Syllabus and Examination pattern for Under Graduate Physiotherapy Course Part II

NOTIFICATION

In exercise of the powers, conferred under section 26 of Krishna Institute of Medical Sciences Deemed University, in its meeting of the Board of Management held on 26th June, 2007, has been pleased to approve the Bye-law pertaining to Under Graduate Physiotherapy Course Part II as given in schedule here to Annexed.

The Bye-law as above shall be effective for the students admitted to Under Graduate Physiotherapy Course Part II in the academic year 2007-08 onwards.

By Order
Registrar

1. This byelaw shall be called Syllabus and Examination pattern for Undergraduate Physiology Course Part II

<table>
<thead>
<tr>
<th>Sr. no</th>
<th>Subject</th>
<th>Hrs per week</th>
<th>Total hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Pathology</td>
<td>2 hrs</td>
<td>50 hrs</td>
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<tr>
<td>02</td>
<td>Microbiology</td>
<td>1 hr</td>
<td>30 hrs</td>
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<tr>
<td>03</td>
<td>Pharmacology</td>
<td>1 hr</td>
<td>45 hrs</td>
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<tr>
<td>04</td>
<td>Kinesiotherapeutics</td>
<td>9 hrs</td>
<td>240 hrs</td>
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<td>05</td>
<td>Electrical agents</td>
<td>9 hrs</td>
<td>200 hrs</td>
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<tr>
<td>06</td>
<td>Psychology</td>
<td></td>
<td>30 hrs</td>
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<tr>
<td>07</td>
<td>Seminars</td>
<td>Alternate Saturday</td>
<td>34 hrs</td>
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<tr>
<td>08</td>
<td>Supervised Clinical practice</td>
<td>3 hrs/ day &amp; 6 days/week</td>
<td>518 hrs</td>
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Transcript Hours 1287

[During clinical hours - to practice clinical skills under the supervision of Senior clinical staff at the O.P.D. set up & to maintain a Register /Log book in which the prescribed Case Histories & written assignments are to be documented & to obtain the signature from the respective section In-charge at the end of the assignment.]
PATHOLOGY (50 hrs)

Objectives:
At the end of the year, the student will be able to:
1. Acquire the knowledge of concepts of cell injury & changes produced thereby in different tissues & organs; capacity of the body in healing process
2. Recall the Etiology-pathogenesis, the pathological effects & the clinical-pathological correlation of common infections & non-infectious diseases
3. Acquire the knowledge of concepts of neoplasia with reference to the Etiology, gross & microscopic features, diagnosis, & prognosis in different tissues, & organs of the body
4. Correlate normal & altered morphology of different organ systems in different diseases needed for understanding disease process & their clinical significance [with special emphasis to neuro- Musculo-skeletal & cardio-respiratory systems]
5. Acquire knowledge of common immunological disorders & their resultant effects on the human body.
6. Understand in brief, about the Haematological diseases & investigations necessary to diagnose them & determine their prognosis

Syllabus

1. General Pathology
   • Cell injury-causes, mechanism & toxic injuries with special reference to Physical, Chemical, & Ionizing radiation
   • Reversible injury [degeneration]-types-morphology, swelling, hyaline, fatty changes,
   • Intra- cellular accumulation-hyaline mucin
   • Irreversible cell injury-types of necrosis- apoptosis -calcification -dystrophic & metastasis
   • Extra-cellular accumulation- amyloidosis, calcification-Pathogenesis-morphology

2. Inflammation & Repair.
   • Acute inflammation-features, causes, vascular & cellular events,
   • Morphologic variations,
   • Inflammatory cells & mediators,
   • Chronic inflammation - causes, types, non-specific & granulomatous with examples
   • Wound healing by primary & secondary union factors promoting & delaying healing process.
   • Healing at various sites-including-bones, nerve, & muscle
   • Regeneration & repair

3. Immuno-pathology- [basic concepts]-
   • Immune system:-organization-cells- antibodies- regulation of immune responses,
   • Hyper-sensitivity,
   • Secondary immuno-deficiency including HIV,
   • Organ transplantation

4. Circulatory disturbances-
   • Edema-pathogenesis-types-translates/exudates,
   • Chronic venous congestion-lung, lever, spleen,
- Thrombosis-formation-fate-effects,
- Embolism-types-clinical effects,
- Infarction-types-common sites
- Gangrenes-types-actiopathogenesis
- Shock-pathogenesis, types, morphologic changes

5. **Deficiency disorders-Vitamin A, B, C, D, E**

6. **Growth Disturbance**
   - Atrophy-malformation, agenesis, dysplasia,
   - Neoplasia calcification, histogenesis, biologic behaviour, difference between benign & malignant tumour
   - Malignant neoplasm -grades-stages-local & distal spread,
   - Carcinogenesis-environmental carcinogens
   - Chemical, Occupational, heredity, vira,
   - Precancerous lesions & Ca in situ
   - Tumor & host interactions-systemic effects-metastatic or direct spread of tumors affecting bones, spinal cord, leading to paraplegia, etc.

