nerve-describing origin, course blood supply and deformity of these nerves.
- (B) **Lower Extremity:** Bony architecture of Tibia, fibula , Femur bone (thighbone), Patella bone (kneecap).
Joints – structure & range of movement of hip joint, knee joint & ankle joint

Muscles –gluteus maximus, gluteus medius, quadricpesfemoris, Biceps femoris -origin, insertion, actions, nerve supply.

Major nerves –Tibial nerve, sciatic, Femoral nerve and gluteal nerve course, branches & deformity of these nerve

Unit-3

(A) Spine and thorax:

Back muscles - Lattismus dorssi , levateor scapulae Rhomboid major and deep muscle –Splenius capitis- their origin, insertion, action and nerve supply.

Vertebral column – Structure & Joints of vertebra (Thoracic cage and curves of vertebral column or Spinal curve).

(B) Head and neck:

Definition of Cranium, Skull & its parts.

Facial Muscles –occipitofrontalis,zygomaticus minor, Buccinator and Orbicularisoris- origin, insertion, actions, nerve supply

Temporo mandibular Joints – structure, types of movement .

Unit-4

(A) Nervous system:

Classification of nervous system

Central nervous system – disposition, parts and functions Cerebrum Cerebellum, Midbrain & brain stem, Blood supply.

Spinal cord- anatomy, blood supply, nerve pathways Thalamus, hypothalamus, Structure and features of meninges Ventricles of brain, Cereberal Spinal Fluid(CSF) circulation

(B) Development of nervous system & defects

Classification of Cranial nerves – Terminal nerve, olfactory optic and occulomoter nerve (course, distribution, functions and palsy)

PRACTICAL

- Identification and description of all anatomical structures.
- The learning of Anatomy is by demonstration only through dissected parts, slides, models, charts etc.
- Demonstration of dissected parts (upper extremity, lower extremity, thoracic & abdominal viscera, face and brain)

Suggested Readings:

- Human Anatomy by Chaurasia vol. I,II,III.
- Anatomy by Vishram Singh
- Clinical Anatomy for students by Neeta Kulkarni
- Clinicial Orientated Anatomy by K. L.Moore 4th ed. LWW 1999 3 Clinical Anatomy for Medical students by Richard Snell , 7th ed.LWW, 2003.

- Gray`s Anatomy by Susan Standring , 39th ed Elseiver,2005 (reference book)
- Human Anatomy by A.K.Datta, vol. I, II, III...
- Human Anatomy vol. I,II, III. by Inderbir Singh
- Essential Anatomy – JSP LUMLEY/CRAVEN/AITKEN, 5th ed. 1995.
- Companion pocket Book of Anatomy Vol. I, II, III, by B.D.Chaurasia.
- General Anatomy by Vishram Singh 30
- Hand Book of General Anatomy by B.D.Chaurasia, 3rd Ed. CBS Publishers & Distributors, 1996
- Essentials of General Anatomy by Sushil Kumar
- Principals of General Anatomy by A.K.Datta 5th Ed.

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-I
BVSNP103 PHYSIOLOGY-1

Max.Marks: 200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

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Unit-1

(A) General Physiology

Cell: morphology, Structure and function of cell organelles Structure of cell membrane Transport across cell membrane
Intercellular communication Homeostasis
Blood: Introduction- composition & function of blood White Blood Cell (W.B.C), Red Blood Cell(R.B.C.), Platelets
formation & functions, Immunity Plasma: composition, formation & functions,
Plasma Proteins: types & functions Blood Groups- types, significance, determination Hemoglobin Haemostasis
Lymph-composition, formation, circulation &functions

Unit-2

(A) Cardiovascular system

Conducting system-components, impulse conduction Heart valves
Cardiac cycle- definition, phases of cardiac cycle
Cardiac output - definition, normal value, determinants.
Stroke volume and its regulation; Heart rate and its regulation
Arterial pulse, Blood pressure-definition, normal values, factors affecting blood pressure
Shock-definition, classification, causes and features Basic idea of Electro Cardio Graph (E.C.G)
Cardiovascular changes during exercise

Unit-3

(A) Respiratory System

Mechanics of respiration, Lung volumes and capacities, Pulmonary circulation, transport of respiratory gases. Factors affecting respiration, Regulation of respiration-neural regulation, voluntary control and chemical regulation, Hypoxia, Hypercapnoea, Hypocapnoea Artificial respiration. Disorders of respiration- dyspnoea, orthopnoea, hyperpnoea, hyperventilation, apnoea, tachypnoea Respiratory changes during exercise.

Unit-4

(A) Nerve Muscle Physiology

Muscles- classification, structure, properties, Excitation contraction coupling Motor unit, Electro Myo gram (EMG), factors affecting muscle tension, Muscle tone, fatigue, exercise.

Nerve –structure and function of neurons, classification, properties Resting membrane potential & Action potential their ionic basis. All or None phenomenon, neuromuscular transmission, Ionic basis of nerve conduction. Concept of nerve injury & Wallerian degeneration Synapses, Electrical events in postsynaptic neurons Inhibition & facilitation at synapses. Chemical transmission of synaptic activity, Principal neurotransmitters.

PRACTICAL

- Microscopic examination of prepared slides of different types of cells
- Examination of pulse, Blood Pressure (B.P.), Respiratory rate.
- Reflexes
- Spirometry to measure various lung capacities & volumes, Respiratory rate, Tidal volume, Inspiratory Reserve Volume (IRV), Vital Capacity (VC), Expiratory Residual Volume (ERV), residual volume on Spirometry.

Suggested Readings:

- Understanding Medical Physiology, R.L. Bijlani, (1995) J P Brothers Medical Publishers.
- Text Book of Medical Physiology, Guyton Hall, (2003) Saunders publishers.
- Principles of Anatomy and Physiology. Tortora (2003). John Wiley and sons.
- Human Physiology, by C.C.Chatterjee, (2002) Medical Allied Agency,
- Human Physiology - Chatterjee
- Anatomy and Physiology for Nurses
- Illustrated Physiology by Ann B Menaught
- A text book of Biochemistry - Subba Rao
- A text book of Medical Physiology - Guyton

**B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-I**

BVSNP104 HUMAN NUTRITION

Max.Marks: 200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 3+3=6
Time: 3hours

Theory

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Unit - I

Introduction to Nutrition: Food as a source of nutrient, functions of food, definition of Nutrition, nutrients, adequate and good nutrition. Nutritional status –optimum and malnutrition

Carbohydrates –Composition, classification, functions, Recommended Dietary Allowance (RDA), food, sources. 3. Proteins-Composition, classification, functions, RDA, food sources and deficiency (in brief)

Fats & Oils –Composition, classification, functions, RDA, food sources, essential fatty acids & effect of their deficiency

Unit – II

Vitamins –Classification, sources, RDA, functions and deficiency (in brief) of the following : Fat soluble : A,D, E & K Water Soluble : B1, B2 , Niacin, B6, Folic acid and B12 Minerals –functions, sources, RDA and deficiency of the following – (in brief) calcium, Iron, iodine, ?Fluorine, Sodium & Potassium).

Water as nutrients, functions, sources, requirement and effect of deficiency. 8 Fiber- types, Functions and Sources.

UNIT - III

Carbohydrates & its types-Digestion, absorption and metabolism, (aerobic and anaerobic,) storage and utilization of carbohydrates. Lipids - Digestion, absorption and metabolism, Storage and mobilization of fat stores during exercise, ketone bodies. Proteins- Digestion, absorption and metabolism, Nitrogen balance and protein quality

Unit – IV

Energy – Units of energy, energy value of food, Gross and physical energy Basic Metabolic Rate (BMR) and factor affecting BMR. Water and electrolyte balance – Water balance; Water and electrolyte losses; affect of low and high intake of electrolytes on water balance.

PRACTICAL

- Preparation diet chart for Adult man, adult women, School going Child
- Determination of following from foods:
- Moisture, ash, Crude Protein, Fiber, fat and Vitamin C
- 2 Preparation of following (at least 2 items each)
- ✓ Salads
- ✓ Soups
- ✓ Deserts
- ✓ Cakes/Cookies
- ✓ Main Course dishes

Suggested Readings:

- Basic Nutrition and Diet Therapy 7 Ed Corinne H. Robinson, Emma S. Weigley Donna H. Mueller Macmillon Publishing Company
- Nutrition in Health and Disease 17th ed L. Anderson Dibble P. R. Turkki H. S. Michael H. J. Ryribergen J. B. Lippincott Company, Philadelphia
- Introductory Nutrition 6th ed Guthrie Helen A St. Louis C. V. Mosby
- Fundamentals of Food & Nutrition Sumati R. Mudambi and M. V. Rajagopal New Age International (P) Ltd. Bombay

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-I
BVSNP105 DIET AND NUTRITION FOR SPORTS-1

Max.Marks: 200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 3+3=6
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-1

(A)Introduction: Nutritional consideration for sports(boxing & wrestling)/ exercising person as compare to normal active person.

(B)Define Energy substrate- uses of glycogen & its functions

Energy substrate for activities of different intensity and duration, aerobic and anaerobic activities.

Unit-II

Important micronutriefts for exercise.Vitamin B complex & C . Exercise induced oxidative stress and role of antioxidants.

Unit-III

Dietry supplements and ergogenic aids (nutritional, pharmacological and physiological).

Fluid balance in sports and exercise, importance, symptoms and prevention of dehydration, Sports drink for runner(Heed, power bar perform).

Unit-IV

Chronic dieting and eating disorder. Female athletic triad, sports anemia.

PRACTICAL

- Meal planning for regular training, balanced diet of different calorific value for specific sport and exercising person (gymnast, Runner/ swimmers (sprinter, middle distance/ long distance, marathon, weight lifter, Boxer. Cricketer.

