

**MGM INSTITUTE OF HEALTH SCIENCES, NAVI MUMBAI**  
**I B.P.T UNIVERSITY EXAMINATION, JULY - 2015**

Subject – HMS-I

Maximum Marks: 80  
Duration – 3 Hours  
(Section A = 10 Minutes)

**INSTRUCTIONS:**

1. Attempt all questions
2. Maximum marks are indicated in the right
3. Illustrate the answers with suitable diagrams wherever necessary
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**SECTION – A**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks**

- A. Limb Girth Measurement
- B. Principles of Stability
- C. Concave Convex Rule
- D. Anatomical pulley
- E. Chest Expansion
- F. Axis and Planes

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. Discuss the classification of joints. Elaborate the causes of soft tissue restrictions
- B. Explain the Muscle Function and elaborate on different types of muscles and its actions

**SECTION – B**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks**

- A. Fundamental Starting Positions
- B. Warm up and cool Down Exercises
- C. Relaxation techniques
- D. Principal of fitness training
- E. Indications and Limitations of group therapy
- F. Types of goniometes

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. Write a note on Soft tissue Manipulations with its physiological principles, indications and therapeutic use of each
- B. Discuss on Aerobic and Anaerobic exercises with its indication and limitations



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**SECTION – A**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks**

- A. Laws of inertia
- B. Angle of pull
- C. Therapeutic tools used for strength training
- D. Anatomical pulleys
- E. Principles of fluid mechanics applied to Hydrotherapy
- F. Free exercises

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. Describe the physiological and therapeutic effects of massage. Explain in detail any 2 soft tissue manipulation techniques.
- B. Describe in detail the fundamental position of standing and write a note on any 3 derived positions from standing

**SECTION – B**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks**

- A. Definition and examples of fixator muscles in upper limb and 2 examples in lower limb.
- B. Advantages and disadvantages of group exercises
- C. Principles of general fitness
- D. Effects and uses of active movements.
- E. Types of muscle contraction
- F. Types of muscle work

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. What are the principles of Goniometry and describe in detail the method to measure the range of motion of the hip joint in detail
- B. Define levers and explain in detail the different types of levers with suitable examples.



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**SECTION –A**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks**

- A. Laws of inertia
- B. Describe the terms center of gravity and base of support
- C. Types of muscle work
- D. Active and passive insufficiency
- E. Warm up exercises
- F. Limb girth measurement

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. Define active movements and classify different types of active movements with suitable examples.
- B. What are the different techniques of relaxation and describe in detail Jacobson's method of relaxation

**SECTION – B**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks**

- A. Describe different types of goniometers
- B. Pulleys
- C. Axes and planes
- D. Describe any 2 derived position from standing
- E. Disadvantages of group exercises
- F. Respiratory rate and pulse rate

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. Define levers and describe different types of lever in detail with suitable examples
- B. Define massage. What are the physiological effects of massage and describe the different types of percussion manipulation in detail



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**SECTION – A**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks**

- A. Kinetics and kinematics
- B. Discuss the anatomical pulley system in human body
- C. Agonist-antagonist synergy
- D. Mention different types of walking aids and its uses.
- E. Therapeutic uses, indications and contra indications of petrissage maneuvers
- F. Importance of cool down exercises

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. What is muscle work? Discuss different types of muscle work, role of muscle as agonists, antagonists, synergists and fixators.
- B. Discuss the laws of inertia and motion, factors affecting equilibrium and types of forces acting on the human body.

**SECTION – B**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks.**

- A. Type 3 lever
- B. Uses of Therapeutic Balls
- C. Apparatus used in therapeutic gymnasium for strengthening lower limb
- D. Maneuvers used in neck massage
- E. Shavasana technique of relaxation
- F. Indications, contraindications and uses of passive movements

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. What is hydrotherapy? Discuss buoyancy, static and dynamic fluid mechanics and different methods of application of hydrotherapy.
- B. Describe various starting and derived positions. Discuss the therapeutic uses of any two in details.



