2025

SPORTS BIOMECHANICS AND KINESIOLOGY

Course : 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. Discuss the scope of Applied Kinesiology and Sports Biomechanics. Describe the historical development of Kinesiology and Sports Biomechanics as academic subject and profession. 6+9

Or

Discuss the following concepts of Kinesiology :

(a) Statics and Dynamics

(b) Work and Power

(c) Plane and Axis. 5+5+5

2. Define the movements— flexion, extension, abduction, adduction and rotation with proper examples. Identify the muscles responsible for these movements of shoulder joints and mention their origin and insertion. 5+10

Or

Enlist the origin and insertion of Hamstring and Quadriceps muscles. Discuss their role for the movements of knee joints. 10+5

3. What is mechanical advantage of a lever? Discuss the principles of different types of body levers with suitable examples. 3+(4×3)

Or

Describe the basic principles of projectile motion in terms of range, height reached and time of flight. Discuss the occurrence of projectile motion in sports field with proper examples. 6+9

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

(a) Analysis of human movements

(b) Frictional force and stability

(c) Types of motion

(d) Magnus Force.

Please Turn Over

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

(a) Kinesiology is the science of

(i) Human performance (ii) Human motion

(iii) Animals' movements (iv) All of these.

(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) Kinematics deals with

(i) motion without force (ii) motion under force

(iii) motion of a single body (iv) motion of many bodies.

(d) Displacement is a

(i) Scalar quantity (ii) Vector Quantity

(iii) Both (i) and (ii) (iv) Neither (i) nor (ii).

(e) Newton's 2nd Law of Motion gives the measure of

(i) acceleration (ii) force

(iii) momentum (iv) angular momentum.

(f) A couple consists of

(i) a single force (ii) parallel forces

(iii) opposite forces (iv) Any of these.

(g) Transverse plane lies on

(i) Sagittal axis (ii) Vertical axis

(iii) Frontal axis (iv) None of these.

(h) An example of multi-axial joint is

(i) knee (ii) hip

(iii) neck (iv) None of these.

(i) S.I. unit of work is

(i) Newton (ii) Joule

(iii) Watt (iv) Horse power.

(j) Movements occurring in the frontal plane are

(i) circumduction (ii) flexion/extension

(iii) abduction / adduction (iv) rotation.

(k) For an object in projectile motion the horizontal component of velocity on the x-axis is (U = initial speed, θ = angle of projection)

(i) $U\sin\theta$ (ii) $U\cos\theta$

(iii) $U\tan\theta$ (iv) $U\sec\theta$.

(l) If a sprinter starts 100m sprint with the acceleration of 4.5 m/s^2 then what will be the velocity of the sprinter after 5 sec?

(i) 0.225 m/s (ii) 2.25 m/s

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