**September 2008**

**[KT 176]** **Sub. Code: 2070**

# M.D. DEGREE EXAMINATION

## Branch XIX – Physical Medicine and Rehabilitation

## APPLIED BASIC SCIENCES RELATING TO PHYSICAL MEDICINE AND REHABILITATION

**Common to**

**Part I – Paper I**

**(Candidates admitted upto 2003-04) and**

**Paper I – (For candidates admitted from 2004-2005 onwards)**

***Q.P. Code : 202070***

**Time : Three hours** **Maximum : 100 marks**

**I. ANATOMY - Answer any FOUR questions. (4 X 5=20)**

1. Middle Cerebral artery.
2. Small muscles of the hand.
3. Forces that keep the knee in extension.
4. Sciatic nerve.
5. Cervical Spine.

**II. PHYSIOLOGY - Answer any FOUR questions. (4 X 5=20)**

1. Bone remodeling.
2. Regulation of respiration.
3. 'Late' responses in electromyography.
4. The determinants of gait and how they work.
5. Neuromuscular junction.

**III. BIO-CHEMISTRY - Answer any THREE questions. (3 X 5=15)**

1. A.T.P.
2. Metabolic effects of exercise.
3. Proteoglycans.
4. Recombinant DNA Technology**.**

**IV. PHARMACOLOGY - Answer any THREE questions. (3 X 5=15)**

1. Drugs in Parkinsonism.
2. Biological agents in rheumatoid Arthritis.
3. Narcotics in Physiatry.
4. Clinical uses and side effects of Aspirin.

**V. MICROBIOLOGY - Answer any THREE questions. (3 X 5=15)**

1. Laboratory diagnosis of HIV infection.
2. Nosocomial infections.
3. Uninary tract infection in spinal cord injury.
4. 'Atypical' mycobacteria.

**VI. PATHOLOGY - Answer any THREE questions. (3 X 5=15)**

1. Pathophysiology of Autonomic Dysreflexia.
2. Pathology of peripheral occlusive arterial disease.
3. Pathophysiology of adhesive capsulitis.
4. Pathology of Osteoarthritis.

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**March 2009**

**[KU 176]** **Sub. Code: 2070**

## M.D. DEGREE EXAMINATION

## Branch XIX – PHYSICAL MEDICINE AND REHABILITATION
**(Common to all candidates)**

## APPLIED BASIC SCIENCES RELATING TO PHYSICAL MEDICINE AND REHABILITATION

***Q.P. Code : 202070***

**Time : Three hours** **Maximum : 100 marks**

**Draw suitable diagram wherever necessary.**

**I. ANATOMY - Answer any FOUR questions. (4 x 5=20)**

1. Suprascapular nerve.
2. Q angle.
3. Applied anatomy of extensor hallucis longus.
4. Carpel tunnel.
5. Circle of Willis.

**II. PHYSIOLOGY - Answer any FOUR questions. (4 x 5=20)**

1. Pathophysiology of erectile dysfunction.
2. Physiology of micturition.
3. Oxygen dissociation curve.
4. Sickle cell anaemia.
5. Gait cycle.

