PRACTICE SET

End Semester Examination, Dec 2025

Program: Bachelor of Physiotherapy (BPT)
Semester: III
Course: Principles of Bioelectrical Modalities-1
Course Code: 23A304

Course Outcomes	Description
CO1	Understand the fundamental concepts and applications of physics and basic electrical components.
CO2	Understand the concepts, principles and applications of bioelectrical modalities.
CO3	Describe principles, techniques, effects, indications, contraindications and dosage parameter for low frequency currents and medium frequency currents.

Section A (24x 5= 120)

1. **Write Modern Concept of Electricity. [CO1] [Unit 1] [Remember-LOT]**
2. **Discuss DC Currents. [CO1] [Unit 1] [Understand-LOT]**
3. **Write short notes on Capacitors and Insulators. [CO1] [Unit 2] [Remember-LOT]**
4. **Define Rheostat. [CO1] [Unit 2] [Remember-LOT]**
5. **Describe the Magnitude of the Current. [CO1] [Unit 2] [Understand-LOT]**
6. **Elaborate the types of Capacitors. [CO1] [Unit 2] [Understand-LOT]**
7. **Write short notes on Fleming's Left Hand Rule. [CO2] [Unit 3] [Remember-LOT]**
8. **Explain Maxwell's Cork Screw Rule. [CO2] [Unit 3] [Understand-LOT]**
9. **Elaborate Electromagnetic Induction. [CO2] [Unit 3] [Understand-LOT]**
10. **What do you understand about Electromagnetism? [CO2] [Unit 3] [Remember-LOT]**
11. **If you are working with electrical equipment and you experience a mild electric shock, what immediate steps should you take to ensure safety? [CO2] [Unit 3] [Apply-LOT]**

12. **Apply your knowledge of earth shock to assess the safety of a physiotherapy clinic that uses various electrotherapy devices. What specific actions would you take to ensure that the equipment is grounded properly to prevent earth shock incidents during patient treatments? [CO2] [Unit 3] [Apply-LOT]**
13. **What do you understand about Diode and Triode Valve? [CO2] [Unit 4] [Remember-LOT]**
14. **What do you understand about Low Frequency Current? [CO3] [Unit 5] [Remember-LOT]**
15. **Define Ionization. [CO3] [Unit 5] [Remember-LOT]**
16. **Write short notes on Galvanism. [CO3] [Unit 5] [Remember-LOT]**
17. **Describe Modified Direct Current. [CO3] [Unit 5] [Understand-LOT]**
18. **Write Short notes on TENS. [CO3] [Unit 5] [Remember-LOT]**
19. **Elaborate various types of TENS. [CO3] [Unit 5] [Understand-LOT]**
20. **Describe the indication, contra- indication, precaution and danger of TENS. [CO3] [Unit 5] [Understand-LOT]**
21. **If a patient is receiving transcutaneous electrical nerve stimulation therapy, how should the electrodes be placed on the body to ensure effectiveness? [CO3] [Unit 5] [Apply-LOT]**
22. **Define IFT and its working principle. [CO3] [Unit 6] [Remember-LOT]**
23. **Describe the indication, contra- indication, precaution and danger of IFT. [CO3] [Unit 6] [Understand-LOT]**
24. **Describe in brief the advantage of Interferential current. [CO3] [Unit 6] [Understand-LOT]**

Section B (24x 10= 240)

25. **What is an atom? Name the three subatomic particles of an atom. CO1] [Unit 1] [Remember-LOT]**
26. **Explain the Structures of an Atom with the help of a Diagram. [CO1] [Unit 1] [Understand-LOT]**
27. **Describe Current Electricity and the Types of Electricity. [CO1] [Unit 1] [Understand-LOT]**
28. **Describe the Capacitance, Potential Difference and EMF. [CO1] [Unit 1] [Understand-LOT]**
29. **Brief Rheostat. Explain Series and Shunt Rheostat with application of each in the Physiotherapy Department. [CO1] [Unit 2] [Apply-LOT]**
30. **Elaborate Ohm's Law. Explain Resistance in Series and Parallel. [CO1] [Unit 2] [Understand-LOT]**
31. **Discuss the Magnetic effects of electric current. [CO2] [Unit 3] [Understand-LOT]**

