2024/12

SET A

MASTER OF PHYSIOTHERAPY
FIRST SEMESTER
BIOMECHANICS & KINESIOLOGY
MPT – 102

[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 of the following is not a part of rib cage?
- a. Thoracic Vertebrae
- b. Ribs
- c. Clavicle
- d. Sternum

2. What primary function does the sternoclavicular joint serve in shoulder biomechanics?
- a. Stabilizes the elbow during flexion
- b. Allows movement of the scapula and arm
- c. Limits the movement of the thoracic spine
- d. Supports the rotation of the forearm

3. During the first 30 degrees of arm elevation, which joint contributes primarily to the movement?
- a. Glenohumeral joint
- b. Scapulothoracic joint
- c. Sternoclavicular joint
- d. Elbow joint

4. What is the average carrying angle in women?
- a. 5-10 degrees
- b. 10-15 degrees
- c. 15-20 degrees
- d. 20-25 degrees

5. What primarily contributes to the dynamic stabilization of the shoulder joint during arm movements?
- a. The bony structure of the glenohumeral joint
- b. The rotator cuff muscles
- c. The ligaments of the shoulder
- d. The scapular muscles only

6. What is the typical range of the lumbosacral angle in a healthy individual?
- a. 10-15 degrees
- b. 25-30 degrees
- c. 30-45 degrees
- d. 45-60 degrees

7. The thoracolumbar fascia is divided into how many layers?
- a. One
- b. Two
- c. Three
- d. Four

8. Which muscles are primarily involved in neck extension?
- a. Sternocleidomastoid
- b. Scalene muscles
- c. Trapezius and splenius capitis
- d. Levator scapulae

9. Which of the following ligaments helps to maintain the stability of the thoracic spine?
   a. Anterior longitudinal ligament
   b. Supraspinous ligament
   c. Interspinous ligament
   d. All of the above

10. Which of the following muscles is primarily responsible for wrist flexion?
   a. Extensor carpi radialis
   b. Flexor carpi radialis
   c. Palmaris longus
   d. Flexor carpi ulnaris

11. Which of the following ribs have direct attachment with sternum?
   a. 6th
   b. 9th
   c. 12th
   d. Both A and B

12. Which costal Cartilage joins the sternum at sternal angle?
   a. 1st
   b. 2nd
   c. 3rd
   d. 4th

13. The period of time from one heel strike to the next heel strike of the same limb is called:
   a. Walking
   b. Swing Phase
   c. Mid Stance
   d. Gait Cycle

14. The number of steps completed per minute per unit of time is called as:
   a. Step Width
   b. Cadence
   c. Velocity
   d. Step Length

15. In gait cycle, stance phase accounts for about:
   a. 40%
   b. 30%
   c. 60%
   d. 75%

16. Amount of time spent when only one extremity is on supporting surface of gait cycle is called:
   a. Double Limb Support
   b. Single Limb Support
   c. Stance Phase
   d. Swing Phase

17. The product of cadence and step length is called as:
   a. Acceleration
   b. Angular Velocity
   c. Velocity
   d. Stride length

18. Choose the term that describes the branch of Mechanics dealing with system subject to acceleration.
   a. Biomechanics
   b. Statics
   c. Dynamics
   d. Friction

19. In the anatomical position, the forearm is in what position?
   a. Supinated
   b. Flexed
   c. Abducted
   d. Pronated

20. Choose the term that describes movement "toward the midline of the body"
   a. Proximal
   b. Rectilinear
   c. Medial
   d. Posterior

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Descriptive

Time: 2 hrs 30 min

Marks: 50

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

1. Explain the joints of Thorax in detail **10**

2. Explain the role of the scapulohumeral rhythm in shoulder biomechanics. How does the coordinated movement between the scapula and humerus contribute to shoulder function, and what are the implications of scapular dyskinesis on movement efficiency and injury risk? **10**

3. Explain mechanics of Ventilation along with muscles of Ventilation **10**

4. How can using a dynamometer help identify muscle imbalances? What are the benefits of detecting these imbalances for injury prevention and treatment? **10**

5. Explain the determinants of Gait in detail **10**

6. Explain Structure, Kinematics and Kinetics of Lumbar Vertebra **10**

7. Explain various Pathological gait in detail **10**

8. Explain Lung Volumes and Capacities in detail **10**

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