Suggested Readings:

- Bucci, L., 1993 Nutrients as Ergogenic Aids for Sports and Exercise. Boca Raton, FL.: CRC Press.
- Advances in Sport and Exercise Science : Nutrition and Sport , Edited by Don MacLaren. , Published by Churchill Livingstone, Elsevier. 2007
- Sports Medicine: The school age athlete by Bruce Reider. 1996. Published by W.B. Saunders.
- Nutrition for Serious Athletes. Dan Banardot. 2000; Human Kinetics.
- Energy-Yielding Macronutrients and Energy Metabolism in Sports Nutrition. Edited by Judy A Driskell , Ira Wolinsky, CRC Press 2000.
- Recommended Dietary Intakes for Indian Sportsman and Women. Satyanarayan, K; Nageshwar Rao. C; Narsinga Rao,B.S.; Malhotra, M.S. (1985)., Hyderabad, National Institute of Nutrition.

**B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-I**

BVSNP106 HOSPITAL MANAGEMENT

Max.Marks: 200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+1=3
Time: 3hours

Theory

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UNIT-I

- To access the patient and physical examination BP , Weight .
- Assess the past and present history.

UNIT-II

- Transporting safely patient from Outpatient Department (OPD).
- Identify various positioning of patients.
- Describing bedding standards for patients.

UNIT-III

- Use various equipments and tools supplies the patients units.
 - ✓ Wheel chair
 - ✓ Stretchers

✓ Mobility Aids

- Knowledge of standard size of beds and mattresses.

UNIT-IV

- Understand the meaning of First Aid and Role of first Aider.
- Importance of preventing cross infection.
- Need of recording incidents and actions.
- Knowledge of using equipments.
- Administer the technique Cardio Pulmonary Resuscitation (CPR)
- Managing Trauma

PRACTICAL

- Using the First Aid kit tools.
- Prepare complete First Aid kit box
- Managing CPR technique.
- Prevention of injury, wound management.

Suggested Readings:

- Principles of Hospital Administration and Planning, japee brothers

**B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-I**

BVSNP107 Environmental Sciences

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

UNIT-I

Environmental studies – Nature, scope and importance, need for public awareness; natural resources – renewable and non-renewable resources, use and over- exploitation/over-utilization of various resources and consequences; role of an individual in conservation of natural resources; equitable use of resources for sustainable lifestyles

UNIT-II

Ecosystems – concept, structure and function of an ecosystem; energy flow in the ecosystem; ecological succession; food chains, food webs and ecological pyramids; types of ecosystem – forest ecosystem, grassland ecosystem, desert ecosystem, aquatic ecosystems
Environmental Pollution – Definition, cause, effects and control measures of different types of pollutions – air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution, nuclear hazards; solid waste management – causes, effects and control measures of urban and industrial wastes; role of an individual in prevention of pollution

UNIT-III

Social issues and the environment – Sustainable development, urban problems related to energy, water conservation, rain water harvesting, watershed management; resettlement and rehabilitation of people, its problems and concerns; climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust; Wasteland reclamation, consumerism and waste products

UNIT-IV

Environmental legislation – Environment Protection Act. Air (prevention and control of pollution) Act. Water (prevention and control of pollution) Act, Wildlife Protection Act, Forest Conservation Act.

Suggested Readings:

- Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
- Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380 013, India, Email:mapin@icenet.net (R)
- Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
- Clark R.S., Marine Pollution, Clarendon Press Oxford (TB)
- Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumabai, 1196p
- De A.K., Environmental Chemistry, Wiley Eastern Ltd.
- Down to Earth, Centre for Science and Environment (R)
- Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p
- Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
- Heywood, V.H & Waston, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.
- Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284 p.
- Mckinney, M.L. & School, R.M. 1996. Environmental Science systems & Solutions, Web enhanced edition. 639p.
- Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)
- Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
- Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
- Rao M N. & Datta, A.K. 1987. Waste Water treatment. Oxford & IBH Publ. Co. Pvt. Ltd. 345p.

**B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER -II
BVSNP201 Communication Skills –English**

Max. Marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-1

Writing Skills: Paragraph, Essay writing Memo, Circular, Notice, Advertisements & posters.

Unit-2

Agenda, Minutes, writing of CV/Resume, Drafting an E-mail. abstracts and summaries, proposals.

UNIT-3

Letter writing- All types of Formal and Informal letters (Employment related correspondence, Correspondence with Govt./Authorities, Office Orders, Enquiries and Replies, Business Letters), covering letters.

Unit-4

Report Writing: Types of reports, structure of reports, short reports, long reports, Press Release

PRACTICAL

- Essay writing, Notice

- Advertisement and Poster making
- Writing letters
- Report writing

Suggested Readings:

- Prasad, P. The Functional Aspects of Communication Skills, Delhi.
- Sen, Leena. Communication Skills, Prentice Hall of India, New Delhi.
- McCarthy, Michael. English Vocabulary in Use, Cambridge University Press.
- Rajinder Pal and Prem Lata. English Grammar and Composition, Sultan Chand Publication

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-II
BVSNP202 ANATOMY-2

Max. Marks: 200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-1

(A) Sensory system: Structure and function of: Visual system Auditory system Gustatory system Olfactory system, Somato sensory system

(B) Cardiovascular system

Circulatory system – major arteries (Pulmonary , coronary) and veins(Pulmonary, jugular), structure of blood vessels. Heart structure, positions, chambers, valves, internal & external features Blood supply to heart Conductive system of heart

Unit-2

(A) Lymphatic system

Circulation, structure & functions Lymph nodes

(B) Respiratory system

Structure of upper and lower respiratory tract

Thorax: Pleural cavities & pleura Lungs and respiratory tree Heart and Diaphragm

Unit-3

(A) Digestive system: Parts of digestive system. Abdominal cavity – divisions Muscles of abdominal wall Liver, Pancreas Spleen, Alimentary canal Gall bladder, Intestine (small & large)

Unit-4

(A)Urinary and Reproductive system: Urinary system Pelvic floor, innervations, Kidneys, Ureter, Bladder, Urethra,
(B)Genital system: Reproductive System of male and female Endocrinal system Pituitary gland Thyroid Parathyroid gland

PRACTICAL

- Demonstration of skeleton- articulated and disarticulated.
- During the training more emphasis will be given on the study of bones, muscles, joints, nerve supply of the limbs and arteries of limbs.
- Surface anatomy: surface land mark-bony, muscular and ligamentous. surface anatomy of major nerves, arteries of the limbs.
- Points of palpation of nerves and arteries.

Suggested Readings:

- Human Anatomy by Chaurasia vol. I, II, III.
- Anatomy by Vishram Singh
- Clinical Anatomy for students by Neeta Kulkarni
- Clinical Orientated Anatomy by K. L.Moore 4th ed. LWW 1999 3 Clinical Anatomy for Medical students by Richard Snell, 7th ed.LWW, 2003.
- Gray`s Anatomy by Susan Standring , 39th Ed Elseiver,2005 (reference book)
- Human Anatomy by A.K.Datta, vol. I, II, III..
- Human Anatomy vol. I, II, III. by Inderbir Singh
- Essential Anatomy – JSP LUMLEY/CRAVEN/AITKEN, 5th ed. 1995.
- Companion pocket Book of Anatomy Vol. I, II, III, by B.D.Chaurasia.
- General Anatomy by Vishram Singh 30
- Hand Book of General Anatomy by B.D.Chaurasia, 3rd Ed. CBS Publishers & Distributors, 1996
- Essentials of General Anatomy by Sushil Kumar
- Principals of General Anatomy by A.K.Datta 5th Ed.

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-II
BVSNP203 PHYSIOLOGY-2

Max. Marks: 200

Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-1

(A)Nervous system

Introduction, central and peripheral nervous system, functions of nervous system.
Reflexes- monosynaptic, polysynaptic, superficial, deep & withdrawal reflex Sense organ, receptors, electrical & chemical events in receptors, Sensory pathways for touch, temperature, pain, proprioception & others. Control of tone & posture: Integration at spinal, brain stem, cerebellar, basal ganglion levels, along with their functions

Unit-2

(A)Motor mechanism: motor cortex, motor pathway: the descending tracts- pyramidal & extra pyramidal tracts-origin, course, termination & functions. Upper motor neuron and lower motor neuron paralysis.

(B)Spinal cord lesions: Complete transection & hemisection of the spinal cord Autonomic nervous system: features and actions of parasympathetic & sympathetic nervous system Hypothalamus. Higher functions of nervous system Special senses- eye, ear, nose, mouth

Unit-3

(A)Renal System

Physiology of kidney and urine formation Glomerular filtration rate, clearance, Tubular function, Water excretion, concentration of urine- regulation of Na⁺, Cl⁻, K⁺ excretion Physiology of urinary bladder

(B)Digestive System

Digestion & absorption of nutrients Gastrointestinal secretions & their elimination. Functions of Liver & Stomach.

Unit-4

(A)Endocrinology

Physiology of the endocrine glands – Pituitary, Pineal Body, Thyroid, Parathyroid, Adrenal, Gonads, Thymus, Pancreas. Hormones secreted by these glands, their classifications and functions.

Male & female reproductive system

Male - Functions of testes, pubertal changes in males, testosterone - action & regulations of secretion.

Female - Functions of ovaries and uterus, pubertal changes, menstrual cycle, estrogens and progesterone - action and regulation.

