

2020

KINESIOLOGY AND BIOMECHANICS

Course : 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.

Question nos. 4 and 5 are compulsory. Answer **any two** from the rest.

1. (a) What are axes and plane? Briefly explain various types of axes and plain with proper diagram. What are the fundamental movements? 5+10+5

Or,

- (b) Write down the meaning of biomechanics and sports biomechanics. Give a clear concept of center of Gravity as an external force in various games and sports. Discuss importance of kinesiology in Physical Education. 6+6+8

2. (a) Briefly explain structural and functional classification of skeletal muscle with examples. Briefly explain Angle of Pull. 14+6

Or,

- (b) Write down the importance of Good Posture. Discuss the different types of movement that can be performed around shoulder joint and elbow joint. 8+12

3. (a) Briefly explain body lever with example. Enlist the factors which influence the projectile motion and discuss how they influence it. 5+15

Or,

- (b) What is the Newton's second Law of Motion? Explain application of Newton's third Law of motion in game and sports field. Define centripetal and centrifugal force with proper example from sports field. 5+7+8

4. Write note on (**any one**) : 10

- (a) Frictional force in game and sports
(b) Stability
(c) Moment of Inertia
(d) Linear velocity and Angular Acceleration.

Please Turn Over

5. Answer the MCQ from the given below and write it on your answer script (*any ten*) : 2×10
- (a) Which of the following methods are used to reduce frictional force?
- (i) Polishing (ii) Lubrication
(iii) By using ball bearings (iv) All of these.
- (b) Which of the following muscle is part of the Quadriceps muscles?
- (i) Rectus femoris (ii) Biceps femoris
(iii) Psoas major (iv) None of these.
- (c) Law of inertia is another name of the
- (i) Newton's second law of Motion (ii) Newton's first law of Motion
(iii) Newton's third law of Motion (iv) None of these.
- (d) The angle of projection to travel the maximum distance by a projectile is
- (i) 35° (ii) 45°
(iii) 65° (iv) 75°.
- (e) Displacement is a –
- (i) Scalar quantity (ii) Vector quantity
(iii) Both A and B (iv) Neither A nor B.
- (f) Which of the following muscles are used for jump?
- (i) Gastrocnemius (ii) Iliopsoas
(iii) Both A and B (iv) None of these.
- (g) Knee joint is an example of
- (i) Hinge joint (ii) Pivot joint
(iii) Ball and Socket joint (iv) Saddle joint.
- (h) When a body part moves away from the center of body, it is called
- (i) Flexion (ii) Extension
(iii) Abduction (iv) Adduction.
- (i) Joint between head and first vertebra is an example of
- (i) First class lever (ii) Second class lever
(iii) Third class lever (iv) None of these.

(3)

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(j) SI unit of Force is

- (i) Dyne
- (ii) Foot-Poundal
- (iii) Newton
- (iv) None of these.

(k) Angle of pull represents

- (i) the direction of the application of the force
- (ii) the amount of force applied
- (iii) Both A and B
- (iv) None of the above.

(l) 'A football is kept on the ground'– it is an example of

- (i) Stable equilibrium
 - (ii) Unstable equilibrium
 - (iii) Neutral equilibrium
 - (iv) None of these.
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