PRACTICE SET
End Semester Examination, Spring- 2026

Program: Bachelor of Physiotherapy (BPT)
Semester: IV
Subject: Principles of Bioelectrical Modalities – II
Subject Code: 23A404

Course CO3:
On the completion of the Course, the students will be able to:

Course CO3s	Description
CO1	Demonstrate the use and clinical application of high-frequency currents such as SWD, MWD and UST.
CO2	Perform various actinotherapy procedures using LASER, Ultraviolet Radiation (UVR), and Infrared Radiation (IRR).
CO3	Describe and apply various therapeutic heat and cold modalities effectively.
CO4	Apply and use various diagnostic instrument like EMG, NCV, Biofeedback etc

UNIT I

Section A (10 marks)

1. Explain the production and biophysical effects of Short-Wave Diathermy (SWD). (CO1) (UNDERSTAND)(LOT)
2. Discuss types and therapeutic effects of Microwave Diathermy (MWD). (CO1) (UNDERSTAND)(LOT)
3. Write the techniques of application and patient preparation for SWD. (CO1) (REMEMBER)(LOT)
4. Explain production and therapeutic effects of Ultrasound therapy. (CO1) (UNDERSTAND)(LOT)
5. Write indications, contraindications and precautions of Ultrasound therapy. (CO1) (REMEMBER)(LOT)
6. Describe types, modes and dosage of traction. (CO1) (UNDERSTAND)(LOT)

Section B (20 marks)

7. Design an appropriate application technique of SWD for osteoarthritis of knee including dosage, electrode placement, duration and explain the principles of SWD production**,** supported with a labeled diagram (CO1) (Create HOT)
8. Analyze the appropriate techniques of application including mode, frequency, intensity, patient preparation and treatment plan for lateral Epicondylitis and mention the use of Ultrasound Therapy in this case by addressing principles, physiological effects and production with diagram. (CO1) (ANALYZE)(HOT)

UNIT II

Section A (10 marks)

9. Define LASER and explain its physical principles. (CO2) (REMEMBER)(LOT)
10. Describe types and therapeutic effects of Infrared Radiation (IRR). (CO2) (UNDERSTAND)(LOT)
11. Explain sources and production of Ultraviolet Radiation (UVR). (CO2) (UNDERSTAND)(LOT)
12. Write biophysical effects and indications of LASER therapy. (CO2) (REMEMBER)(LOT)
13. Describe the physiological effects of UVR, therapeutic uses and indications of UVR in this case, Explain the production and principles of UVR therapy and its wavelength and types (CO2) (UNDERSTAND)(LOT)
14. Describe the techniques of application and patient preparation for IRR. (CO2) (UNDERSTAND)(LOT)

Section B (20 marks)

15. "A 32-year-old patient with psoriasis is prescribed Ultraviolet Radiation (UVR)therapy. Before starting treatment, a Minimal Erythema Dose (MED)test is performed, and the patient shows a faint erythema E1at 60 seconds exposure. The therapist plans a graded UVR dosage schedule for subsequent days." Analyze the dose determination of UVR in this case by explaining the concept of MED, factors affecting dosage, and calculate the appropriate E3 dose for the third day of treatment with proper justification. (CO2) (Analyze)(HOT)

16. Design a treatment plan using laser therapy for a patient with chronic plantar fasciitis presenting with heel pain. And justify your plan with proper reasons. (CO2) (CREATE)(HOT)

UNIT III

Section A (10 marks)

17. Explain principles and biophysical effects of intermittent compression therapy. (CO3) (UNDERSTAND)(LOT)
18. Describe types and therapeutic effects of compression therapy. (CO3) (UNDERSTAND)(LOT)
19. Write indications and contraindications of intermittent compression therapy. (CO3)(REMEMBER)(LOT)
20. Explain principal, sources and types of cryotherapy. (CO3) (UNDERSTAND)(LOT)
21. Discuss physiological effects of cryotherapy. (CO3) (UNDERSTAND)(LOT)
22. A 25-year-old athlete presents with an acute ankle sprain characterized by pain, swelling, and limited movement; apply your knowledge of cryotherapy to describe the appropriate application techniques and necessary precautions for effective and safe management of this condition. (CO3) (APPLY)(LOT)