PRACTICAL

- Blood – Testing of blood groups, hemoglobin and Red Blood Cell (R.B.C), White Blood Cell (W.B.C), Total Leucocytes Count (T.L.C), Differential Leucocytes Count (D.L.C), Erythrocyte Sedimentation Rate (ESR).
- Blood indices, Blood grouping, Bleeding & Clotting time. Demonstration of dissection of mammals and observation of digestive and reproductive systems (Male & Female).

Suggested Readings:

- Understanding Medical Physiology , R.L. Bijlani, (1995) J P Brothers Medical Publishers.
- Text Book of Medical Physiology, Guyton Hall , (2003)Saunders publishers.
- Principles of Anatomy and Physiology. Tortora (2003) . John Wiley and sons.
- Human Physiology, by C.C.Chatterjee, (2002)Medical Allied Agency,
- Human Physiology - Chatterjee
- Anatomy and Physiology for Nurses
- Illustrated Physiology by Ann B Menaught
- A text book of Biochemistry - Subba Rao
- A text book of Medical Physiology - Guyton

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-II
BVSNP204 PHYSIOTHERAPY IN SPORTS

Max. Marks: 200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 3+3=6
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-1

Pre-exercise evaluation

Diet and nutrition

Measurement of fitness components and sports skills - Measurement of muscular strength, Measurement of muscular endurance, Measurement of flexibility, Determination exercise endurance, Physiological effects of exercise on body systems - Muscular system, Endocrine system, Cardio-respiratory system, Nervous system

Unit-2

Sports injuries - Spine –Prolapse Interverteberal Disc (PIVD), Kissing spine, cervical whiplash injuries, facet joint syndrome, Sacroilliac Joint(SI) joint dysfunction, Hip – muscle strain, piriformis syndrome, Illiotibial Band Syndrom (ITB) syndrome, osteitis pubis, Knee – menisci, cruciate, collateral, osteochondritis, chondromalacia patellae, biceps femoris tendonitis, swimmers knee, patello-femoral pain syndrome, Leg & ankle – shin splint, achillis tendonitis & rupture, TA bursitis, ankle sprain, plantar fasciitis, turf toe syndrome, Head & face – maxillo-facial injuries, helmet compression syndrome.

Unit-3

(A)Sports injuries

Shoulder – instability, rotator cuff injury, biceps tendonitis and rupture, pectoralis major rupture, scapular dyskinesis and acromio-clavicular joint injuries, Elbow – tennis elbow, golfer’s elbow, Wrist and hand – carpal tunnel syndrome, gamekeeper’s thumb.

(B)Principles of injury prevention.

Unit-4

(A)Principles of training & Rehabilitation in sports injuries.

(B)Sports in Special age groups: Female athletic triad, Younger athlete- Musculo-skeletal problems, management, children with chronic illness and nutrition. Older athlete- Physiological changes with aging, benefits, risks of exercise in elderly, exercise prescription guidelines for elderly.

PRACTICAL

- Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of sports physiotherapy
- Student must maintain a logbook. The duly completed logbook should be submitted during practical examination.

Suggested Readings:

- Text book of work physiotherapy – Guyton, Prim Books Bangalore-1991 8th edition
- Physiology of Sports and Exercise - Majumdar. P, New Central Book
- Physical rehabilitation – Susan B O' Sullivan ,volume – 6
- Therapeutic exercise – Carolin Kisner and Colbi , edition -5
- Physical Rehabilitation of the Injured Athlete, 3e 3rd Edition by James R. Andrews MD (Author), Kevin E. Wilk PT DPT (Author), Gary L. Harrelson Ed D ATC (Author)
- Sports Physiotherapy : Applied Science and Practice by Maria Zulaga, Churchill livingstone(1995)
- Clinical Sports Medicine by Brukner and Khan
- Sports Physiotherapy by Dr. Tahir P. Hussain

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-II
BVSNP205 ETHICS IN PHYSIOTHERAPY

Max.Marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 1+1=2
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-1

History of physiotherapy, Ethical principles in health care, Ethical principles related to physiotherapy, Scope of practice, enforcing standards in health profession-promoting quality care, Professional ethics in research, education and patient care delivery, Informed consent issues, Medical ethics and Economics in clinical decision-making.

Unit-2

Rules of professional conduct: Physiotherapy as a profession Relationship with patients. Relationship with health care institutions. Relationship with colleagues and peers. Relationship with medical and other professional.

Unit-3

Confidentiality and Responsibility, Malpractice and negligence, Provision of services and, advertising.

UNIT-4

Legal aspects: Consumer protection act, Legal responsibility of physiotherapist for their action in professional context and understanding liability and obligations in case of medico-legal action.

PRACTICAL

- Assignments based on course content will be given to the students.
- Seminar/Case presentation.

Suggested Readings

- WCPT, APTA guideline for standards of physical therapy practice
- Published guidelines from WHO, UNISEF, UNESCO, WCPT, APTA, IAP and international associations and organisations.
- E-resources
- Legal aspects of documenting: Scott, Ronald 4. Public Power & Administration by Wilenski, Hale & Iremonger

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-II
BVSNP206 EXERCISE THERAPY – I

Max. marks: 200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-1

Introduction to exercise therapy , Mechanical principle applied in human body – gravity, centre of gravity, line of gravity, base of support, equilibrium, axis and planes .

Unit-2

Disability models – International Classification of Impairments & Disability and Handicaps(ICIDH) model of disability, Nagi model of disability, International Classification of Functioning (ICF) model

Exercise physiology – effect of exercise in various systems – musculoskeletal, neuromuscular, cardiovascular, respiratory system.

Unit-3

Movements, Passive movements – definition, classification, indications, contra indications, advantages, limitations, techniques - emphasize PROM to upper, lower, neck and trunk muscles

Unit-4

Active movements - definition, classification, indications, contra indications, advantages, limitations, techniques - emphasize active movements to upper, lower, and neck and trunk muscles, Starting positions – muscle work, effect and uses and derived positions

PRACTICAL

- Starting positions and derived positions
- Range of motion (Passive Range of Motion , Active Range of Motion, Assistive Active Range of Motion) exercises to all joints
- Measurement of joint range using goniometer.

Suggested Readings:

- Principles of Exercise Therapy—Dena Gardiner 3.
- Practical Exercise Therapy—Margaret Hollis 4
- Massage- Holley & Cook
- Practical Exercise Therapy—Margaret Hollis 56
- Measurement of Joint Motion: A Guide to Goniometry--Cynthia Norkins
- Joint structure and function- Cynthia Norkins REFERENCE BOOKS
- Therapeutic Exercise—Carolyn Kisner & Kolby
- Physiotherapy in Orthopaedic conditions-by Jayant Joshi [for the study of Basic Yogic postures]
- Yoga for Health & Peace- S. Nimbalkar
- Massage for Therapists – M. Hollis

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER – III
BVSNP301 FOOD SCIENCE & MICROBIOLOGY

Max. marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

UNIT – I

Cereals and Millets - Composition and nutritive value, cereal products, Breakfast

Cereals rule of cereals in cookery.

Pulses and Legumes - Nutritive value of pulses and legumes, Storage of pulses, Use of pulses.

Milk & Milk Products – Composition and Nutritive value, types of milk products role of milk & milk products in cookery.

Vegetables and Fruits – Classification, Composition & Nutritive value, storage & Use.

UNIT II

EGGS – Nutritive aspect, quality of egg preservative and use of egg.

Flesh Food – Composition & nutritive value of meat, fish & poultry. Preventive storage uses of flesh food.

Sugar & Sugar Products – Nutritive value sugar related products storage & uses.

Fats & Oils – Nutritional importance composition, specific fats role of fats / oils in Cookery.

UNIT – III

Introduction to microbiology and its relevance to everyday life. General Morphology of micro-organisms, general characteristics of bacteria, fungus virus, Protozoa, algae. Control of micro-organisms, growth curve effect of environmental factors growth of micro-organisms PH, water activity ,oxygen availability temp & other.

Environmental microbiology, water, air, soil & sewage Relevance of microbiology standards for food safety.

UNIT - IV

The relationship of micro-organisms to sanitation effects of micro-organisms (Bacteria, viruses, moulds, yeasts and parasites) or food degradation and food borne diseases. **Importance of personal hygienic** of food handling habits, clothes and illness, education of food handles in handling & serving food. **Cleaning methods** :Sterilization and disinfection products & methods use of detergents, heat chemicals tests for sensitizer strength, **Sanitation** – Kitchen design equipment & System structure & layout of food ,premises maintaining clean environment, selecting and installing equipment cleaning equipment. **Waste product handling**, planning of waste disposal, solid wastes & liquid wastes

PRACTICAL

- Wheat preparation – Chapati , Prontha , Plain & Sruffed , Puris, Bhaturas
- Rice Preparation – Plain & fried rice, pulao , veg , bieryani
- Pulse preparation – Punjabi dal , Aloo- chhole, masala rajmah sambar sprouted
- pubes
- Vegetable preparation – Aloo matar palak paneer, veg kofta , dum aloo veg korma
- Snacks – Varity of sandwiches, fried snacks.

Suggested Readings:

- Textbook of Microbiology-by R. Ananthnarayan & C.K.Jayram Panniker.
- Textbook of Microbiology- Dr. Baweja
- Textbook of Microbiology- Dr. D.R. Arora
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B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-III
BVSNP302 FOOD SERVICE MANAGEMENT

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

UNIT – I

Aims and objectives of different food service outlets (I) Institutional (II) Hospitals . **Equipments** – Classification of equipments, selection & purchase of equipments. **Equipments** – Design Installation and operation, care & maintenance of equipments.

Planning for cooking & service unit – Layout of kitchens , storage and maintenance of kitchens. Planning storage spaces Planning service areas , decoration of service & dining area.

