

BACHELOR OF PHYSIOTHERAPY (BPT)
SEMESTER -IV EXAMINATION, JUNE-2026

(BPT401) BIO PHYSICS

[Time allotted: Three Hours]

[Max Marks: 100]

Note: Read all the instructions carefully

Answer all questions in serial order. Draw suitable diagrams wherever necessary

Q. 1. Objective type questions: (Attempt All)**(10 x 02 = 20)**

(Very short/ short answer/ MCQ/ One liners/ Fill in the blanks/ True/False)

- a. Ohm's law
 - i. $V = I R$
 - ii. $I = VR$
 - iii. $R = VR$
 - iv. $V = I/R$
- b. _____ is an example of low intensity currents.
 - i. TENS
 - ii. EMS
 - iii. US
 - iv. LASER
- c. Which subatomic particle has a positive charge?
 - i. Proton
 - ii. Neutron
 - iii. Electron
 - iv. Nucleus
- d. Rectifier can take the form of _____
 - i. Node
 - ii. Rheostat
 - iii. Vacuum tube diodes
 - iv. Resistors
- e. An object which exhibit properties like free to move from north to south pole
 - i. Friction
 - ii. Force
 - iii. Power
 - iv. Magnetism
- f. Which of the following is a contraindication for using superficial heat therapy?
 - i. Chronic arthritis
 - ii. Acute inflammation
 - iii. Muscle stiffness
 - iv. Decreased joint range of motion
- g. The power plug should be:
 - i. 2 pin plug
 - ii. 3 pin plug
 - iii. 4 pin plug
 - iv. 5 pin plug
- h. The term decimeter wave applies:
 - i. Infrared
 - ii. Shortwave
 - iii. Microwave
 - iv. None of the above
- i. The Current is passed through an electrolyte, dissociating into positive and negative ions known as:
 - i. Magnetic effect of electric current.
 - ii. Physical effect of electric current.
 - iii. Chemical effect of electric current.
 - iv. Electrical Effect of electric current.
- j. For deeper penetration of therapeutic ultrasound, PT should:
 - i. Use 1 MHz frequency
 - ii. Use 3 MHz frequency
 - iii. Increase the intensity
 - iv. Increase the mark space ration

Q. 2. Short notes/ Short answer type questions (Attempt any Five)**(05 x 04 = 20)**

- a. Potential energy and potential difference CO1, PO1
- b. Prevention of electric shock? CO2, PO1
- c. Physiological effect of heat therapy? CO4, PO9
- d. Define ions and electrolytes. CO1, PO1
- e. Magnetic effects of an electric fields? CO3, PO5
- f. Write First aid and initial management after electric shock, CO2, PO5
- g. Concept of standing wave and its clinical significance in therapeutic ultrasound. CO4, PO8

Q. 3. Structured questions (Attempt any Three)**(03 x 10 = 30)**

- a. In brief: CO1, PO1
 - i. Ohm's law
 - ii. Resistance
 - iii. Fuse and its role in a circuit
- b. Write about following: CO3, PO5
 - i. Magnetism
 - ii. Properties of magnetism
 - iii. Electromagnetic induction
- c. Explain the following: CO4, PO9
 - i. Physical principle of cold therapy
 - ii. Physical principle of ultrasound
 - iii. Therapeutic effect of heat and ice therapy
- d. Write about: CO2, PO5
 - i. Fuse
 - ii. Earthing
 - iii. Electric shock

Q. 4. Long Answer/ Essay type questions (Attempt any Two)**(02 x 15 = 30)**

- a. Difference between magnetic and chemical effects of electric current. Describe the process of how the chemical effect of electric current is produced. CO2, PO5
- b. Describe about various types of superficial heat therapy modalities. Write their physiological effects, indications, and contraindications. CO4, PO2
- c. What are the applications of thermionic valve, advantages of thermionic valves? CO1, PO1