7. **Medical Genetics- [In Brief]**

8. **Specific Pathology**
   - CVS
     - Arteriosclerosis- Ischaemic heart diseases-myocardial
     - Infarction-Pathogenesis /Pathology
     - Hypertension
     - C.C.F.
     - R H.D.
     - Peripheral vascular diseases
   - Respiratory
     - COPD,
     - Pneumonia [lobar, broncho, viral],
     - T.B.-primary, secondary-morphologic types,
     - Pleuritis, complications,
     - Lung collapse-atelectasis
   - Neuropathology
     - Reaction of nervous tissue to injury-infection-& ischaemia
     - Pyogenic meningitis, TBM, Viral,
     - Cerebro-vascular diseases-arteriosclerosis-Thrombosis, embolism, aneurysm, hypoxia, infarction-& hemorrhage
     - Effects of Hypotension on CNS.
     - Coma
     - Polio myelitis- Leprosy-Demyelinating diseases-Parkinsonism-Cerebral palsy-metachromatic leucodystrophy- Dementia- Hemiplegia /paraplegia—Pathogenesis & pathology of Wilson`s disease
     - SOL- [In brief]
     - Peripheral nerve injury
9. Muscle diseases-Muscular dystrophy-hypertrophy-Psudo-hypertrophy-atrophy-Polio- myelitis
Myositis ossification, necrosis, regeneration-Myotonia

10. Neuro -muscular junction-Myasthenia gravis-Myasthenic syndrome-

11. Bone & Joints
- Fracture healing -Osteomyelitis -rickets- Osteomalacia- Bone tumors.
- Osteoporosis
- Spondylisis, P.I.D.-Scoliosis -Haemarthrosis -Gout-T.B.
- Arthritis- degenerative- inflammatory- RA- Ankylosing spondylitis- Tenosynovitis

12. Urinary -commonly encountered in paralytic bladder, Common urinary tract infections
[brief]-urinary calculi.

13. G.I. system-
  Gastric/duodenal ulcer, enteric fever, TB, enteritis, Gastritis [related to consumption
of NSAID

14. Endocrine-Hyperthyroidism-Diabetes

15. Hepatic diseases Cirrhosis-emphasis to systemic effects of portal hypertension

16. Skin-Melanin pigment disorders- Vitiligo- Tenia versicolor-Psoriasis-Bacterial/fungal
infections- cutaneous TB, -Scleroderma, SLE, Leprosy Alopacia.

17. Clinical pathology- [including Demonstrations]
   Anaemia- [deficiency]-T.C./D.C. / Eosinophilia, E.S.R., C.P.K.
   Muscle/skin/nerve biopsy
   Microscopic appearance of
   Muscle necrosis-fatty infiltration
   Lab investigation in liver & renal failure

Text Books:
1. Text book of Pathology-by Harsh Mohan
2. Pathologic basis of disease by Cotran, Kumar, Robbins
3. General Pathology -by Bhende
MICROBIOLOGY (30 hrs)

Objectives:
At the end of the year, the candidate will have sound knowledge of the agents responsible for causing human infections, pertaining to C.N.S., C.V.S., musculoskeletal, & Respiratory system

