2023

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. Discuss the importance of sports biomechanics in the field of physical education and sports. What is line of gravity? Describe the different body axes and the movements about these axes. 7+2+6

Or,

What are Kinesiology and Biomechanics? Write down the basic four fundamental movements one can perform. What are Scalar and Vector Quantities? Briefly discuss the important factors responsible for maintaining equilibrium. 4+2+4+5

2. What is a muscle? Write the names of important muscles that help in the movement of shoulder joint. Differentiate between isometric and isotonic muscle contraction. 2+9+4

Or,

Write down the importance of good posture. Briefly describe the hinge joint with diagram. What is meant by Angle of Pull? 4+7+4

3. Explain the mechanical advantage of second class lever with an example of human body lever. Define rectilinear motion and curvilinear motion. Discuss the application of the principles derived from Newton's Third Law of motion in the field of physical education and sports. 5+4+6

Or,

Discuss the function of a pulley. Define force and discuss the internal and external forces. State Newton's Second Law of Motion and explain it. 3+5+7

4. Write short notes on the following (*any two*) : 7½×2

   (a) Distance and Displacement

   (b) Linear and Angular acceleration

   (c) Impulse

   (d) Couple.

Please Turn Over

5. Choose the correct option for following MCQs and write the correct answer on your answer script (*any ten*) : 1×10

   (a) Wheel and Axle arrangement acts like

   (i) Lever   (ii) Muscle

   (iii) Force   (iv) Bone.

   (b) The SI unit of Force is

   (i) Kg   (ii) Newton

   (iii) Joule   (iv) Dyne.

   (c) The unit m/s^2 denotes

   (i) Distance   (ii) Velocity

   (iii) Acceleration   (iv) Speed.

   (d) Frictional resistance depends on

   (i) atmospheric pressure   (ii) surface area

   (iii) surface texture   (iv) All of these.

   (e) For a vertical projection, the angle of projection will be

   (i) less than 90°   (ii) 90°

   (iii) more than 90°   (iv) 0°.

   (f) Hinge joint allows the movement

   (i) only flexion   (ii) only extension

   (iii) both flexion and extension   (iv) circumduction.

   (g) During abduction of the arm, the arm moves

   (i) towards the body   (ii) away from the body

   (iii) in front of the body   (iv) back of the body.

   (h) In which type of lever, is the force applied between the weight and fulcrum?

   (i) Class-1 lever   (ii) Class-II lever

   (iii) Class-III lever   (iv) None of these.

   (i) Bending forward of the trunk is an example of movement in the

   (i) Frontal plane   (ii) Sagittal plane

   (iii) Transverse plane   (iv) None of these.

   (j) If in a straight line Tulu covers 100m distance in 12.5 seconds, she ran at a speed of

   (i) 10 m/s   (ii) 20 m/s

   (iii) 12.5 m/s   (iv) 8 m/s.

(k) The path of an object projected into free space is known as

    (i) Parabola   (ii) Straight line

    (iii) Hyperbola   (iv) Arc.

(l) Study of joints is called

    (i) Kinesiology   (ii) Biomechanics

    (iii) Anthropology   (iv) Arthrology.