2024

SPORTS BIOMECHANICS AND KINESIOLOGY

Paper : MPCC-202

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. Define the term Kinesiology and Sports Biomechanics. Explain why the study of Biomechanics and Kinesiology is important in sports and physical education. 6+9

Or,

Discuss the following concepts in Kinesiology :

(a) Kinematics and Kinetics

(b) Stability and equilibrium

(c) Centre of Gravity and Line of Gravity. 5+5+5

2. Describe the origin, insertion of the following muscles of lower extremity and mention its actions on body movements :

(a) Hamstrings

(b) Quadriceps

(c) Sartorius. 5+5+5

Or,

Write the origin, insertions of the following muscles and enlist their role for concerned joint movements:

(a) Deltoid

(b) Biceps

(c) Serratus. 5+5+5

3. Define motion and force. Mention different types of force with proper examples. If Suchitra starts 100m sprint from rest with acceleration of 4.0 m/s², how much distance will she cover in 6 sec? (2+2)+6+5

Or,

What is frictional force? Mention different types of frictional force with examples. Explain how frictional force influences sports performance. Describe the function of class-III body lever during exercise. 2+4+4+5

Please Turn Over

7½×2

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

   (a) Plan and Axis

   (b) Movements of shoulder girdles

   (c) Analysis of walking

   (d) Methods of movement analysis.

5. Answer the following MCQs by choosing the correct option given below and writing it on your answer script (**any ten**) : 1×10

   (a) In 1886, the term Kinesiology was introduced by

      (i) Nils Posse   (ii) Pehr Henrik Ling

      (iii) David Buchanan   (iv) James Naismith.

   (b) The world's first kinesiology department was launched in 1967 at

      (i) The Oxford University, England

      (ii) The University of Waterloo, Canada

      (iii) The University of California, USA

      (iv) University of Stockholm, Sweden.

   (c) The basic SI unit of mass is

      (i) Kilogram (kg)   (ii) Pound (lb)

      (iii) Ounce (oz)   (iv) Gram (gm).

   (d) A system of forces that rotates or turns things is called

      (i) Centrifugal force   (ii) Centripetal force

      (iii) Lever   (iv) Torque.

   (e) If a sprinter starts from rest on a 100m sprint with the acceleration of 4.5 m/s² then what will be the velocity of the sprinter after 5 sec?

      (i) 22.5 cm/s   (ii) 2.25 m/s

      (iii) 22.5 m/s   (iv) 225 m/s.

   (f) Read the Statements A and B carefully and select the correct option.

      ● Statement-A: Work is related to the amount of energy transferred to or from a system by a force.

      ● Statement-B: Power is a scalar quantity with SI unit of Joule.

      (i) Statement-A is correct but Statement-B is wrong.

      (ii) Statement-B is correct but Statement-A is wrong.

      (iii) Both the Statements A and B are correct.

      (iv) Both the Statements A and B are wrong.

(g) The path of a projectile is always

   (i) Vertically upright

   (ii) Horizontally straight

   (iii) A parabola

   (iv) A circle.

(h) Read the Statements A and B and select the correct option.

Statement - A : Force can cause a body to move or stop.

Statement - B : Force can cause an object to change its direction of motion and shape.

   (i) Statement - A is correct but Statement-B is wrong.

   (ii) Statement - B is correct but Statement-A is wrong.

   (iii) Both the Statements A and B are correct.

   (iv) Both the Statements A and B are wrong.

(i) For an object in projectile motion the horizontal component of velocity is (velocity and angle of projection = u and θ)

   (i) $u \sin\theta$

   (ii) $u \cos\theta$

   (iii) $u \tan\theta$

   (iv) $u \sec\theta$.

(j) If the weight of an object is W and buoancy is B then the condition of flotation of the object in fluid is

   (i) $W > B$

   (ii) $W < B$

   (iii) $W = B$

   (iv) None of these.

(k) If the other conditions remain the same, then the Range of a projectile will be maximum when the angle of projection (θ) is

   (i) 30°

   (ii) 45°

   (iii) 75°

   (iv) 90°.

(l) A spinning ball moves in the air with a curved path due to

   (i) Newton's effect

   (ii) Magnus effect

   (iii) Bouncy effect

   (iv) Magnetic effect.

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