Syllabus

1. Introduction & scope
2. Classification of Micro-organisms & morphology of Bacteria
3. Sterilization & disinfections -[basic concepts]
   - Hospital acquired infection, universal safety precautions, waste disposal.
4. Immunology
   - Antigen-antibody—reaction-& application for diagnosis;
   - Immune response- normal/abnormal;
   - Innate immunity, & acquired immunity [vaccination]
   - Hyper-sensitivity & auto-immunity
5. Laboratory Diagnosis of Infection
6. Bacteriology
   - Infection caused by gram +ve cocci; Gas gangrene- clostridium-Diptheria
   - Infection caused by gram –ve cocci- Septicemia- cholera-Shock-Typhoid-diarrhoea;
   - Mycobacterial infection- tuberculosis-Leprosy-Atypical Micobacterium;
   - Syphilis-morphology & pathogenesis [VDRL]
7. Viruses
   - Introduction & general properties,
   - HIV,
   - Hepatitis,
   - Polio, measles, congenital viral infections, Rubella, CMV, Herpes
8. Mycology
   - Mycetoma- Aspergilosis- candidiasis
9. Parasites affecting C.N.S.
   - Malaria- Filaria- Toxoplasma -Cystisarcosis & echinococcus
10. Applied Microbiology
11. As relevant to diseases involving Bones, Joints, Nerves, Muscles, skin & brain.
12. Cardiopulmonary system, & burns.
Text Books

Scheme Of Examination

Theory Only
1. Pathology-50 marks + Microbiology-30 marks = 80 marks + IA. 20 marks
   = Total-100 marks. There shall be No L.A. Qs in this paper
2. Emphasis to be given to topics related to Musculo skeletal / Neurological /
   Cardio-vascular/ Respiratory conditions & Wound / Ulcers.

Section-I-M.C.Q.-based on Single best answer in MUST KNOW area (time 30 minute)
   Q-1 based on Pathology - [1 x 20]------------------------20 marks
   Q-2 Based on Microbiology - [1 x 10]-------------------10 marks

Section-B-S.A.Q.-based on Pathology
   Q-3- To answer any FIVE out of Six [5 X 3]--------15 marks
   Q-4-To answer any-THREE out of Four [3 X 5]--------15 marks

Section-C- S.A.Q.-based on Microbiology-
   Q-5-Answer any FOUR out of Five [4 x 5]-----------20 marks

Internal Assessment— Two papers in Pathology having 25 marks each & one paper in
Microbiology-50 marks ------Total-100 marks20 % of the average of total marks obtained
will be considered for IA
PHARMACOLOGY

(45 hrs)

Objectives:
At the end of the year, the candidate will be able to -
1. Describe Pharmacological effects of commonly used drugs by patients referred for Physio Therapy; list their adverse reactions, precautions to be taken & contra-indications, formulation & route of administration
2. Identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physio therapy & vis-a-versa
3. Indicate the use of analgesics & anti-inflammatory agents with movement disorders with consideration of cost, efficiency, & safety for individual needs.
4. Get the awareness of other essential & commonly used drugs by patients-The bases for their use & common as well as serious adverse reactions.

Syllabus

Must Know
- Drugs described in topics 2 to 9.
- Pharmacological effects & mechanism, Formulation, Route of administration, salient Pharma- kinetic feature,
- Adverse Reactions;
- Precautions & contra-indications

Desirable to Know
- Major group of drugs described in topics 10, 11, & 12
- Bases of use in indicated conditions;
- Common & serious Adverse Reactions

Topics:
1. General pharmacology
   - Drug Pharmacokinetics -Pharmacology-adverse reaction-factors modifying drug effects

2. Drug activity of CNS
   - Introduction
   - Alcohols + Sedatives & hypnotics
   - Anti-convulsion
   - Analgesics & antipyretics-specially Gout & R.A.
   - Psycho Therapeutics
   - General anesthetic+ local anesthetic

3. Drugs acting on peripheral nervous system
   - Adrenergic
   - Cholinergic

4. Drug therapy in Parkinson

5. Skeletal muscle relaxants

6. Drugs acting on CVS
   - Hyper tension

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7. Drugs acting on Respiratory system
   - For upper respiratory tract infections - sinusitis, cough, laryngitis, pharyngitis
   - For Bronchial asthma
   - For COPD - effects of prolonged drug administration

8. Insulin
   - Oral anti-diabetic drugs

9. Chemo-therapy
   - General principles
   - Anti Tuberculosis
   - Anti-leprosy

10. Other Chemo Therapeutic drugs
    - Sulfa drugs in urinary tract infection
    - Tetra/chloro
    - Penicillin
    - cephalosporin
    - aminoglycides
    - Microlytic

10. Endocrine
    - Introduction, Thyroid & Antithyroid
    - Estrogen + Progesterone
    - Steroids + anabolic steroids

11. Drugs in G. I. tract
    - Peptic ulcer + antiemetic
    - Diarrhoea & constipation


13. Dermatological -- Scabies-Psoriasis-Local antifungal

14. Vaccines & Sera

15. Vitamin -D, Calcium; Phosphorus, Magnesium

Text Books:
   1. Pharmacology-by Gaddum
   2. Medical Pharmacology by Drill
3. Pharmacology principle of Medical practice-by Krantx, & Carr
4. Pharmacological basis of Therapeutics-by Goodman, L. S. Gilman A