32. **What do you understand about magnetic lines of forces and their properties? [CO2] [Unit 3] [Remember-LOT]**
33. **What is electromagnetism, and what are the fundamental forces involved in electromagnetic interactions? [CO2] [Unit 3] [Remember-LOT]**
34. **After ensuring the power is off, what are the first steps you would take to assess the condition of the person who has been shocked? How would you determine if they need CPR or other medical interventions? [CO2] [Unit 3] [Apply-LOT]**
35. **Explain Semiconductors and its types with the help of a diagram. [CO2] [Unit 4] [Understand-LOT]**
36. **Describe the functions and applications of Ohmmeter, Ammeter and Volt Meters. [CO2] [Unit 4] [Understand-LOT]**
37. **A patient has muscle atrophy in the forearm. How would you apply faradic current for muscle re-education? [CO3] [Unit 5] [Apply-LOT]**
38. **Analyze the differences between Faradic current and other types of electrical currents in terms of their physiological effects on muscle tissue. [CO3] [Unit 5] [Analyze-HOT]**
39. **Elaborate the Indication, contra-indication and Precautions of Galvanic Current. [CO3] [Unit 5] [Understand-LOT]**
40. **Design a treatment protocol using galvanic current for a patient with sensory neuropathy in the hand. [CO3] [Unit 5] [Create-HOT]**
41. **Analyze the effects of different electrode placement strategies for galvanic current when treating edema. [CO3] [Unit 5] [Analyze-HOT]**
42. **Compare the effectiveness of adhesive electrodes versus carbon electrodes in electrotherapy treatments. What are the advantages and disadvantages of each, considering factors like patient comfort and conductivity? [CO3] [Unit 5] [Analyze-HOT]**
43. **Explain the Method of application of TENS in the human body. [CO3] [Unit 5] [Apply-LOT]**
44. **What are the physiological effects of TENS? [CO3] [Unit 5] [Understand-LOT]**
45. **Explain the Model of Pain Gate Theory. [CO3] [Unit 5] [Understand-LOT]**
46. **Explain the procedure of patient preparation used in IFT. [CO3] [Unit 6] [Understand-LOT]**
47. **Explain the placement of electrode positions applied in IFT. [CO3] [Unit 6] [Understand-LOT]**
48. **Design a treatment plan using IFT for a patient with post-operative knee pain and swelling. [CO3] [Unit 6] [Create-HOT]**

Section C **(10x 20= 200)**

49. **Evaluate the advantages and limitations of using Direct Current (DC) for different physiotherapeutic conditions such as chronic pain, wound healing, and muscle weakness. In what scenarios would DC therapy be most beneficial, and when might it be contraindicated? [CO1] [Unit 1] [Evaluate-HOT]**
50. **Analyze the role of capacitors in electrotherapy devices used in physiotherapy. How do capacitors affect the flow of current in devices like TENS or interferential therapy, and what implications does this have on the therapeutic outcomes? [CO2] [Unit 2] [Analyze-HOT]**
51. **Examine the potential risks and consequences of electrical shock hazards in a physiotherapy clinic or healthcare environment. How do electric shock and earth shock differ in terms of severity and the appropriate immediate response? [CO2] [Unit 3] [Analyze-HOT]**
52. **Analyze the differences between magnetic and non-magnetic substances in terms of their atomic structure and behavior in a magnetic field. [CO2] [Unit 3] [Analyze-HOT]**
53. **What happens when a strong magnet is used on ferromagnetic, paramagnetic, and diamagnetic substances? How do these materials behave differently under different magnetic field conditions? [CO2] [Unit 3] [Analyze-HOT]**
54. **A 30 year old male with a complaint of inability to grip and flex the wrist known case of neuropraxia of the median nerve but the nerve is intact. Analyze what type of current is suitable for muscle stimulation and what are the methods of applications, Physiological effects, indication and contra-indication of it? [CO3] [Unit 5] [Analyze-HOT]**
55. **A 26 year old male came to PT OPD with c/o Foot drop having a history of RTA known cases of severe nerve damage. Analyze which type of current would you apply for muscle stimulation and what are the Methods of application, therapeutic effects, indications, contra-indications, precautions and danger. [CO3] [Unit 5] [Analyze-HOT]**
56. **A 45 year old female with difficulty in prolonged sitting that causes severe back pain for 2-3 days came to OPD. Evaluate how you would manage her. What are the treatment options for her? Explain the physiological, therapeutic effects, indications, contra-indications and precautions of it. [CO3] [Unit 5] [Evaluate-HOT]**
57. **Design a treatment protocol using TENS for a patient with post-operative shoulder pain and propose modifications in TENS application to target deep tissue pain more effectively. [CO3] [Unit 5] [Create-HOT]**
58. **Define IFT? Discuss in brief the physiological and therapeutic effects of it? Analyze how you will place electrodes and give treatment in the case of Frozen Shoulder? [CO3] [Unit 6] (Analyze -HOT)**

Summary Sheet:

CO Wise

CO	Q. No	Marks
CO1	1,2,3,4,5,6,25,26,27,28,29,30,49	110
CO2	7,8,9,10,11,12,13,31,32,33,34,35,36,50,51,52,53	175
CO3	14,15,16,17,18,19,20,21,22,23,24,37,38,39,40,41,42,43,44,45,46,47,48,54,55,56,57,58	275
Total		**560**

Unit Wise

Unit	Q. No	Marks
Unit 1	1,2,25,26,27,28,49	70
Unit 2	3,4,5,6,29,30,50	60
Unit 3	7,8,9,10,11,12,31,32,33,34,51,52,53	130
Unit 4	13,35,36	25
Unit 5	14,15,16,17,18,19,20,21,37,38,39,40,41,42,43,44,45,54,55,56,57	210
Unit 6	22,23,24,46,47,48,58	65
Total		**560**

Blooms Taxonomy Level (BTL) Wise

BTL	Q. No	Marks
LOT	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25 ,26,27,28,29,30,31,32,33,34,35,36,37,39,43,44,45,46,47	310
HOT	38,40,41,42,48,49,50,51,52,53,54,55,56,57,58	250
Total		**560**

Prepared by: Dr. Raunaque Ara (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.