**III. BIO-CHEMISTRY - Answer any THREE questions. (3 x 5=15)**

1. Anaerobic metabolism.
2. Metabolic effects of exercise.
3. Liver function tests.
4. Anti beriberi factor.

**IV. PHARMACOLOGY - Answer any THREE questions. (3 x 5=15)**

1. Baclofen.
2. Tadanafil.
3. Tricyclic antidepressants.
4. Revised National Tuberculosis Control Programme.

**V. MICROBIOLOGY - Answer any THREE questions. (3 x 5=15)**

1. Standard tests for syphilis.
2. Streptococcus.
3. Importance of Nosocomial infection.
4. Chikungunya.

**VI. PATHOLOGY - Answer any THREE questions. (3 x 5=15)**

1. Chromosome mapping.
2. Gout.
3. Description and testing of homonymous hemianopia.
4. Megaloblastic anaemia.

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**MAY 2011**

**[KY 176]** **Sub. Code: 2070**

**M.D. DEGREE EXAMINATION**

**BRANCH XIX – PHYSICAL MEDICINE AND REHABILITATION**

**APPLIED BASIC SCIENCES RELATING TO PHYSICAL MEDICINE AND REHABILITATION**

***Q.P. Code : 202070***

**Time : 3 hours** **Maximum : 100 marks**
**(180 Min)**

**Answer ALL questions in the same order.**

| **I. Write notes on :** | **Pages (Max.)** | **Time (Max.)** | **Marks (Max.)** |
|---|---|---|---|
| **I. ANATOMY** | | | |
| 1. Internal capsule. | 3 | 9 | 5 |
| 2. Lumbosacral junction. | 3 | 9 | 5 |
| 3. Gluteus maximus muscle. | 3 | 9 | 5 |
| 4. Scapulohumeral rhythm. | 3 | 9 | 5 |
| **II. PHYSIOLOGY** | | | |
| 1. Pathway of vision. | 3 | 9 | 5 |
| 2. Somatosensory evoked potentials. | 3 | 9 | 5 |
| 3. Gait cycle. | 3 | 9 | 5 |
| 4. Phases of swallowing. Mechanisms to prevent aspiration of food into the airway. | 3 | 9 | 5 |
| **III. BIO-CHEMISTRY** | | | |
| 1. Creatine Kinase. | 3 | 9 | 5 |
| 2. Creatinine clearance. | 3 | 9 | 5 |
| 3. Metabolic effects of insulin. | 3 | 9 | 5 |
| **IV. PHARMACOLOGY** | | | |
| 1. Botulinum toxin. | 3 | 9 | 5 |
| 2. Vitamin D. | 3 | 9 | 5 |
| 3. Bisphosphonates. | 3 | 9 | 5 |
| **V. MICROBIOLOGY** | | | |
| 1. Rheumatoid factor. | 3 | 9 | 5 |
| 2. Asymptomatic bacteriuria. | 3 | 9 | 5 |
| 3. Human immunodeficiency virus. | 3 | 9 | 5 |
| **VI. PATHOLOGY** | | | |
| 1. Synovial fluid findings in infections, Crystal arthritis and Rheumatoid arthritis. | 3 | 9 | 5 |
| 2. Muscle biopsy. | 3 | 9 | 5 |
| 3. Pathophysiology of Atherosclerosis. | 3 | 9 | 5 |

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**April 2012**

**[LA 176]** **Sub. Code: 2070**

**M.D. DEGREE EXAMINATION**
**BRANCH XIX – PHYSICAL MEDICINE AND REHABILITATION**

**APPLIED BASIC SCIENCES RELATING TO PHYSICAL MEDICINE AND REHABILITATION**
***Q.P. Code : 202070***

**Time : 3 hours** **Maximum : 100 marks**
**(180 Min)**

**Answer ALL questions in the same order.**

| **Write notes on** | **Pages (Max.)** | **Time (Max.)** | **Marks (Max.)** |
|---|---|---|---|
| **I. ANATOMY** | | | |
| 1. Write a note on Pivot joints. | 3 | 9 | 5 |
| 2. Describe the Iliotibial band. | 3 | 9 | 5 |
| 3. Describe the structure of the neuromuscular junction. | 3 | 9 | 5 |
| 4. Explain the Bronchopulmonary segments. | 3 | 9 | 5 |
| **II. PHYSIOLOGY** | | | |
| 1. Outline saltatory conduction. | 3 | 9 | 5 |
| 2. Describe the effects of exercise on cardiovascular system. | 3 | 9 | 5 |
| 3. Explain the maintenance of normal posture. | 3 | 9 | 5 |
| 4. Explain the five phases of bone remodeling. | 3 | 9 | 5 |
| **III. BIO-CHEMISTRY** | | | |
| 1. Write a note on the causes and clinical manifestations for hyperuricemia. | 3 | 9 | 5 |
| 2. Briefly explain cardiac enzymes. | 3 | 9 | 5 |
| 3. What is C Reactive Protein? Mention its clinical utilities. | 3 | 9 | 5 |
| **IV. PHARMACOLOGY** | | | |
| 1. Discuss the indicators, dose and side effects of phenytoin. | 3 | 9 | 5 |
| 2. Write a note on Selective Serotonin Reuptake Inhibitors. | 3 | 9 | 5 |
| 3. Discuss the indicators, dosage and side effects of Dantrolene. | 3 | 9 | 5 |
| **V. MICROBIOLOGY** | | | |
| 1. Write a note on the Laboratory diagnosis of leprosy. | 3 | 9 | 5 |
| 2. Explain the common organisms causing urinary tract infections. | 3 | 9 | 5 |
| 3. What is HLA B27? What are the indicators for testing HLA B27? | 3 | 9 | 5 |
| **VI. PATHOLOGY** | | | |
| 1. Describe the pathology of spine involvement in tuberculosis. | 3 | 9 | 5 |
| 2. Describe the pathophysiology of chronic wounds. | 3 | 9 | 5 |
| 3. Write a note on Dystrophin? | 3 | 9 | 5 |

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**(LC 176)** **APRIL 2013** **Sub. Code: 2070**

