

2024

KINESIOLOGY AND BIOMECHANICS

Paper : CC-402

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

1. Explain the term Kinesiology and Biomechanics. Write down the importance and application of Sports Biomechanics in enhancing sport performance with examples. 5+10

Or,

Briefly explain the concepts of the followings : 5×3

- (a) Centre of gravity and Line of gravity
- (b) Scalar and Vector quantity
- (c) Stability and Equilibrium.

2. Briefly explain the importance of Kinesiology in enhancing sports performance. Classify muscles with examples. Write down the name of major muscles that are involved with the movements of knee joint. 4+5+6

Or,

Briefly explain the concepts of the followings : 5×3

- (a) Eccentric and Isokinetic Muscle Contraction
- (b) All or None law
- (c) Reciprocal Innervations.

3. What is projectile motion? Explain different types of projectile motion with examples. Mention the different factors affecting range of a projectile. 2+9+4

Or,

Briefly explain the concepts of the followings : 5×3

- (a) Types of motion
- (b) Force and its units
- (c) Class-II lever and its mechanical advantage.

4. Write short notes on the following (**any two**) :

- (a) Linear Kinematics
- (b) Impulse and Momentum
- (c) Friction and its types
- (d) Factors affecting stability.

5. Choose the correct option for following MCQs and write it on your answer script (**any ten**) :

1×10

- (a) Sport Biomechanics helps in
 - (i) Improving performance
 - (ii) Reducing injury
 - (iii) Rehabilitation
 - (iv) All of these.
- (b) Speed is a
 - (i) Scalar quantity
 - (ii) Vector Quantity
 - (iii) Both (i) and (ii)
 - (iv) None of these.
- (c) Newton's 2nd Law of Motion gives the measure of
 - (i) Acceleration
 - (ii) Force
 - (iii) Momentum
 - (iv) Angular Momentum.
- (d) The bi-axial joint is/are
 - (i) Pivot
 - (ii) Hinge
 - (iii) Both (i) and (ii)
 - (iv) None of these.
- (e) A Couple consists of :
 - (i) A single force
 - (ii) Parallel forces
 - (iii) Opposite forces
 - (iv) All of these.
- (f) Transverse plane lies on
 - (i) Sagittal axis
 - (ii) Vertical axis
 - (iii) Frontal axis
 - (iv) None of these.
- (g) The human elbow joint is an example of
 - (i) 1st class lever
 - (ii) 2nd class lever
 - (iii) 3rd class lever
 - (iv) All of these.
- (h) S.I. unit of work is
 - (i) Newton
 - (ii) Joule
 - (iii) Watt
 - (iv) Horse power.

- (i) Movements occurring in the frontal plane are
- (i) Circumduction
 - (ii) Flexion Extension
 - (iii) Abduction Adduction
 - (iv) Rotation.
- (j) If for covering 0.5km distance an athlete takes 20 seconds, the average speed of the athlete is
- (i) 25 m/s
 - (ii) 2.5 m/s
 - (iii) 0.25 m/s
 - (iv) 10 m/s
- (k) Torque is the angular analogue of
- (i) Impulse
 - (ii) Force
 - (iii) Momentum
 - (iv) Mass.
- (l) A passenger in a moving car leans forward when the car brakes suddenly, due to
- (i) Inertia of motion
 - (ii) Inertia of rest
 - (iii) Mass
 - (iv) Velocity of the car.
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