

**PRACTICE SET**  
**End Semester Examination, Spring- 2026**

**Program:** Bachelor of Physiotherapy (BPT)

**Semester:** II

**Course:** Fundamentals of Biomechanics & Exercise Therapy

**Course Code:** 23A204

<b>Course Outcomes</b>	<b>Description</b>
CO1	Understand the basic principles, concepts and terminologies of fundamental exercise.
CO2	Describe biomechanics of fundamental exercise therapy.
CO3	Describe the concepts of therapeutic gymnasium, disability models, Active & passive movements.
CO4	Demonstrate Starting and derived positions, relaxation, balancing techniques.
CO5	Apply the technique of ROM & girth, length measure and massage

**Unit 1**

**Section A**

- 1. Enumerate Gravity, line of gravity and base of support with examples and diagrams. [CO1] [Understand-LOT]**
- 2. Define COG. Write down the location of COG in male, female and children with reasoning. [CO1] [Remember-LOT]**
- 3. Brief Equilibrium and its types with suitable examples and diagrams. [CO2] [Remember-LOT]**
- 4. Explain in your own words what mechanical advantage means and how it helps when using a lever? [CO2] [Apply-LOT]**
- 5. Enumerate Lever system, order of lever, axis and plane with respect to the human body. [CO1] [Understand-LOT].**

## **Section B**

- 6. Demonstrate the relationship between different axes and planes of the body by describing and illustrating various types of movements? [CO2] [Analyze-HOT]**
- 7. Analyze the classification of levers based on the relative positions of the fulcrum, effort, and load. Examine the biomechanics of each class and explain their functional significance in the human body. [CO2] [Analyze-HOT]**

## **Unit 2**

### **Section A**

- 8. Discuss Pulley, its types and advantages. [CO2] [Understand-LOT]**
- 9. Elaborate spring, its properties, springs connection in Parallel and Series. [CO2] [Remember-LOT]**
- 10. Describe anatomical pulley along with its examples and diagram related to the human body. [CO2] [Remember-LOT]**
- 11. Enumerate how following equipment can be used to increase shoulder ROM: Shoulder wheel, shoulder pulley, Finger ladder? [CO3] [Apply-LOT]**
- 12. Define the physiotherapeutic biomechanical importance of these modalities:  
a) Ankle exerciser b) Shoulder ladder c) Balancing Board d) Pronator Supinator instrument [CO3] [Remember-LOT]**

### **Section B**

- 13. Differentiate stress-strain curve and Hooke's law graph with respect to the key points describing materials property. [CO2] [Analyze-HOT]**

## **Unit 3**

### **Section A**

- 14. Elaborate the classification of movements by a suitable flow chart with examples. [CO3] [Remember-LOT]**
- 15. Describe Relax PROM along with its techniques. [CO3] [Understand-LOT]**
- 16. Distinguish between Nagi model and ICIDH model of disability. [CO3] [Analyze-HOT]**
- 17. Explain the ICF model of disability. [CO3] [Understand-LOT]**
- 18. Illustrate ICIDH model of disability with suitable examples. [CO3] [Remember-LOT]**

### **Section B**

- 19. Design the technique of performing relax PROM for lower limbs. [CO4] [Create-HOT]**

## **Unit 4**

### **Section A**

- 20. Explain active free, active assisted, active assisted resisted and resisted exercise. [CO3] [Understand-LOT]**
- 21. Discuss the classification of AROM with examples. [CO3] [Understand-LOT]**
- 22. Elaborate the indication, contra-indication, advantage and limitations of AROM. [CO3] [Remember-LOT]**

### **Section B**

- 23. Elaborate how different techniques of voluntary movements differ from each other in context of definition, application principles and benefits. [CO3] [Analyze-HOT]**
- 24. Illustrate the correct techniques for performing various active exercises and analyze their impact on different muscle groups and body systems. [CO3] [Analyze-HOT]**

## **Unit 5**

### **Section A**

- 25. Explain the fundamental positions of its muscle work, effects and uses. [CO4] [Understand-LOT]**
- 26. Write short notes on Relaxation and types of relaxation. [CO4] [Remember-LOT]**
- 27. Explain Suspension therapy and the uses of suspension in physiotherapy. [CO4] [Understand-LOT]**
- 28. Discuss the Static and Dynamic Balance. Mention the factors responsible for maintaining balance. [CO4] [Understand-LOT]**
- 29. Elaborate how Sherrington Principle of reciprocal innervation and biological principles help to maintain relaxation? [CO4] [Analyze-LOT]**
- 30. Discuss the balance and mechanism of balance control. [CO4] [Understand-LOT]**

### **Section B**

- 31. Analyze different derived positions in context of muscle work, effect and uses along with suitable line diagrams. [CO4] [Analyze-HOT]**
- 32. Define suspension therapy and its types. Analyze the therapeutic applications of suspension therapy for different parts of the human body. [CO4] [Analyze-HOT]**

## Unit 6

### Section A

33. Explain Goniometer, its types and uses with proper diagrams and examples. [CO5] [Understand-LOT]
34. Discuss Massage, its history and types. [CO5] [Understand-LOT]
35. Explain the benefits of girth measurement and its procedure. [CO5] [Understand-LOT]
36. Discuss the protocol used for the measurement of limb length discrepancies of lower limb. [CO5] [Understand LOT]
37. What are the key differences between various massage techniques and their specific indications and contra indications? [CO5] [Analyze-HOT]
38. Discuss physiological effects and therapeutic effects of massage therapy. [CO5] [Understand-LOT]

### Section B

39. Analyze the role of end feel in goniometric assessment of joint range of motion. How does the end feel vary across different joints, and how can it affect the interpretation and accuracy of measurements? [CO5] [Analyze-HOT]
40. Analyze the procedures for measuring the range of motion of the upper limb, lower limb, and cervical spine using a goniometer. How do the steps differ among these regions, and what factors influence measurement accuracy? [CO5] [Analyze-HOT]

### Summary Sheet:

#### CO Wise

CO	Q. No	Marks
CO1	1,2,5	30
CO2	3,4,6-10,13	110
CO3	11,12,14-18, 20-24	140
CO4	19,25-32	120
CO5	33-40	100
	<b>Total</b>	500

### Unit Wise

Unit	Q. No	Marks
Unit 1	1-7	90
Unit 2	8-13	70
Unit 3	14-19	70
Unit 4	20-24	70
Unit 5	25-32	100
Unit 6	33-40	100
<b>Total</b>		<b>500</b>

### Blooms Taxonomy Level (BTL) Wise

BTL	Q. No	Marks
LOT	1-5, 8-12, 14,15, 17,18,20-22, 25-30, 33-36,38	280
HOT	6,7, 13, 16,19, 23, 24, 31, 32,37, 39, 40	220
<b>Total</b>		<b>500</b>

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**Disclaimer:** -This is a Practice set. The Question in End term examination will differ from the Practice set. This Practice set is meant for practice only.