UNIT-II

Menu Planning – Types of menu, writing menus, construction of menus, menu display. Food Service – Different styles of service presentation & display of food. Staff organization of different outlets manager, hostess, supervisor , steward , waiter. Laws governing food service establishments.

UNIT-III

Organization and Management- - Definition and types of organization, - Definition , Principles and functions of catering management, Tools of Management, Organization Chart, Communication, Management of Resources
- Money, Space, Materials, Equipments, Staff, Time, Energy, Procedures.

UNIT – IV

Food Management - Characteristics of food, Quality, quantitative aspect of quality, Sensory qualities, Nutritional qualities, Food recommended for use in canteens, Lunch rooms & Kiosks. Food Purchasing- Food buyer, Purchasing activity - Buying Food, Receiving & storage of food, Food Production- - Food production system & process. Effective use of left over.

PRACTICAL

Organizing a sports event.

Suggested Readings:

- Boella, M.J.(1983):Personnel Management in the Hotel and Catering Industry,3rd Ed., Hutchinson, London.
- Drucker, P.F. (1975): Management Allied Publishers, New Delhi.
- Feam, D.(1969):Management Systems for the Hotel Catering and Allied Industries.
- Hitchcock, M.J.(1980):Food Service Systems Administration, Mac millan, New york.
- Koontz, H.,ODonnel, C., Wehrich, H.(1983):Essentials of Management, Indian Ed.
- Moore,c.L.and Jaedicke, R.K.: Managerial Accounting, South Western Publishing Co.
- Kotas, R. (1972): Accounting in the Hotel and Catering Industry, Intertext Books, 3rd Ed. Butler and Tanner, London

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER – III
BVSNP303 DIETETICS

Max. marks :200

Internal marks: 20

External Marks: 80

Practical: 100

Credit: 2+2=4

Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

UNIT I

Introduction of meal management – Balanced diet basic principles of meal planning, objectives and steps in meal planning.

Nutrition during infancy – Nutritional requirements, advantages of breast feeding Introduction of supplementary food.

Nutrition during early childhood (Toddler / Pre School) growth and nutrient needs, nutrition related problems.

Nutrition of school children – Nutritional requirements, school lunch programmes

UNIT II

Nutrition during adolescence – Nutritional requirements, food choices and eating habits.

Nutrition in pregnancy – Nutritional requirements complications of pregnancy.

Nutrition during lactation – Physiology of lactation, nutritional requirements.

Geriatric nutrition – Nutritional requirements, nutrition related problems

UNIT – III

Role of Dietician, Diet Therapy: Routine hospital diet, Regular diet, Light diet, Soft Diet, Full

Liquid diet. **Diet in fevers and infections** – Typhoid, Malaria and Tuberculosis. **Diet in gastro intestinal disorders:** Diarrhea, Constipation, Peptic ulcer.

UNIT – IV

Diet in Diabetes mellitus – Classification, predisposing factors, Diagnosis, Dietary management.

Diet in Cardiovascular diseases – Dietary management in Atherosclerosis and hypertension.

Diet in diseases of liver and gall bladder.

Diet in Renal diseases - Dietary Management in Glomerulonephritis , Acute and chronic renal failure

PRACTICAL

PART A

1. Planning and preparation of a balanced diet for a pregnant women
2. Planning and preparation of a balanced diet for a nursing mother.
3. Preparation of weaning food.
4. Planning and preparation of a diet for pre schoolers.
5. Planning and preparation of a diet for preschool going child.
6. Planning and preparation of a balanced diet for a adolescence

PART B

1. Planning and preparation of diet in fever
2. Planning and preparation of diet in constipation and peptic ulcer
3. Planning and preparation of diet in hypertension
4. Planning and preparation of diet for Insulin dependent diabetes mellitus
5. Planning and preparation of diet in kidney failure.

Suggested Readings:

- Pharmacology by Gaddum
- Pharmacology & Pharmacotherapeutics Revised 19th Edition 2005 by Dr.S.D.Satoskar & Dr.S.D. Bhandarkar
- Pharmacology principle of Medical practice by Krantx, & Carr
- Pharmacology basis of Therapeutic By Goodman L.S. Gilman A
- Essential of Medical Pharmacology 5th Edition 2003 By Dr.K.D.Tripathi
- McLaren, D.S., Meguid, M.M. (1988): Nutrition and its Disorders, Churchill Livingstone.
- Waterlow, J.C. (1992): Protein Energy Malnutrition and its Disorders, Churchill Livingstone.
- Gopalan, C (Ed.), (1993): Recent Trends in Nutrition, Oxford, University Press.
- Sachdeva, H.P.S., Chaudhary, P. (1994): Nutrition in Children . Developing Country Concerns, Dept. of Pediatrics, Maulana Azad Medical College , New Delhi.
- Worthington Roberts , B.S. & William, S. (1989): Nutrition in Pregnancy and Lactation, 5th Ed. Mosby.

- Ebrahim, G.J.(1983). Nutrition in Mother and Child Health, ELBS.
- Endres, J.B. Rockwell,R.E. (1990). Food Nutrition and the Young Child, Maxwell, Macmillian International Publishing group.
- Mahan, L.K. and Escott-Stump, S. (2000): Krause's Food Nutrition and Diet Therapy, 10th Edition, W.B. Saunders Ltd.
- Shils, M.E., Olson, J.A., Shike, M. and Ross, A.C. (1999): Modern Nutrition in Health and Disease, 9th Edition, Williams and Wilkins.
- Escott-Stump, S. (1998): Nutrition and Diagnosis Related Care, 4th Edition, Williams and Wilkins.
- Garrow, J.S., James, W.P.T. and Ralph, A. (2000): Human Nutrition and Dietetics, 10th Edition, Churchill Livingstone.
- Williams, S.R. (1993): Nutrition and Diet Therapy, 7th Edition, Times Mirror/Mosby College Publishing.
- Davis, J. and Sherer, K. (1994): Applied Nutrition and Diet Therapy for Nurses, 2nd Edition, W.B. Saunders Co.
- Walker, W.A. and Watkins, J.B. (Ed) (1985): Nutrition in Pediatrics, Boston, Little, Brown & Co.

Journals and Other Reference Series

- Nutrition Update Series
- World Review of Nutrition and Dietetics
- Journal of the American Dietetic Association
- American Journal of Clinical Nutrition
- European Journal of Clinical Nutrition
- Nutrition Review

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER – III
BVSNP304 DIET AND NUTRITION FOR SPORTS-2

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-I

Macro Nutrients-Carbohydrate as an energy source for sports and exercise. Carbohydrate stores, fuel for aerobic and anaerobic metabolism, Glycogen re-synthesis, carbohydrate (CHO) Loading, CHO composition for pre exercise, during and recovery period.

Unit-II

Role of fat as an energy source for sports and exercise. Fat stores, regulation of fat metabolism, factors affecting fat oxidation (intensity, duration, training status, CHO feeding), effect of fasting and fat ingestion.

Unit-III

Protein and amino acid requirements, Factors affecting. Protein turnover, protein requirement and metabolism during endurance exercise, resistance exercise and recovery process. Protein supplement.

UNIT-IV

Meal planning for regular training, balanced diet of different calorific value for specific sport and exercising person golfer, archery, throwing events, Hockey, Football, and aerobic and strength training exercise.

PRACTICAL

- Planning and preparation of:
- Energy dense recipes
- High fibre recipes
- Low fat recipes
- Low sodium recipes
- Micronutrient dense recipes

Suggested Readings:

- Bucci, L., 1993 Nutrients as Ergogenic Aids for Sports and Exercise. Boca Raton, FL.:CRC Press.
- Advances in Sport and Exercise Science : Nutrition and Sport , Edited by Don MacLaren. , ChPublished by Churchill Livingstone, Elsevier. 2007
- Sports Medicine: The school age athlete by Bruce Reider. 1996. Published by W.B. Saunders.
- Nutrition for Serious Athletes. Dan Banardot. 2000; Human Kinetics.
- Energy-Yielding Macronutrients and Energy Metabolism in Sports Nutrition. Edited by Judy A Driskell , Ira Wolinsky, CRC Press 2000.

- Recommended Dietary Intakes for Indian Sportsman and Women. Satyanarayan, K; Nageshwar Rao. C; Narsinga Rao,B.S.; Malhotra, M.S. (1985)., Hyderabad, National Institute of Nutrition.

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER – III
BVSNP305 Basic Nursing and First Aid
Basic Nursing:

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit:2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-1

What is Nursing ? Nursing principles. Inter-Personnel relationships, Bandaging Basic turns, Bandaging extremities, Triangular Bandages and their application. Nursing Position: Environment safety, Bed making, prone, lateral, dorsal, dorsal recumbent, Flower's positions, comfort measures, Aids & rest and sleep.

Unit-2

Methods of Giving Nourishment: Feeding, Tube feeding, drips, transfusion. Surgical Dressing: Observation of dressing procedures. Lifting and transporting patients: Lifting patient up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher.

Unit-3

First Aid: Meaning and use of Low voltage Rescue and CPR (Cardio pulmonary resuscitation), Initial assessment vs. Secondary Assessment, Emergency moves: clothes drag, seat carry, Physical exam and SAMPLE history, documentation and legal considerations, sudden illness, wounds, water sterilization steps.

Unit-4

First Aid- Bleeding, caring for shock, Burns, injuries to muscles, bones and joints, splints, Bites and stings, Assisting with bronchodilators (inhalers), Heat related emergencies, cold emergencies, in-line stabilization for head, neck and back injuries. First aid kit tools.

PRACTICAL:

Training in providing first aid including CPR.