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**SECTION –A**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks**

- A. Merits and demerits of goniometry
- B. Uses of warm up and cool down
- C. What is angle of pull?
- D. Describe the different axes and planes
- E. Uses of free active Exercises
- F. Types of muscle work

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. Classify massage. Write in detail the principles of massage. Explain the effects and uses of each technique of petrissage manoeuvre
- B. Explain the muscle work, effects and uses of sitting as a fundamental position. Enumerate the position derived from sitting. Write in detail the muscle work for any 3 position derived from sitting.

**SECTION – B**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks**

- A. Explain what is centre of gravity
- B. Explain active insufficiency with example
- C. Describe the different types of springs used in therapeutic gymnasium
- D. Explain closed kinematic exercises with example
- E. Describe a walker and explain its uses.
- F. Factors affecting equilibrium

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. Write in detail the principles of relaxation. Examination the different techniques of relaxation. (5+10)
- B. What are levers? Explain the different orders of levers with two examples of each. Write a note on importance of levers. (1+12+12)



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Duration – 3 Hours

(Section A = 10 Minutes)

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**SECTION – A**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks**

- A. What is equilibrium? Describe its types.
- B. Enumerate planes of movement and write effect of gravity on each.
- C. What is lever? Describe first order lever giving example in human body.
- D. Write in brief about types of muscle work describing any one in detail.
- E. Describe in brief any 5 principles of passive movements
- F. Discuss buoyancy.

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. Describe:
  - a. Types of goniometers
  - b. Principles of goniometry
  - c. Detailed technique for measuring ankle range of motion.
- B. Define voluntary movements writing its classification. Describe technique, effects and uses of free exercises.

**SECTION – B**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks**

- A. Write on closed chain kinematics with one example
- B. Role of muscles as synergists
- C. Describe half kneeling position and its muscle work
- D. Accessories used in therapeutic gymnasium for resisted activities
- E. Advantages and disadvantages of group activities
- F. Define and enumerate types of pulleys describing any one in detail

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. Describe:
  - a. Principles of relaxation
  - b. Its effects and uses
  - c. Jacobson's relaxation technique
- B. Describe any 3 manoeuvres in massage technique giving its indications, contraindications and uses.



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**SECTION – A**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks**

- A. Active and passive insufficiency
- B. Equipment used for hand exercises in the therapeutic gym
- C. Anatomical pulleys
- D. How is lower limb girth measured?
- E. Types of levers
- F. Indications and contraindications of effleurage

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. Describe types of muscle work. What are the different muscle actions?
- B. Describe general and local techniques of relaxation along with their uses.

**SECTION – B**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks**

- A. Describe open chain and closed chain kinematics
- B. Equipment used for resisted exercises
- C. Describe the indications and contraindications of kneading
- D. What is the need for fitness exercise with a sedentary lifestyle?
- E. Types of goniometers
- F. Describe axes and planes with reference to the human body

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. What are the components of fitness? What are warm and cool down exercises?
- B. Classify movements. Describe the effects and uses of the various movements.



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**SECTION –A**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks**

- A. Apparent limb length
- B. Angle of pull
- C. Mechanical advantages of lever
- D. Center of gravity
- E. Types of muscle contraction
- F. Bubble goniometer

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. Describe any three fundamental starting positions and explain the derived positions from standing with alteration of trunk
- B. Define levers. Describe different classes of levers with suitable examples

**SECTION – B**

**Q.1. Short Answer Question (Any FIVE)**

**25 Marks**

- A. Describe half kneeling position and its muscle work
- B. One repetition maximum
- C. Types of goniometers
- D. Use of laws of inertia and motion
- E. Principles of group exercises
- F. Surface landmarks for identification of spinal vertebrae

**Q.2. Long Answer Question (Any ONE)**

**15 Marks**

- A. Describe any five equipments used in a therapeutic gymnasium and their applications in detail
- B. Explain classification of joints in detail with suitable examples