REV-01
BPT/30/35

2025/12

**SET A**

# BACHELOR OF PHYSIOTHERAPY
## THIRD SEMESTER
## BIOMECHANICS
## BPT – 306 [REPEAT]

[USE OMR SHEET FOR OBJECTIVE PART]

**Duration: 3 hrs.** **Full Marks: 70**

**Objective**

**Time: 30 min.** **Marks: 20**

***Choose the correct answer from the following:*** ***1×20=20***

1. Which connective tissue structure reduces friction between tendon/ligament and bone?
   a. Bursa
   b. Tendon
   c. Aponeuroses
   d. Cartilage

2. Which bone rotates during pronation and supination at the proximal radio-ulnar joint?
   a. Ulna around radius
   b. Radius around ulna
   c. Both rotate equally
   d. Neither bone rotates

3. The knee joint is an example of a
   a. Ball and socket joint
   b. Pivot joint
   c. Hinge joint
   d. Saddle joint

4. Which carrying angle of the elbow is formed between
   a. Long axis of humerus and ulna
   b. Long axis of humerus and radius
   c. Long axis of radius and ulna
   d. Long axis of capitulum and trochlea

5. The joint between vertebrae in the spine is a
   a. Cartilaginous joint
   b. Synovial joint
   c. Fibrous joint
   d. Ball and socket joint

6. Which structure serves as a roof for the carpal tunnel?
   a. Flexor retinaculum
   b. Palmaris longus tendon
   c. Extensor retinaculum
   d. Ulnar nerve

7. Normal angle of torsion for shoulder joint
   a. 30 degrees anterior
   b. 30 degrees medial
   c. 30 degrees lateral
   d. 30 degrees posterior

8. What is the carrying angle of the elbow, typically observed in the anatomical position?
   a. 0 degree
   b. 5- 15 degree
   c. 45 degree
   d. 20- 30 degree

9. Normal angle of inclination of femur:
   a. 110 degrees
   b. 130 degrees
   c. 90 degrees
   d. 125 degrees

10. Which of the following joints allows for pronation and supination of the forearm, affecting wrist movement?
    a. Distal radioulnar joint
    b. Radiocarpal joint
    c. Intercarpal joint
    d. Midcarpal joint

11. In second class lever load lies between
    a. Fulcrum and effort
    b. Resistance and fulcrum
    c. Between fulcrum
    d. None of the above

12. Which type of grip is characterized by the use of the thumb and fingertips to hold small objects?
    a. Power grip
    b. Hook grip
    c. Pinch grip
    d. Cylindrical grip

13. The SI unit of power is
    a. Watt
    b. Joules
    c. Newton
    d. Ampere

14. Muscle involved in flexor mechanism of hand
    a. Palmar interossei
    b. Dorsal interossei
    c. Flexor digitorum superficialis
    d. Lumbricals

15. Which ions plays a major role in muscle contraction?
    a. Calcium
    b. Sodium
    c. Potassium
    d. Chloride

16. In wrist biomechanics, radial deviation occurs mostly at the:
    a. Radiocarpal joint
    b. Midcarpal joint
    c. Distal radioulnar joint
    d. Carpometacarpal joint

17. The SI unit of work is
    a. Newton
    b. Joule
    c. Watt
    d. None of the above

18. Which structure holds the head of the radius in place during movement at the proximal radio-ulnar joint?
    a. Quadrate ligament
    b. Annular ligament
    c. Interosseous membrane
    d. Oblique cord

19. Normal angle of inclination is
    a. 110-130 degrees
    b. 120 degrees
    c. 130-150 degrees
    d. 150-180 degrees

20. Which carpal bone is most important in wrist stability due to its bridging role?
    a. Lunate
    b. Capitate
    c. Scaphoid
    d. Hamate

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## Descriptive

**Time: 2 hrs 30 min** **Marks: 50**

***[ Answer question no.1 & any four (4) from the rest ]***

1. Describe the composition of fibrillar and interfibrillar components of extracellular matrix in connective tissue? **10**

2. Write in detail about angle of inclination. Explain coxa vera & coxa valga. **5+5=10**

3. Write in detail about kinetic and kinematics of humeroradial & humeroulna joint. Discuss about ligaments of proximal and distal radioulnar joint. **5+5=10**

4. Explain how immobilization and overuse injury affects muscle? **10**

5. Write in detail about kinetic and kinematics of wrist joint. **10**

6. Describe the load deformation curve with diagram? Describe the structure of a sarcomere with diagram? **5+5=10**

7. Write in detail about power grips & precesion handlings of hand complex. **10**

8. Describe the structure of a hip joint with diagram? Discuss the movements that occur in hip joint in relation to planes and axes? **5+5=10**

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