Suggested Readings:

- Emergency Care and First Aid for Nurses: A practical Guide, Churchill Livingstone.
- Textbook on First Aid & Emergency Nursing by Clement 1
- First Aid and Emergency Care (Hindi Ed.) by Williamson.
- First Aid and Emergency Care by Ajay Singh.

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER – III
BVSNP306 ELECTRO THERAPY – I

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 3+3=6
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-1

Basic components of electronic current-electrons, protons, neutrons, ions, matter, molecules.

Current electricity – static electricity, electric charges, conductor, condition of electricity, resistance, factors effecting resistance with example in human body, insulation , unit of electric current-ampere, coulomb, volt, ohms law.

Unit-2

Magnetism, theories of magnetism, properties of magnet.

Electromagnetic induction , electromagnetic radiation , law governing radiations.

Grouth's law, cosine law , inverse square law , law of reflection , rarefaction.

Unit-3

Electrical components transformer , capacitor , diode, valves.

Types of electric current , wave forms, current modulation-continuous, burst, beat, surge. Electric circuit in parallel and series.

Unit-4

Safety issues while using electric equipments – for patients and therapist.

Muscles and nerve response to electrical stimulation –polarization, depolarization and propagation of impulse.

PRACTICAL

- Identify basic electrical components in electrotherapeutic equipments.
- Reading of medical records , identifying indications and contraindications for electrotherapy.
- Stimulation of motor points stimulation of individual muscle and group muscle.

Suggested Readings:

- Clayton's Electro therapy – Kitchen-3RD Ed
- Clayton's Electro therapy – Kitchen-10th Ed
- Electro therapy explained –by Low & Reed
- Electrotherapy: Evidence Based Practice- Kitchen 11th Ed
- Principles & Practice of Electro Therapy –Joseph Kahn
- Clinical Electro Therapy-by Nelson & Currier
- Thermal Agents – by Susan L. Michlovitz
- Principles & Practice of Electro Therapy- Dr Saeed Anwar

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-IV
BVSNP401 CATERING MANAGEMENT FOR SPORTS EVENTS

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-I

Fundamental of Event Management: Principles of meal planning for bulk cooking considering serving size and serving style. Market survey, procurement of raw material, storage, costing and budgeting.

Unit-II

Meal planning for regular training, balanced diet of different calorific value for specific sports and exercising persons (gymnast, Runner/swimmers, sprinter, middle distance/ long distance, marathon) weight lifter, boxer, cricketer, golfer, archery, throwing events, Hockey, Football and aerobic and strength training exercise.

Unit-III

Pre event meal and liquid, Post event meal, high energy meal
Sports bar- Energy bar, Protein bar and Nutrition bar

Unit-IV

Sports Drink- Hypo, Iso and Hypertonic drink for hydration/ energy and recovery drink.
Antioxidant rich diet. Balance ethnic meal Meal for weight loss program/ sports camps.

PRACTICAL:

- Principles of meal planning for bulk cooking considering serving size and serving style , Market survey, procurement of raw material, storage, costing and budgeting.
- Prepare diet chart before running after running
- Prepare diet chart for sprinter before and after.
- Organizing & managing Sports events

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-IV
BVSNP402 WEIGHT MANAGEMENT AND FITNESS

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit:2+2=4

Theory

Time: 3hours

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-1

Meaning of obesity, Adult and childhood obesity, prevalence, types, etiology, theories of Obesity, Factors affecting, co-morbidity.

Unit-II

Regulation of energy intake and expenditure, control of appetite and food intake, foods selection and consumption pattern. Hormonal control: Insulin, Thyroid & estrogen

Unit-III

Critical evaluation of standard weight loss diet commonly followed by weight watchers. Care and cure in rehabilitation, precaution.

Unit-IV

Necessity of continuous monitoring and necessary emergency procedures. Athletic Fitness.

PRACTICAL

- Classification of obesity according to Basal Metabolic Index(BMI). Assessment of body fat by different method.

- Types of Exercise including Aerobics, spinning, yoga, power yoga, weight training, strength training, circuit training, etc.
- Equipments commonly used in Fitness Industry.
- Exercise for weight gain/ loss, muscle development and improving muscle tone
- Exercise for Cardio-respiratory fitness
- Strengthening the joints and bones and increasing flexibility.

Suggested Readings:

1. Edward L. fox and Donald K Mathews (1985). CBS College Publishing. Japan
2. Present Knowledge in Nutrition; Ed, Myrtle L. Brown, ILSI Press.
3. David C. Nieman , Fitness and Sports Medicine, A Health related Approach (3rd edition, 1995)
4. Bases of fitness- Edward L. fox , Timothy E. Kirby and Ann Roberts Fox (1987)
5. Measurement and evaluation for Physical Educators - Don Kirkendall, Joseph J Gruber and Robert E. Johnson. 1987. Human kinetics Publishers Inc.
6. The Physiological Basis of Physical Education and Athletics, by E.L.Fox and D.K.Mathews, Holt-Saunders, 1981.
7. Edward L. fox and Donald K Mathews (1985). CBS College Publishing. Japan
8. Present Knowledge in Nutrition; Ed, Myrtle L. Brown, ILSI Press.
9. David C. Nieman , Fitness and Sports Medicine, A Health related Approach (3rd edition, 1995)
10. Bases of fitness- Edward L. fox , Timothy E. Kirby and Ann Roberts Fox (1987)
11. Measurement and evaluation for Physical Educators - Don Kirkendall, Joseph J Gruber and Robert E. Johnson. 1987. Human kinetics Publishers Inc.
12. The Physiological Basis of Physical Education and Athletics, by E.L.Fox and D.K.Mathews, Holt-Saunders, 1981.

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-IV
BVSNP403 SPORTS PSYCHOLOGY & COUNSELING

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-I

Importance and need of Psychological Training in sports. The emotional contents of Sports: Intrinsic Pressures, Social Pressures & Personal Pressure.

Unit-II

Mind-The mechanics of Flight or Fight Response, The Physical Disruptions and the Mental Disruptions.

The sports Emotional-Reaction profile: Factors affecting performance like Desire, Assertiveness Sensitivity, Tension Control, Personal Accountability, Self discipline, Confidence, Concentration, Consistency, Commitment and trait Interaction.

Unit-III

Mental Preparation for the Game and Mental Practice for the play. Rational Emotive Mental Training Programme for sportsman using Mind-body co-ordination. Techniques to Improve Performance- Creative visualization, desensitization auto-suggestion, therapy, rational thinking for specific purpose and progressive relaxation procedure

Unit-IV

Understanding the problems of sportsman-Lack of adequate motivation and concentration, fear of Insecurity & Rejection, Fear of Making a wrong move, Not able to make the use of maximum available resources (Physical & Mental) psychological barriers

between student & teacher and drugs . **Counseling in sports:** Importance & need of psychological counseling, Types of counseling like individual, group, team etc. Effective counseling methods & techniques, case studies, role plays and discussion.

PRACTICAL

- Case Study and Presentation
- Counseling of sports person

Suggested Readings

- Sports Psychology by Yadvinder Singh; Publisher: Sports Publications
- Sports Psychology Basics by Andrew Caruso; Publisher: Reedswain
- Key Concepts In Sports Psychology by Ellis Cashmore; Publisher: routledge fondation
- A Comparative Study Of Sports Psychology by Dharmendra P Bhatt ; Publisher: Sports Publications
- Basic Aspect Of Sport Psychology by D C Lal; Publisher: Sports Publications
- Essential Sport Psychology by Murphy Shane; Publisher: Human Kine
- Sport Psychology: Contemporary Themes by Lavallee David ; Publisher: Palgrave M
- Sport Psychology Interventions by Murphy Shane M; Publisher: Human Kine
- Sport Psychology (with Infotrac) by Arnold D Leunes; Publisher: Wadsworth Publishing Company
- Coaches Guide To Sport Psychology by Rainer Martens; Publisher: Human Kinetics Publishers
- Learning Experiences In Sport Psychology; Publisher: Human Kine
- Sport Psychology: The Key Concepts by Cashmore Ernest; Publisher: Routledge
- Applied Sport Psychology: Personal Growth To Peak Performance by 4th Edition Williams; Publisher: Academic Internet Publishers

B. Voc. in Sports Nutrition & Physiotherapy

**SEMESTER-IV
BVSNP404 STRESS MANAGEMENT**

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit I

Introduction & Meaning of Stress, Types of Stress, Symptoms of stress, Identification of Sources of Stress
Stress Models/ Theories

Unit II

Impact of Stress on Bio-Logical Changes, Stress and Illness,
Relationship between Stress and Performance at workplace and at home.

Unit III

Meaning of stress management ,Basic concepts of Stress Management
Stress Management for Sports persons

Unit IV

Stress Management Techniques such as Progressive relaxations technique, Time Management, yoga Nidra, Meditation, deep breathing, stress balls, spas, Somatic training, cognitive therapy, music therapy.,

PRACTICAL

- Practically applying stress management technique - Progressive relaxations technique, yoga nidra, meditation, deep breathing, stress balls, spas, somatic training, cognitive therapy, music therapy.

Suggested Readings:

- Manage Your time to reduce your stress: A handbook for the overworked, overscheduled and overwhelmed-Rita Emmett
- Monkey Mind: A memoir on Anxiety-Daniel Smith
- Hardwiring Happiness: The new Brain Science of Contentment, Calm and Confidence –Rick Hanson
- Undoing Perpetual Stress: The missing Connection between Depression Anxiety and 21st Century Illness.