Scheme Of Examination

Theory- 40 Marks
Internal Assessment 10 Marks

(There shall be No L.A.Qs in this paper)

Section: A Q-1-M.C.Q.—based on single best answer in MUST KNOW area (10 marks)
Section-B-Q-2-S.A.Q.—To answer any FIVE out of six- [5 X 3]----------15 marks
Section-C-Q-3-S.A.Q.—To answer any THREE out of four [3 X 5]-------15 marks

*Emphasis should be given to the drugs related to Musculo-skeletal/ Psycho-Neurological/Cardio-vascular/ Respiratory conditions /analgesics & anti-inflammatory conditions.

Internal Assessment -Two papers of 50 marks each-----TOTAL-100marks
10% of the average of total marks obtained will be considered for IA
EXERCISE THERAPY: (240 hrs)

Exercise therapy: 40 hrs
Other: 40 hrs + Practical / laboratory-160 hrs

Objectives
At the end of the year, the candidate will be able to-
1. Analyze Normal human posture [static & dynamic], & various Normal Musculo skeletal movements during Gait, activities of daily living, & also the normal describe the movement of the Thorax during breathing; in terms of Biomechanical & Physiological Principles
2. Apply the biomechanical principles for the efficacy in the assessment methods for mobility, muscle strength
3. Describe the Biophysical properties of connective tissue, & effect of mechanical loading, & factors which influence the Muscle strength, & mobility of articular & periarticular soft tissues
4. Describe the physiological effects, Therapeutic uses, merits/demerits of various exercise modes.
5. Demonstrate various therapeutic exercises on self & also acquire the skill of application on Models
6. Acquire the skill of assessment of isolated & group muscle strength, & Range of motion of the joints subjectively & objectively

Syllabus
1. Biomechanics of joints of the skeletal system [spine, extremities, T.M. joint & Thoracic cage
2. Kinetics & Kinematics of various activities of daily living-e.g. Supine to sitting, sitting to standing, squatting, climbing up & down, lifting, pulling, pushing, overhead activities, walking running, jogging
3. Assessment of muscle strength, [group/individual]-subjective & objective methods-1/10 RM dynamometry
   - Factors that influence the strength of the normal muscle/ hypertrophy,-recruitment of motor units, change after training /type of contraction
     Isometric /Isotonic /Isokinetic Eccentric
   - General principles of strength training:- overload / intensity/Motivation /learning/ duration/ frequency / reversibility/specificity
   - Mobilization of muscles & Fasciae--around the shoulder/elbow/wrist /Hip/knee/ ankle/ Spine [dorso-lumber fascia]
5. Methods of Assessment of the Posture-Sitting /standing/ Lying/Physiological deviations of the posture
6. Methods of assessment of Gait- measurements for walking aids-axillary /elbow crutches, walking sticks -Pre-crutch training, crutch gaits
8. Principles of P.N.F.[no practical]
9. Breathing exercises- Goals -Inspiratory- Expiratory/Segmental- Forced expiratory -coughing-huffing/ Modified Inspiratory / Active cycle of breathing
10. Bronchial Hygiene-postural drainage positions/ humidification
11. Principles of Home programme & Ergonomic advise
   - Functional motor skills, e-Motor skills to function independently in ADL
   - Mobility, Bed /Wheel chair mobility, ambulation,
13. Application of mat exercises [to practice on self & on models
14. 6 Minute walk test - on models (only technique)

**Practical No.-3 a, 4b, 5, 6, 7, 9, 10, 12a & b, 13,14**

**Text Books**
1. Progressive resisted exercises-by Margaret Hollis,
2. Therapeutic Exercise by Carolyn Kisner
3. Kinesiology by Cynthia Norkins
4. PNF - Knott and Voss

**Reference Books**
1. Therapeutic exercise by Basmijjan & Wolf
2. Muscle testing by Daniel Kendall
3. Clinical evaluation - Lacote  (for Isolated assessment of abdominal muscles)
4. Muscle Stretching & Auto-stretching- Olaf Evjenth
5. Orthopaedic Evaluation - Magee (only for assessment of posture)