**M.D. DEGREE EXAMINATION**
**BRANCH XIX – PHYSICAL MEDICINE & REHABILITATION**

**APPLIED BASIC SCIENCES RELATING TO PHYSICAL MEDICINE AND REHABILITATION**
***Q.P.Code: 202070***

**Time: Three Hours** **Maximum: 100 marks**

**Write notes on:**

**I. ANATOMY** **(4X5=20)**
1. Function of Basal ganglia
2. Subtalar joint
3. Piriformis muscle
4. Q-angle (quadriceps angle)

**II. PHYSIOLOGY** **(4X5=20)**
1. Effect of exercises on cardiovascular activity
2. Normal swallowing
3. Frontal lobe functions
4. Properties of motor unit

**III. BIO-CHEMISTRY** **(3X5=15)**
1. Alkaline phosphatase
2. Creatinine Phosphokinase
3. Dopamine

**IV. PHARMACOLOGY** **(3X5=15)**
1. Modafinil
2. Serotonin – Norepinephrine Reuptake Inhibitors
3. Risedronate

**V. MICROBIOLOGY** **(3X5=15)**
1. HLA B27
2. Hospital acquired infections
3. Helicobacter pylori

**VI. PATHOLOGY** **(3X5=15)**
1. Osteomalacia
2. Enthesopathy
3. Buerger's disease

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**(LI 176)** APRIL 2016 **Sub. Code:2070**

**M.D. DEGREE EXAMINATION**

**BRANCH XIX – PHYSICAL MEDICINE AND REHABILITATION**

**PAPER I – APPLIED BASIC SCIENCES RELATING TO PHYSICAL MEDICINE AND REHABILITATION**

***Q.P.Code: 202070***

**Time: Three Hours** **Maximum: 100 Marks**

**Write notes on:**

**I. ANATOMY** **(4 x 5 = 20)**

1. Facial Nerve.
2. Cruciate ligaments of knee joint.
3. Supinators of forearm.
4. Typical vertebra.

**II. PHYSIOLOGY** **(4 x 5 = 20)**

1. Insulin.
2. Saltatory conduction.
3. Intrinsic factor.
4. Types of muscle fibres.

**III.BIOCHEMISTRY** **(3 x 5 = 15)**

1. Vitamin D.
2. Creatinine phosphokinase.
3. Energy sources for anaerobic exercises.

**IV. PHARMACOLOGY** **(3 x 5 = 15)**

1. Hydroxychloroquin.
2. Selective serotonin reuptake inhibitors.
3. Oxybutynin.

**V. MICROBIOLOGY** **(3 x 5 = 15)**

1. Nosocomial infections.
2. Cold abscess.
3. Widal test.

**VI. PATHOLOGY** **(3 x 5 = 15)**

1. Pathology of lobar pneumonia.
2. Avascular necrosis of femoral head.
3. Pancoast tumour.

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**(LK 176)** MAY 2017 **Sub. Code:2070**

**M.D. DEGREE EXAMINATION**

**BRANCH XIX – PHYSICAL MEDICINE AND REHABILITATION**

**PAPER I – APPLIED BASIC SCIENCES RELATING TO PHYSICAL MEDICINE AND REHABILITATION**

***Q.P.Code: 202070***

**Time: Three Hours** **Maximum: 100 Marks**

**Write notes on:**

**I. ANATOMY** **(4 x 5 = 20)**

1. Screw home mechanism.
2. Afferent and efferent nerve supply of bladder.
3. Spinocerebellar tract.
4. Plantar arches.

**II. PHYSIOLOGY** **(4 x 5 = 20)**

1. Tonic neck reflexes.
2. Phases of gait cycle.
3. Structure and functions of muscle spindle.
4. Lung volumes.

**III.BIOCHEMISTRY** **(3 x 5 = 15)**

1. Calcium metabolism.
2. Immunoglobulins.
3. Lipoproteins.

**IV. PHARMACOLOGY** **(3 x 5 = 15)**

1. Donepezil.
2. Botulinum toxin.
3. Pharmacological options for osteoporosis.

**V. MICROBIOLOGY** **(3 x 5 = 15)**

1. Significant bacteruria.
2. Synovial fluid examination as a diagnostic tool in arthritis.
3. ANA.

**VI. PATHOLOGY** **(3 x 5 = 15)**

1. LE cell phenomenon.
2. Pathology of Thromboangitis obliterans.
3. Histopathology of TB.

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**(LM 176)** MAY 2018 **Sub. Code: 2070**