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-IV
BVSNP405 EXERCISE THERAPY –2

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+3=5
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-1

Relaxation – definition, types of relaxation, relaxation techniques
Suspension – definition, types, uses and therapeutic applications
Balance – static and dynamic balance, mechanism of balance control, balancing exercises

Unit-2

Neuromuscular coordination – causes of in coordination, exercises to improve coordination – Frenkle exercise
Joint range measurement – Goniometer, types and techniques of measuring joint Range of Motion(ROM)

Unit-3

Measurement of limb length, girth
Manual muscle testing – grading system, techniques- emphasize on skill to grade upper, lower, neck and trunk muscles.

Unit-4

Mobility aids – crutches, canes, walker
Soft tissue manipulation (massage) – history, types, techniques, physiological effects, therapeutic uses, contraindications .

PRACTICAL

- General and local Relaxation techniques
- Suspension exercise to all major joints
- Massage – upper limb, lower limb, back, face
- Manual muscle testing of individual muscles
- Coordination exercises, balancing exercises

Suggested Readings:

- Principles of Exercise Therapy–Dena Gardiner 3.
- Practical Exercise Therapy—Margaret Hollis 4
- Massage- Holley & Cook
- Practical Exercise Therapy—Margaret Hollis 56
- Measurement of Joint Motion: A Guide to Goniometry--Cynthia Norkins
- Joint structure and function- Cynthia Norkins
- Therapeutic Exercise—Carolyn Kisner & Kolby
- Physiotherapy in Orthopaedic conditions-by Jayant Joshi [for the study of Basic Yogic postures]
- Yoga for Health & Peace- S. Nimbalkar
- Massage for Therapists – M. Hollis

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-IV
BVSNP406 ELECTRO THERAPY – 2

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+3=5
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-1

Pain – types of pain, pain pathway, theories of pain, Gate control theory of pain, pain modulation at various levels.

Unit-2

Low frequency currents: Neuromuscular electrical stimulation– physiological effects, therapeutic uses of electrical stimulation techniques– electrodes type, electrode size, electrode placement, stimulating points, methods of reducing skin electrode resistance, contraindications and precautions. High voltage pulsed stimulation. Russian stimulation. Trans cutaneous Electrical Nerve stimulation (TENS)– therapeutic uses of TENS, types, electrode placement in TENS, contraindications and precautions Iontophoresis – mechanism, biophysical effect, medication dosage, medicated ions used, techniques of application.

Unit-3

Electro diagnostic test –Faradic Galvenic(FG) test, strength duration curve, chronaxie, rheobase .

Unit-4

Interferential therapy (IFT) – physiological effects, therapeutic indications, methods of application, sweep, base, contraindication and precautions.

PRACTICAL

- Faradic foot bath, Faradism under pressure.
- Plotting SD graph, diagnosis using electro diagnostic test – FG test and Strength Duration Curve(SD curve).
- Placement of electrodes in TENS & IFT with dosimeter for various indications.

Suggested Readings:

- Clayton's Electro therapy – Kitchen-3RD Ed
- Clayton's Electro therapy – Kitchen-10th Ed
- Electro therapy explained –by Low & Reed
- Electrotherapy: Evidence Based Practice- Kitchen 11th Ed
- Principles & Practice of Electro Therapy –Joseph Kahn
- Clinical Electro Therapy-by Nelson & Currier
- Thermal Agents – by Susan L. Michlovitz
- Principles & Practice of Electro Therapy- Dr Saeed Anwar

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-V
BVSNP501 Computer Application-1

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-1

Introduction to Computers: Definition of Computer, Computer Hardware: computer system as information processing system; Computer system differences- types of computer systems, hardware options- CPU, input devices, output devices, storage devices, communication devices, configuration of hardware devices and their applications.

Unit -2

Introduction to Operating systems: Dos , Software needs, operating system application software's, programming languages; DOS.

Unit -3

Windows- window explorer, print manager. Control panel, paintbrush, calculator, desk top, my Computer, settings, find, run.

Unit-4

Elementary knowledge of Networking, Types of networking: LAN, MAN, WAN; WWW, Browsers.

PRACTICAL

Demonstration of abovementioned components in computer.

Suggested Readings:

1. Introduction of Information System ALEXISLEON,
2. Computer Fundamentals-Nasib Singh Gill.

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-V
BVSNP502 HUMAN NUTRITION AND METABOLISM-1

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit:2+2=4

Theory

Time: 3hours

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-I

Nutrition and its relation to health. Food Acceptance and food behavior, internal factors influencing the intake of food. External factors influencing the intake of food. Digestion of food-role of gastrointestinal tract, hepatobiliary system and pancreas. Absorption- mechanisms of transport.

Unit-II

Digestion, absorption and metabolic conversions (in brief), functions, sources, requirements effects of deficiencies and excess of Carbohydrates: sugar, starches, fibre. Metabolic conversions to include utilization of glucose (postabsorptive), conversion to glycogen and fat. Glucose homeostasis and role of hormones (in brief)

Unit-III

Digestion, Absorption, transport (in brief), functions, sources, requirements, effects of deficiencies and excess of lipids: fatty acids, fat, cholesterol, Role of lipoproteins and implications for health (in brief)

Unit-IV

Digestion, absorption and metabolic conversions (in brief), functions, sources, requirement during different stages of lifecycle, effects of deficiencies and excess of protein and amino acids-essential and non-essential amino acids. Disposal of nitrogenous wastes-role of liver and kidney, Protein synthesis and breakdown vis-a vis the intake.

PRACTICAL

- Demonstration of digestion system & its working.
- Prepare assignment on role of carbohydrate and lipoprotein for health

Suggested Readings:

- Groff, James L & Gropper, Sareen S: Advanced nutrition and human metabolism. 3rd ed. Stamford : Wadsworth Publ, 1999.
- Barasi, Mary E : Human nutrition : a health perspective. London : Arnold, c1997.
- Present Knowledge in Nutrition. International Life Sciences Institute.
- Eastwood, Martin & Edwards, Christine & Parry, Doreen : Human nutrition : a continuing debate. London : Chapman & Hall, c1992.
- The Role of Fats in Human Nutrition/edited by F B Padley and Podmore. Chichester : Ellis Horwood, c1985.(Ellis Horwood Series in Food Science and Techology, edited by I D Morton)
- Guthrie Helen (1986) Introductory Nutrition. Times Mirror/ Mosby College Publishing.
- Mudambi, S.R., Rajgopal, M.V.(1990) Fundamentals of Foods and Nutrition, New Age International Pvt. Ltd.
- Nutrient Requirements and Recommended Dietary Allowances for Indians-I.C.M.R. Publication 1999.
- Robinsson, and Lawler. (1986) Normal and Therapeutic Nutrition. Mac Millan Pub.Co.
- Elenaor N., Whitney S., Rady R. (1993): Understanding Nutrition, West Publishing Company, Minneapolis.
- Wardlaw (1993): Perspectives in Nutrition, Paul Insel Mosby.
- Bhatia Arti: Nutrition & Dietetics- Anmol Publication Pvt. Ltd.- New Delhi.
- C. Gopalan, B.V. Ramasastri and S.C. Balasubramanian (1989)- Nutritive Value of Indian Foods. NIN ICMR Hyderabad 500 007

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-V
BVSNP503 COMMUNITY NUTRITION

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

UNIT – I

Introduction of community nutrition, Concept of Community Nutrition, Nutritional problems confronting our country, - Causes of malnutrition in India.

UNIT-II

Methods of assessment of nutritional status, Malnutrition & Infection.

UNIT – III

National and International agencies in community nutrition, Integrated Child Development Service(ICDS), School Nutrition Programme (SNP), World Health Organisation (WHO), United Nations Children Emergency Fund(UNICEF), National Institute of Nutrition (NIN), Central food Technological Research (CFTRI).

Nutrition Education: - Importance of nutrition education, Nutrition education methods: - Posters, Charts, Audio visual aids, Lectures

UNIT-IV

Strategies to combat Nutritional problems – Fortification, supplementation, Immunization Programme. Breast Feeding and its advantages: - Weaning foods , Importance of correct and timely weaning

PRACTICAL

- Preparation of visual aids – Charts, posters, models etc.
- Use of anthropometric measurement in children.
- Preparation of low cost recipes

- Planning a cycle menu
- Visit to: Hospital to observe nutritional deficiencies

Suggested Readings:

- Mahan, L.K. and Escott-Stump, S. (2000): Krause's Food Nutrition and Diet Therapy, 10th Edition, W.B. Saunders Ltd.
- Shils, M.E., Olson, J.A., Shike, M. and Ross, A.C. (1999): Modern Nutrition in Health and Disease, 9th Edition, Williams and Wilkins.
- Escott-Stump, S. (1998): Nutrition and Diagnosis Related Care, 4th Edition, Williams and Wilkins.
- Garrow, J.S., James, W.P.T. and Ralph, A. (2000): Human Nutrition and Dietetics, 10th Edition, Churchill Livingstone.
- Williams, S.R. (1993): Nutrition and Diet Therapy, 7th Edition, Times Mirror/Mosby College Publishing.
- Davis, J. and Sherer, K. (1994): Applied Nutrition and Diet Therapy for Nurses, 2nd Edition, W.B. Saunders Co.
- Walker, W.A. and Watkins, J.B. (Ed) (1985): Nutrition in Pediatrics, Boston, Little, Brown & Co.
- Guyton, A.C. and Hall, J.E. (1999): Textbook of Medical Physiology, 9th Edition, W.B. Saunders Co.
- Ritchie, A.C. (1990): Boyd's Textbook of Pathology, 9th Edition, Lea and Febiger, Philadelphia.
- Fauci, S.A. et al (1998): Harrison's Principles of Internal Medicine, 14th Edition, McGraw Hill.

