



Abhinav Bindra Sports Medicine and Research Institute  
MPT 1st Internal Examination February 2026

1st Year

Date: 05.02.2026

Time: 09:00 AM-12:00 PM

Question Code- F3

Subject: Biomechanics and Therapeutics

F.M.: 80 marks

Subject Code- 23MPT103

**Long Questions- Answer Any 4 (4 X 15Marks)**

1. Discuss kinetics and kinematics of synovial joints, any one of your choices. Provide 5 examples of translatory and rotatory motions.
2. Explain the concept of force systems in biomechanics. Illustrate with examples how parallel, concurrent, and coplanar forces act on the human body.
3. Differentiate between open-chain and closed-chain exercises with examples. Write short notes on Wolff's Law in bone adaptation.
4. Discuss the mechanical properties of soft tissues and muscles. Explain stress-strain relationships and their clinical relevance.
5. Describe the principles and applications of TENS and FES. Compare their mechanisms and therapeutic outcomes.

**Short Questions- Answer Any 5 (5 X 4Marks)**

6. Discuss the role of ATP-PC system, glycolysis, and oxidative phosphorylation?
7. How do mechanical stresses and hormonal influences affect bone development and remodelling?
8. Discuss the mechanical properties of soft tissues and muscles?
9. Write short notes on gait kinematics?
10. Co-ordinate systems in biomechanics.
11. Explain therapeutic applications of UST, by using atleast 5 recent systematic review and meta-analysis