Avinashilingam Institute for Home Science and Higher Education for Women

Deemed to be University Estd. u/s 3 of UGC Act 1956, Category A by MHRD [now MoE]
Re-accredited with A++ Grade by NAAC. CGPA 3.65 /4, Category I by UGC
Coimbatore - 641 043, Tamil Nadu, India

Degree

Bachelor of Physical Education Examination – May 2025
IV Semester

Class: II B.P.Ed.

Time : 3 Hours
Max. Marks : 100

23BPDC25 Kinesiology and Biomechanics

Course Outcomes:

CO1: Demonstrate and apply basic mechanical and physics principles to human movements and implements used in various sports.
CO2: Identify the relationship between anatomical structure, physiological function, and mechanical principles as they relate to the performance of basic and complex motor skills.
CO3: Explain the knowledge and appreciation of the importance of the study of kinesiology as a foundation for further studies in biomechanics and performance analysis
CO4: Analyze sport movements and design movement-oriented exercise prescriptions and view the performance of physical activity skills critically and evaluate performance in terms of principles of efficient movement.
CO5: Describe the methods used to achieve the goals of exercise and sports Biomechanics

Part A **10 x 1 = 10**

Choose the Correct Answer

CO1 K1

1. Which of the following describes sports biomechanics?
   a. Study of diet and exercise
   b. Analysis of human movement in sports
   c. Measurement of heart rate in athletes
   d. Study of emotions in sports

CO2 K2

2. What is the significance of axes and planes in biomechanics?
   a. To improve running speed
   b. To analyze movement direction
   c. To reduce body weight
   d. To increase endurance

CO4 K1

3. Which type of muscle contraction occurs when the muscle lengthens?
   a. Concentric b. Eccentric c. Isometric d. None of the above

CO5 K2

4. How joints are classified?
   a. Based on movement capability
   b. Based on muscle type
   c. Based on bone density
   d. None of the above

CO3 K1

5. Newton's First Law is also known as
   a. Law of action-reaction
   b. Law of inertia
   c. Law of acceleration
   d. Law of momentum

CO3 K2

6. A lever consists of
   a. a fulcrum, effort, and load
   b. only a force
   c. only a mass
   d. none of the above

CO5 K1

7. What is the difference between distance and displacement?
   a. Distance is a scalar quantity, displacement is a vector quantity
   b. Both are vector quantities
   c. Distance is always greater than displacement
   d. None of the above

CO4 K2

8. Which of the following is an example of angular motion?
   a. Running in a straight-line
   b. Somersault in gymnastics
   c. Jumping forward
   d. Walking

CO4 K1

9. What is locomotor movement?
   a. Movement that involves a change in body position
   b. Movement that occurs without displacement
   c. Movement that requires a forceful push
   d. Movement that involves only the upper body

CO5 K2

10. What is manipulative movement?
    a. Movement performed with an object
    b. Movement that occurs in water.
    c. Movement that involves only lower limbs
    d. None of the above

Part B 5 x 6 = 30

Answer ALL questions

Each answer should not exceed 400 words or two pages

11. a. Define kinesiology and explain its importance in sports. **CO1 K2**

(or)

11. b. Explain the concept of the center of gravity and its effect on movement. **CO1 K2**

12. a. Describe different types of joints in the human body. **CO2 K3**

(or)

12. b. What is reciprocal innervation? Explain with an example. **CO2 K3**

13. a. Define force and explain its types. **CO3 K4**

(or)

13. b. Explain how friction affects sports performance. **CO3 K4**

14. a. Define velocity and acceleration. How are they related? **CO4 K5**

(or)

14. b. Describe the concept of angular motion and its importance in sports. **CO4 K5**

15. a. Describe the mechanical principles applied in running. **CO5 K6**

(or)

15. b. Discuss the importance of leverage in sports performance. **CO5 K6**

Part C 5 x 12 = 60

Answer ALL questions

Each answer should not exceed 800 words or four pages

16. a. Explain the concept of axes and planes in sports biomechanics with examples. **CO1 K3**

(or)

16. b. Define and explain the laws of gravity in relation to human movement. **CO1 K3**

17. a. Discuss the importance of good posture in sports and daily life. **CO2 K4**

(or)

17. b. Explain how anatomy and physiology contribute to sports performance. **CO2 K4**

18. a. Explain the application of Newton's Laws of Motion in any four sports activities with example. **CO3 K5**

(or)

18. b. Discuss the mechanical advantages of levers in the human body. **CO3 K5**

19. a. Explain linear and angular kinematics with real-life sports examples. **CO4 K6**

(or)

19. b. Define momentum and explain its role in sports activities. **CO4 K6**

20. a. Explain the role of locomotor, non-locomotor, and manipulative movements in sports. **CO5 K6**

(or)

20. b. Explain the impact of biomechanics on sports injury prevention and rehabilitation. **CO5 K6**

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