**M.D. DEGREE EXAMINATION**

**BRANCH XIX – PHYSICAL MEDICINE AND REHABILITATION**

**PAPER I – APPLIED BASIC SCIENCES RELATING TO PHYSICAL MEDICINE AND REHABILITATION**

***Q.P.Code: 202070***

**Time: Three Hours** **Maximum: 100 Marks**

**Write notes on:**

**I. ANATOMY** **(4 x 5 = 20)**

1. Cruciate ligaments of knee joint.
2. Blood supply of spinal cord.
3. Coronary Circulation.
4. Arches of foot.

**II. PHYSIOLOGY** **(4 x 5 = 20)**

1. Physiology of swallowing.
2. Neuromuscular transmission.
3. Immunoglobulin.
4. Thermo regulation.

**III. BIOCHEMISTRY** **(3 x 5 = 15)**

1. Metabolic acidosis.
2. Anaerobic metabolism.
3. Vitamin A.

**IV. PHARMACOLOGY** **(3 x 5 = 15)**

1. Anti Parkinsonian agents.
2. Anti platelet drugs.
3. Methotrexate.

**V. MICROBIOLOGY** **(3 x 5 = 15)**

1. Multi drug resistant tuberculosis.
2. Cysticercosis.
3. Dengue fever.

**VI. PATHOLOGY** **(3 x 5 = 15)**

1. Amylodosis.
2. Giant cell tumor.
3. Sickle cell aneamia.

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**(LO 176)** MAY 2019 **Sub. Code: 2070**

**M.D. DEGREE EXAMINATION**

**BRANCH XIX – PHYSICAL MEDICINE AND REHABILITATION**

**PAPER I – APPLIED BASIC SCIENCES RELATING TO PHYSICAL MEDICINE AND REHABILITATION**

***Q.P. Code: 202070***

**Time: Three Hours** **Maximum: 100 Marks**

**Write notes on:**

**I. ANATOMY** **(4 x 5 = 20)**

1. Lumbosacral junction.
2. Blood supply of brain.
3. Maintenance of normal posture.
4. Anatomy of brachial plexus.

**II. PHYSIOLOGY** **(4 x 5 = 20)**

1. Physiology of normal bowel.
2. Physiological effects of heat.
3. Inman's six determinants of gait.
4. Action potential.

**III.BIOCHEMISTRY** **(3 x 5 = 15)**

1. Vitamin D in calcium homeostasis.
2. CPK in muscular dystrophy.
3. C reactive protein.

**IV. PHARMACOLOGY** **(3 x 5 = 15)**

1. Dantrolene.
2. Calcitonin.
3. Medications used to treat spasticity.

**V. MICROBIOLOGY** **(3 x 5 = 15)**

1. Transfusion transmitted viral diseases.
2. Rheumatoid factor.
3. Gas gangrene.

**VI. PATHOLOGY** **(3 x 5 = 15)**

1. Atherosclerosis.
2. Histopathology of Duchenne muscular dystrophy.
3. Histopathology of chronic wounds.

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**[LQ 176]** AUGUST 2020 **Sub. Code: 2070**

(MAY 2020 SESSION)

**M.D. DEGREE EXAMINATION**

**BRANCH XIX – PHYSICAL MEDICINE AND REHABILITATION**

**PAPER I – APPLIED BASIC SCIENCES RELATING TO PHYSICAL MEDICINE AND REHABILITATION**

***Q.P. Code: 202070***

**Time: Three Hours** **Maximum: 100 Marks**

**Write notes on:**

**I. ANATOMY** **(4 x 5 = 20)**

1. Internal capsule
2. Cross section of spinal cord
3. Intervertebral disc
4. Carpal tunnel

**II. PHYSIOLOGY** **(4 x 5 = 20)**

1. Micturition reflex
2. Refractory period
3. VO2 Max
4. Cardiac output

**III. BIOCHEMISTRY** **(3 x 5 = 15)**

1. ATP synthesis in a muscle
2. Essential amino acids
3. Vitamin E

**IV. PHARMACOLOGY** **(3 x 5 = 15)**

1. Enumerate drugs for osteoporosis
2. Intrathecal baclofen
3. Anti TNF agents

**V. MICROBIOLOGY** **(3 x 5 = 15)**

1. Bacterial profile of UTI in SCI patients
2. Biomedical waste
3. Cell mediated immunity

**VI. PATHOLOGY** **(3 x 5 = 15)**

1. Bone healing
2. Discuss the primary and secondary injury in TBI
3. Pathogenesis of rheumatoid arthritis.

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**[MD 0721]** JULY 2021 **Sub. Code: 2070**

(MAY 2021 SESSION)