**B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-V**

BVSNP504 Nutritional Problems In india

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 3+3=6
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

UNIT-1

Concept and Scope of Community Nutrition in India

Food Availability and factors affecting food Availability and its consumption:

- Agricultural production
- Post harvest handling, Marketing & distribution
- Population
- Economic
- Regional
- Industrialization

UNIT-II

National problems of the Community and Implication for Public Health

- Common problems in India
- Causes (Nutritional and Non nutritional)
- Incidence of Nutritional Problems , Signs, Symptoms and treatment.
- Micro nutrients deficiencies(vitamin A, d, iron, iodine)
- Flurosis

UNIT-III

Schemes and Programme to combat Nutritional Problems in India

- Prophylaxis Programme
- Mid day Meal Programme
- ICDS-Integrated child development Service

UNIT-IV

Hazards to Community Health and Nutritional Status

- Adulteration in Food
- Water pollution
- Use of pesticides

PRACTICAL:

- Field Survey of nearby area to find out the nutritional problems

Suggested Books:

- Aggarwal, A.n.(1981),Indian Economy Problems of Development and planning
- Ghosh,S.(1989),You and your Child
- Prevention of Food Adulteration Act 1994, govt. of India

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-V
BVSNP505 EXERCISE THERAPY – 3

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit:2+2=4

Theory

Time: 3hours

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-I

(A)Joint mobilization:

Definition – Mobilization, Manipulation, indications, limitations, contraindications and precautions, applications of Mobilization technique to various joints. Principles of Maitland, Mulligan and Meckzi joint Manipulation techniques.

(B)Stretching:

Definition, properties of soft tissue, mechanical and neurophysiological properties of connective tissue, mechanical properties of non contractile tissue. Determinants, type and effect of stretching, precautions, general applications of stretching technique.

Unit-II

(A)Resisted exercise:

Definition – strength, power, endurance. Guiding principle of resisted exercise, determinants, types Manual and Mechanical Resistance Exercise, Isometric Exercise, Dynamic Exercise - Concentric and Eccentric, Dynamic Exercise - Constant and Variable Resistance, Isokinetic Exercise, Open-Chain and Closed-Chain Exercise, precautions, contraindications

(B)Progressive Resistance Exercise - de Lormes, Oxford, MacQueen, Circuit Weight Training, Plyometric Training—Stretch-Shortening Drills, Isokinetic Regimens

Unit-III

(A)Proprioceptive Neuromuscular Facilitation – Principles, Diagonal patterns of movements, Basic procedures, Upper Extremity Diagonal patterns, Lower Extremity Diagonal Patterns.

(B)Technique in PNF(Proprioceptive Neuro Muscular Facilitation) – Rhythmic Initiation, Repeated Contractions, Reversal of Antagonists, Alternating Isometrics, Rhythmic Stabilization.

Unit-IV

(A)Aerobic Exercises – Definitions, Physiological response to Aerobic Exercise, Evaluation of aerobic capacity – exercise testing, Determinant of Aerobic Exercise, Physiological Changes with Aerobic Training, Aerobic Exercise Program, Applications of Aerobic Program in patients with chronic illness.

PRACTICAL

- Joint Mobilisation to individual joint
- Stretching of individual and group muscles
- Resisted exercises to individual and group muscles, open and closed kinematic exercises
- PNF patterns to upper and lower limb

Suggested Readings:

- Principles of Exercise Therapy–Dena Gardiner 3.
- Practical Exercise Therapy—Margaret Hollis 4
- Massage- Holley & Cook
- Practical Exercise Therapy—Margaret Hollis 56
- Measurement of Joint Motion: A Guide to Goniometry--Cynthia Norkins
- Joint structure and function- Cynthia Norkins
- Therapeutic Exercise—Carolyn Kisner & Kolby
- Physiotherapy in Orthopaedic conditions-by Jayant Joshi [for the study of Basic Yogic postures]
- Yoga for Health & Peace- S. Nimbalkar
- Massage for Therapists – M. Hollis

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-V
BVSNP506 ELCTROTHERAPY – 3

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit:2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit I

(A)Introduction to high frequency current, Electro Magnetic Spectrum

(B)SWD: Define short wave, Frequency & Wavelength of SWD, Principle of Production of Short Waved Diathermy (SWD), Circuit diagram & Production of SWD, Methods of Heat Production by SWD treatment, Types of SWD Electrode, Placement & Spacing of Electrodes, Tuning, Testing of SWD Apparatus, Physiological & Therapeutic effects, Indications & Contraindications, Dangers, Dosage parameters. Pulsed Electro Magnetic Energy.

Unit II

(A)Micro Wave Diathermy: Define Microwave, Wave length & Frequency, Production of MW, Applicators, Dosage Parameters, Physiological & Therapeutic effects, Indications & Contraindications, Dangers of micro wave diathermy(MWD).

Unit III

(A)Ultrasound : Define Ultrasound, Frequency, Piezo Electric effects: Direct, Reverse, Production of Ultrasonic(US), Treatment Dosage parameters : Continuous & Pulsed mode, Intensity, US Fields: Near field, Far field, Half value distance, Attenuation, Coupling Media, Thermal effects, Nonthermal effects Principles & Application of US: Direct contact Water bag, Water bath, Solid sterile gel pack method for wound Uses of US, Indications & Contraindications, Dangers of Ultrasound Phonophoresis: Define Phonophoresis Methods of application, Commonly used drugs, Uses is Dosage of US.

Unit IV

(A)IRR: Define IRR(Infrared rays), wavelength & Parameters, Types of IR generators, Production of Infra Radiation(IR),

Physiological & Therapeutic effects, Duration & frequency of Treatment, Indication & Contraindication.

PRACTICAL

The students of Electrotherapy must be able to demonstrate the use of electrotherapy modalities applying the principles of electrotherapy with proper techniques, choice of dosage parameters and safety precautions.

- Application of Ultrasound for different regions-various methods of application
- Demonstrate treatment techniques using SWD, IRR and Microwave diathermy
- Demonstrate the technique of Ultra Violet Radiation (UVR) exposure for various conditions – calculation of test dose

Suggested Readings:

- Clayton's Electro therapy – Kitchen-3RD Ed
- Clayton's Electro therapy – Kitchen-10th Ed
- Electro therapy explained –by Low & Reed
- Electrotherapy: Evidence Based Practice- Kitchen 11th Ed
- Principles & Practice of Electro Therapy –Joseph Kahn
- Clinical Electro Therapy-by Nelson & Currier
- Thermal Agents – by Susan L. Michlovitz
- Principles & Practice of Electro Therapy- Dr Saeed Anwar

B.Voc. in Sports Nutrition & Physiotherapy
SEMESTER-VI
BVSNP601 Computer Application-2

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit -1

MS. Word-Starting Ms-Word, Creating and formatting a document, Changing fonts and font size ,Table Creation and operations, Auto Correct, Auto text, Spell check, Thesaurus, Word Art, inserting objects, Mail Merge, letter, label, envelope ,Page setup, Page Preview, printing a document.

Unit-2

MS. Excel-Starting Excel, Worksheet, Cell, Inserting data into rows and columns, alignment, text wrapping, sorting data, auto sum, use of functions, referencing formula cells in other formulae, Naming cells and ranges, goal seek, generating graphs, integrating worksheet data charts with Word, creating hyperlink with word document, Page setup, print preview, printing worksheets.

Unit -3

Ms. PowerPoint: Starting Ms. Power point, Auto wizard, creating a presentation using auto content wizard, Blank presentation, creating, saving and printing a presentation. Adding a slide to a presentation, navigating through a presentation, slide sorter, slide show, editing slides, use of clipart and wordart gallery, adding transitions and animation effects, setting timings for slide show, preparing Note pages, Preparing Audience Handouts, printing presentation documents.

Unit-4

E-mail, Social networking, online form filling, online order placement online examination, E- payment browsing journals and articles using internet.

PRACTICAL:

All topic of Ms. Word, Ms-Excel, Ms- Power point and Email as mentioned in the theory.

Suggested Readings:

- Subramaniam, S.:Introduction to Computers
- Norton Peter: Introduction to Computers
- Nagpal, D.P.:Mastering Microsoft office 2000

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-VI
BVSNP602 HUMAN NUTRITION AND METABOLISM-2

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 2+2=4
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit-I

Absorption and transport, functions (physiological and biochemical), sources, requirement during different stages of life cycle, effects of deficiencies and excess of Fat soluble vitamins, Vitamin A, Vitamin D, Vitamin E, Vitamin K

Unit-II

Absorption and transport, functions (physiological and biochemical) sources, requirement during different stages of life cycle, effects of deficiencies and excess water soluble vitamins: Vitamin C, Thiamin, Riboflavin, Niacin, Pyridoxine, Folic acid, Vitamin B 12, Pantothenic acid, Biotin

Unit-III

Absorption and transport, functions (physiological and biochemical) sources, requirement during different stages of life cycle, effects of deficiencies and excess of Minerals and trace elements: Calcium and phosphorus, Iron, Zinc.

UNIT-IV

Absorption and transport, functions (physiological and biochemical) sources, requirement during different stages of life cycle, effects of deficiencies and excess of: Fluoride, Iodine, Selenium, Copper, Sodium, Potassium and Chloride

PRACTICAL:

- Prepare Assignment on Comparison of Metabolism of Normal person and sports person.

- Prepare Assignment on Comparison of Metabolism of adult man and adult women.