Section B (20 marks)

23. Critically analyze the use of intermittent compression therapy in the case of chronic lower limb edema following prolonged immobilization, associated with heaviness and reduced mobility by explaining its principles, types, physiological effects, indications, contraindications, precautions, and patient preparation for safe and effective management. (CO3) (ANALYZE) (HOT)

24. Critically analyze the role of cryotherapy in the case of acute soft tissue injury characterized by pain, swelling, and inflammation by discussing its sources, mechanisms of action, physiological effects, therapeutic uses, indications, contraindications, and appropriate application techniques for effective management. (CO3) (ANALYZE)(HOT)

UNIT IV

Section A (10 marks)

25. Explain modes of heat transfer in physiotherapy. (CO3) (UNDERSTAND)(LOT)
26. Describe paraffin wax bath: techniques of application, physiological effects, indications and contraindications. (CO3)(UNDERSTAND)(LOT)
27. Discuss moist heat therapy and its therapeutic effects. (CO3) (UNDERSTAND)(LOT)
28. Explain fluidotherapy and its clinical applications. (CO3) (UNDERSTAND)(LOT)
29. Write indications and contraindications of contrast bath. (CO3) (REMEMBER)(LOT)
30. Describe the role of superficial heating modalities in managing chronic low back pain, with emphasis on therapist skills, patient preparation, and safety protocols. (CO3) (UNDERSTAND) (LOT)

Section B (20 marks)

31. Critically analyze the use of paraffin wax bath therapy in the case of patient with rheumatoid arthritis by discussing its mechanism of action, application technique, physiological effects, indications, contraindications, precautions, and patient preparation for safe and effective management. (CO3) (ANALYZE)(HOT)
32. A 48-year-old patient presents with chronic wrist stiffness and pain following prolonged immobilization after a fracture; critically analyze the selection and application of appropriate heat therapy modalities by explaining their mechanisms, physiological effects, and clinical uses for effective rehabilitation. (CO3) (ANALYZE)(HOT)

UNIT V

Section A (10 marks)

33. Explain reaction of degeneration and its stages. (CO4) (UNDERSTAND)(LOT)
34. Describe types of nerve lesions and their electrical reactions. (CO4) (UNDERSTAND)(LOT)
35. Define EMG and explain its basic techniques. (CO4) (REMEMBER)(LOT)
36. Critically discuss Nerve Conduction Velocity with detailed explanation of underlying electrophysiological principles, components and working of instrumentation. (CO4) (UNDERSTAND LOT))
37. Explain principles and therapeutic effects of biofeedback. (CO4) (UNDERSTAND)(LOT)
38. Write indications, contraindications, and precautions of biofeedback. (CO4) (REMEMBER)(LOT)

Section B (20 marks)

39. A 55-year-old patient presents with progressive numbness, tingling, and weakness in the upper limb, raising suspicion of peripheral nerve involvement; critically analyze the role of electrodiagnostic tests in this case by discussing their underlying principles, instrumentation, techniques, and clinical applications in diagnosis and management. (CO4) (ANALYZE)(HOT)
40. Evaluate Electromyography (EMG) in detail with respect to its physiological basis, instrumentation, procedure, and clinical applications in neuromuscular disorders. (CO4) (Evaluation)(HOT)

Summary Sheet

CO Wise

CO	Q. No	Marks
CO1	1-8	100
CO2	9-16	100
CO3	17-32	200
CO4	33-40	100
Total		**500**

Unit Wise

Unit	Q. No	Marks
Unit 1	1-8	100
Unit 2	9-16	100
Unit 3	17-24	100
Unit 4	25-32	100
Unit 5	33-40	100
Total		**500**

Blooms Taxonomy Level (BTL Wise)

BTL	Q. No	Marks
LOT	1,2,3,4,5,6, 9,10,11,12,13,14,17,18,19,20,21,22, 25,26,27,28,29,30,33,34,35,36,37,38	300
HOT	7,8,15,16,23,24,31,32,39,40	200
Total		**500**

Prepared By: Dr. Tamal Mandal (PT)

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.