**M.D. DEGREE EXAMINATION**

**BRANCH XIX – PHYSICAL MEDICINE AND REHABILITATION**

**PAPER I – APPLIED BASIC SCIENCES RELATING TO PHYSICAL MEDICINE AND REHABILITATION**

***Q.P. Code: 202070***

**Time: Three Hours** **Maximum: 100 Marks**

**Write notes on:**

**I. ANATOMY** **(4 x 5 = 20)**

1. Circle of Willis.
2. Intrinsic muscles of hand.
3. Describe the ilio tibial band.
4. Sciatic nerve.

**II. PHYSIOLOGY** **(4 x 5 = 20)**

1. Determinants of gait.
2. Saltatory conduction.
3. Structure and function of muscle spindle.
4. Bone remodelling.

**III. BIOCHEMISTRY** **(3 x 5 = 15)**

1. Adenosine triphosphate.
2. Alkaline phosphatase.
3. Lipoprotein.

**IV. PHARMACOLOGY** **(3 x 5 = 15)**

1. Biological agents in RA.
2. Indomethacin.
3. Selective serotonin reuptake inhibitor.

**V. MICROBIOLOGY** **(3 x 5 = 15)**

1. Urinary tract infection in spinal cord injury.
2. HIV.
3. Chikungunya.

**VI. PATHOLOGY** **(3 x 5 = 15)**

1. Pathophysiology of osteoarthritis.
2. Muscle biopsy.
3. Describe the pathology of spine involvement in TB.

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**THE TAMIL NADU DR.M.G.R. MEDICAL UNIVERSITY**

**[MD 0522]** **MAY 2022** **Sub. Code: 2070**

**M.D. DEGREE EXAMINATION**

**BRANCH XIX – PHYSICAL MEDICINE AND REHABILITATION**

**PAPER I – APPLIED BASIC SCIENCES RELATING TO PHYSICAL MEDICINE AND REHABILITATION**

***Q.P. Code: 202070***

**Time: Three Hours** **Maximum: 100 Marks**

**Write notes on:**

**I. ANATOMY** **(4 x 5 = 20)**

1. VII Cranial Nerve
2. Segments of the Lung
3. Rotator Cuff and its significance
4. Skeletal muscle types and their significance

**II. PHYSIOLOGY** **(4 x 5 = 20)**

1. Muscle stretch reflex and Golgi tendon reflex
2. Lung volumes and Capacities
3. Motor unit recruitment
4. Ejection Fraction

**III. BIOCHEMISTRY** **(3 x 5 = 15)**

1. Glycolysis
2. Essential Fatty Acids
3. Vitamin K

**IV. PHARMACOLOGY** **(3 x 5 = 15)**

1. Enumerate Drugs for RA - DMARDs
2. Oxybutynin
3. Selective Cox 2 inhibitors

**V. MICROBIOLOGY** **(3 x 5 = 15)**

1. MRSA infection
2. Herpes Zoster
3. Cytokines

**VI. PATHOLOGY** **(3 x 5 = 15)**

1. Factors involved in Tissue Healing
2. Enthesopathy
3. Pathogenesis of Muscular Dystrophy

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**THE TAMIL NADU DR.M.G.R. MEDICAL UNIVERSITY**

**[MD 0723]** **JULY 2023** **Sub. Code: 2070**

**(MAY 2023 EXAM SESSION)**

**M.D. DEGREE EXAMINATION**

**BRANCH XIX – PHYSICAL MEDICINE AND REHABILITATION**

**PAPER I – APPLIED BASIC SCIENCES RELATING TO PHYSICAL MEDICINE AND REHABILITATION**

***Q.P. Code: 202070***

**Time: Three Hours** **Maximum: 100 Marks**

**Write notes on:**

**I. ANATOMY** **(4 x 5 = 20)**

1. Map cross-section at the level of basal ganglia.
2. Carpal bones.
3. Neuroanatomy of the bladder.
4. Gastrosoleus muscle.

**II. PHYSIOLOGY** **(4 x 5 = 20)**

1. Phases of swallowing.
2. Deep tendon reflex.
3. Sacral reflexes.
4. Sleep cycle.

**III. BIOCHEMISTRY** **(3 x 5 = 15)**

1. Lipid profile.
2. Cystatin C.
3. Homocysteine.

**IV. PHARMACOLOGY** **(3 x 5 = 15)**

1. Modafinil.
2. Doxycycline.
3. Bromocriptine.

**V. PATHOLOGY** **(3 x 5 = 15)**

1. Stages of wound healing.
2. Venous ulcer.
3. Reflux esophagitis

**VI. MICROBIOLOGY** **(3 x 5 = 15)**

1. Dermatophytes.
2. Pseudomonas aeruginosa.
3. Antinuclear Antibody test.

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