

Master of Physical Education Examination - 2025

Department of Physical Education

1st Year, 2nd Semester

Subject Code: MPCC-202

Sports Biomechanics and Kinesiology

Time: Three Hours

Full Marks: 70

Group - A

Answer any three questions:

15×3=45

1. Briefly explain the nature of the sport biomechanics as subject. Explain linear and angular kinematics. Describe plane and axis of movement. 4+3+8=15
2. What are the different characteristics of projectile motion? Find out the equation for maximum distance covered in a projectile motion and the angle required for it. Describe Class-2 lever with the example of body lever. 5+6+4=15
3. Write origin, insertion and action of the following muscles: 3×5=15
(i) Biceps Brachii (ii) Deltoid (iii) Abdominis (iv) Quadriceps (v) Gastrocnemius
4. What is biomechanical analysis? What are the various techniques and procedure of biomechanical analysis? Biomechanically analyse any one fundamental human movement. 2+5+8=15
5. Briefly explain the following terms: 3×5=15
(a) Line of Gravity, (b) Mechanical Energy (c) Scalar and Vector quantities,
(d) Statics and Dynamics, (e) Kinetics

Group-B

Write short notes on **any two** of the following:

7.5×2=15

6. Biomechanical analysis of putting the shot
7. Biomechanical factors of high jump
8. Scope of Kinesiology
9. Principles of stability

Group-C**10. Answer any ten MCQ and write it on your answer script:****1x10=10**

- i) Father of biomechanics:
- a) Giovanni Alfonso Borelli
 - b) Leonardo da Vinci
 - c) Galileo Galilei
 - d) Richard Hinrichs
- ii) Lateral plane divides the body into:
- a) Front and back halves
 - b) Left and right halves
 - c) Upper and lower halves
 - d) Inner and outer halves
- iii) Mechanics includes
- a) Kinetics and kinematics
 - b) Statics and dynamics
 - c) Both A and B
 - d) None
- iv) Which of the following is true?
- a) Mass changes but weight remains unchanged.
 - b) Mass is fixed but weight changes.
 - c) Both mass and weight are fixed.
 - d) Both mass and weight change.
- v) Bernoulli's principle is about:
- a) Why the air has weight
 - b) How pressure decreases with increased fluid speed
 - c) How gravity pulls object
 - d) None
- vi) The anterior deltoid mainly contributes to
- a) Shoulder elevation
 - b) Shoulder extension
 - c) Shoulder flexion and internal rotation
 - d) Scapular elevation

- vii) If the net force on an object is zero, the object is
- a) Slows down
 - b) Speeds up
 - c) At rest or moves with constant velocity
 - d) changes direction
- viii) If the momentum is doubled the velocity must be
- a) Doubled
 - b) Halved
 - c) Remains same
 - d) Zero
- ix) Double support phase is present in
- a) Running
 - b) Walking
 - c) Both A and B
 - d) None
- x) Which type of friction has least magnitude
- a) Static friction
 - b) Sliding friction
 - c) Rolling friction
 - d) Fluid friction
- xi) The mechanical advantage of an inclined plane is 5. If the effort force is 60N, what will be the load force?
- a) 12N
 - b) 300N
 - c) 100N
 - d) None
- xii) A car accelerates uniformly 20m/s to 50m/s in 4second. What is the acceleration of that car?
- a) 17.5m/s
 - b) 7.5m/s
 - c) 10m/s
 - d) 16m/s