**Scheme Of Examination**

Theory•80 marks + Internal assessment-20 marks = Total-100marks
Practical/laboratory- 80 marks, + I.A.-20marks = Total1-100 marks

**Theory: Model question paper**

Section: A  
Q-1-M.C.Q.-based on Single best answer- MUST KNOW area -------20 marks

Section: B  
SAQ-Q-2]-Answer any FIVE out of Six [5 X 3]-------------------------15 marks  
Q-3]-Answer ant THREE out of Four [3 X 5]---------------------15 marks

Section: C  
L.A.Q.4][Compulsory]-Based on Kinesiology--------------------------15 marks  
Q.5] Therapeutic application for Muscle training /Posture/Gait -15 marks 
OR  
Q-6] Therapeutic application for Mobility/Pulmonary function-15 marks

*LAQ should give Break up of 15 maks-e.g.[3 + 5 + 7] etc
Practical
1. Long case - Muscle training/ Mobility/Pulmonary Function training. (35 Marks)
2. Two Short Case: - Based on M.M.T/Coordination /Posture /Gait/ Funct-re-edu etc. (20 X 2 =40 Marks)
3. Journal (5Marks)

Internal Assessment - for Practical
Ward exam at the end of each clinical Assignment having 20 marks each &20% of the average of all Ward exams to be considered for IA
Objectives:
At the end of the year, the candidate will be able to
1. Describe the production & physiological effects, therapeutic uses, merits/demerits, indications & contraindications of various low/medium & high frequency modes
2. Describe the physiological effects & therapeutic uses of various therapeutic ions & topical pharmaco-therapeutic agents to be used for the application of iontophoresis & sono-/phonophoresis
3. Acquire the skill of application of the electro therapy modes on models for the purpose of assessment & treatment
4. Acquire an ability to select the appropriate mode as per the tissue specific & area specific application.

Syllabus
1. Low frequency currents.
   - Cathodal /Anodal galvanism, iontophoresis with various ions & pharmaco-therapeutic drugs
   - Electrical stimulation for re-education - short /long pulse-motor points
   - Strong surged faradic current under pressure /elevation
   - T.N.S.-types
   - High voltage currents
   - Micro-currents
   - Didynamic currents
   - Assessment of sensory & pain threshold & pain tolerance

2. Medium frequency currents - Beat frequency-types - Endovac attachment - advantage of I.F.T. over low frequency currents


4. High frequency thermal agents - S.W.D.-types - continuous /Pulsed - types of electrodes.

5. Therapeutic ultrasound - pulsed/continuous.

6. Action therapy
   - Radiant heat [I.R.]
   - U.V.R.-a/b/c types - Test dose, local & general application
   - Laser-He/Ne, & I.R.-combination

7. Care of wound - application of therapeutic currents, ultrasound, U.V.R. & laser

Practical:
Skills of application to be practiced on models in No-1 to 7 above
Text Books
1. Clayton’s Electro Therapy
2. Electro therapy Explained- by Low & Read
3. Electro Therapy -by Kahn,
4. Therapeutic Electricity-by Sydney Litch

Reference Book
1. Clinical Electro Therapy-by Nelson & Currier

Scheme Of Examination

Theory—80 marks + I.A. -20marks, total-100 marks
Practical/lab- 80 marks; + IA. -20marks,total 100 marks

Theory: Model question paper

Section-A
M.C.Q- Q-1]-based on Single best answer- [20x1]- ---------------20 marks
(To include all MUST KNOW areas)

Section-B
S.A.Q-Q-2] -to answer any FIVE out of Six- [5 x 3]------------------- 15 marks
[Must know area]-
Q-3]-to answer any THREE out of Four- [3 x 5]
Based on Action Therapy------------------------------------------15 marks

*Section-C-
L.A.Q- Q-4] should be based on High frequency modes ------15 marks
Q-5]- should be based on Low /Medium frequency currents ------15 marks
OR
Q-6] -should be based on Low /Medium frequency currents -------15 marks

* LAQ should give break up of 15 marks- e.g. -[3 + 5+ 7]

Practical/ Laboratory- (80 Marks)

1. Long Case-On model Motor points/ U.V.R Test Dose /Faradism under pressures (35Marks)
2. Two Short Case - one based on Low or medium Freq current second based on high Freq. current/ Action therapy. (20 X 2 =40 Marks)
3. Journal (05 Marks)

Internal assessment-for practical- 20 marks examination to be conducted at the end of each ward/ OPD assignment, & average of Total marks to be considered

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