Suggested Readings:

1. Groff, James L & Gropper, Sareen S: Advanced nutrition and human metabolism. 3rd ed. Stamford : Wadsworth Publ, 1999.
2. Barasi, Mary E : Human nutrition : a health perspective. London : Arnold, c1997.
3. Present Knowledge in Nutrition. International Life Sciences Institute.
4. Eastwood, Martin & Edwards, Christine & Parry, Doreen : Human nutrition : a continuing debate. London : Chapman & Hall, c1992.
5. The Role of Fats in Human Nutrition/edited by F B Padley and Podmore. Chichester : Ellis Horwood, c1985.(Ellis Horwood Series in Food Science and Techology, edited by I D Morton)
6. Guthrie Helen (1986) Introductory Nutrition. Times Mirror/ Mosby College Publishing.
7. Mudambi, S.R., Rajgopal, M.V.(1990) Fundamentals of Foods and Nutrition, New Age International Pvt. Ltd.
8. Nutrient Requirements and Recommended Dietary Allowances for Indians-I.C.M.R. Publication 1999.
9. Robinsson, and Lawler. (1986) Normal and Therapeutic Nutrition. Mac Millan Pub.Co.
10. Elenaor N., Whitney S., Rady R. (1993): Understanding Nutrition, West Publishing Company, Minneapolis.
11. Wardlaw (1993): Perspectives in Nutrition, Paul Insel Mosby.
12. Bhatia Arti: Nutrition & Dietetics- Anmol Publication Pvt. Ltd.- New Delhi.
13. C. Gopalan, B.V. Ramasastri and S.C. Balasubramanian (1989)- Nutritive Value of Indian Foods. NIN ICMR Hyderabad 500 007

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-VI
BVSNP603 YOGA THERAPY

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 1+1=2
Time: 3hours

Theory:

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

UNIT-1

Yoga & its brief development. ii) Meaning of Yoga & its importance iii) Yoga as a Science of Art (Yoga Philosophy). iv) Meaning of meditation and its types and principles.

UNIT- II

Classification of Yoga/Types of Yoga ii) Hatha Yoga , Raja Yoga, Laya Yoga, Bhakti Yoga, Gyan Yoga, Karma Yoga. iii) Asthang Yoga.

UNIT –III

Principles of Yogic Practices. ii) Meaning of Asana, its types and principles. iii) Meaning of Pranayama, its types and principles. iv) Meaning of Kriya its types and principles.

UNIT –IV

Yogic therapies and modern concept of Yoga ii) Naturopathy, Hydrotherapy, Electrotherapy, Messotherapy, Acupressure, acupuncture. iii) Meaning and importance of prayer. iv) Psychology of mantras. v) Different mudras during prayers.

PRACTICAL

- Practice of different types of Asans as mentioned in theory

REFERENCE BOOKS:

1. Rajayoga - Swami Vivekananda - Ramakrishna Ashrama Publications.
2. Hathayoga Pradipika of Swatmarama - Kaivalyadhama, Lonavala
3. The Science of Yoga - Taimini - Theosophical Publishing House, Adyar, Madras.
4. Yogasutras of Patanjali - Hariharananda Aranya, University of Calcutta Press, Calcutta.
5. Patanjali Yoga Pradeepa Omananda Tirtha- Geeta Press, Gorakhpur.
6. Gherandasamhita - Bihar School of Yoga, Munger, Bihar.
7. Shivayogadipika - Sadashivabrahmendra, Ananda Ashramagranthavali, Choukhamba Press.
8. Yoga Darshan : Swami Niranjanananda-Sri Panchadashanam Paramahansa Alakh Bara, Deoghar.
9. Four chapters on Freedom (commentary on the Yoga sutras of Patanjali), Swami Satyananda (1983), Bihar School of Yoga, Munger.

B. Voc. in Sports Nutrition & Physiotherapy

SEMESTER-VI

BVSNP 604 NATUROPATHY

Max.marks:200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 1+1=2
Time: 3hours

Theory:

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

UNIT - I

History of Nature cure, Basic principles of Nature cure. Types of diseases - chronic and acute diseases, principles of poisoning by waste products, methods for strengthening the Pranic force, diagnosis of diseases by shapes of body/bodily organs.

UNIT – II

Water-therapy - Importance of water, methods of using water as therapy, effects of different temperatures of water on body, type of bath and their benefits, Bandages of different bodily organs in water therapy & their benefits, Enema & its uses.

UNIT – III

Mud-Clay therapy - Importance of soil, its types, characteristics & uses in therapy. Mud bath, Bandages of clay uses & applications. Sun bath & its uses in different disease, different colour of sun rays. Importance of air bath & its uses.

UNIT – IV

Definition of Massage, its history & importance, effects of massage on different bodily organs, types of massage, Role of massage in management of diseases. Principles of Acupressure, relationship of points of Acupressure in hand, wrist, feet, ankle etc. Application & limitations of Acupressure therapy.

PRACTICAL

- Application of mud therapy, water Therapy, massage therapy

REFERENCE BOOKS:

1. Practice of Nature Cure - By Henry Lindlahr
2. History & Philosophy of Nature Cure - By S.J. Singh
3. My Nature Cure - By Sh. M. K. Gandhi

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-VI
BVSNP605 EXERCISE THERAPY – 4

Max. Marks: 200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 3+3=6
Time: 3hours

Theory

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit I

(A) Hydrotherapy:

Definitions, Goals and Indications, Precautions and Contraindications, Properties of water, Therapeutic Exercises in Hydrotherapy, Special equipments used.

(B) Balance training:

Definition and Key terms, Balance control, Components of balance, Balance Impairment, Examination of Impaired Balance, Balance training Exercises.

Unit II

(A) Posture:

Normal Postural Control, Postural Alignment, Postural Stability, Postural Impairment and Mal-Alignment, Postural Training.

(B) Breathing Exercises:

Aims and Goals of Breathing Exercises, Procedures of Diaphragmatic Breathing, Segmental Breathing, Pursed-Lip Breathing, Preventing and Relieving Episodes of Dyspnea, Positive Expiratory Pressure Breathing, Respiratory Resistance Training, Glossopharyngeal Breathing.

Exercises to mobilize the chest, Postural Drainage, Manual Technique used in Postural Drainage, Postural Drainage Positions, Modified Postural Drainage.

Unit III

(A) Gait Training:

Definition, Different methods of Gait Training, Gait Training in Parallel Bars, Walking Aids: Types: Crutches, Canes, Frames; Principles and training with walking aids.

(B) Soft Tissue Injury:

General Description of Inflammation and repair, Acute, Sub Acute, and Chronic stage, General Treatment Guidelines.

Unit IV

Yoga: History, Introduction, Classification, Various Asana

Practical

- Various types breathing exercises, chest mobilization exercises, postural drainage exercise
- Gait training with various walking aids
- Various Asana.

Suggested Readings:

- Principles of Exercise Therapy—Dena Gardiner 3.
- Practical Exercise Therapy—Margaret Hollis 4
- Massage- Holley & Cook
- Practical Exercise Therapy—Margaret Hollis 56
- Measurement of Joint Motion: A Guide to Goniometry--Cynthia Norkins
- Joint structure and function- Cynthia Norkins REFERENCE BOOKS
- Therapeutic Exercise—Carolyn Kisner & Kolby
- Physiotherapy in Orthopaedic conditions-by Jayant Joshi [for the study of Basic Yogic postures]
- Yoga for Health & Peace- S. Nimbalkar
- Massage for Therapists – M. Hollis

B. Voc. in Sports Nutrition & Physiotherapy
SEMESTER-VI
BVSNP606 ELCTROTHERAPY – 4

Max. Marks: 200
Internal marks: 20
External Marks: 80
Practical: 100
Credit: 3+3=6
Time: 3hours

Theory:

Note: The Examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of 2 marks each. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All the questions shall carry 16 marks each.

Unit I

(A) Ultra violet Rays (UVR): Define UVR, Types of UVR, UVR generators: High pressure mercury vapour lamp, Water cooled mercury vapour lamp, Kromayer lamp, Fluorescent tube, Theraktin tunnel PUVA(Psoralen and Ultra violet A radiation-photochemotherapy) apparatus. Physiological & Therapeutic effects. Sensitizers & Filters. Test dosage calculation. Calculation of E1, E2, E3, E4 doses. Indications, contraindications. Dangers Dosages for different therapeutic effects, Distance in UVR lamp.

Unit II

(A)LASER: Define LASER. Types of LASER. Principles of Production. Production of LASER by various methods. Methods of application of LASER. Dosage of LASER. Physiological & Therapeutic effects of LASER. Safety precautions of LASER. Classifications of LASER Energy density & power density.
(B)Wax Therapy: Principle of Wax Therapy application – latent Heat, Composition of Wax Bath Therapy unit, Methods of application of Wax, Physiological & Therapeutic effects, Indications & Contraindication, Dangers.

Unit III

(A)Contrast Bath: Methods of application, Therapeutic uses, Indications & Contraindications.
(B)Moist Heat Therapy: Hydro collator packs – in brief, Methods of applications, Therapeutic uses, Indications & Contraindications. Fluidotherapy: Construction, Method of application, Therapeutic uses, Indications & Contraindications.

Unit IV

(A)Cryotherapy: Define- Cryotherapy, Principle- Latent heat of fusion, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, and Methods of application with dosage.
(B)EMG(Electro Myo Gram) and Nerve Conduction Velocity test, Biofeed back

PRACTICAL

- Calculation of dosage and technique of application of LASER
- Technique of treatment and application of Hydrocollator packs, cryotherapy, contrast bath, wax Therapy

Suggested Readings:

- Clayton's Electro therapy – Kitchen-3RD Ed
- Clayton's Electro therapy – Kitchen-10th Ed
- Electro therapy explained –by Low & Reed
- Electrotherapy: Evidence Based Practice- Kitchen 11th Ed
- Principles & Practice of Electro Therapy –Joseph Kahn
- Clinical Electro Therapy-by Nelson & Currier
- Thermal Agents – by Susan L. Michlovitz
- Principles & Practice of Electro Therapy- Dr Saeed Anwar