

Roll No: \_\_\_\_\_

Enrollment No: \_\_\_\_\_

**PARUL UNIVERSITY**  
**Faculty of Physiotherapy**  
**First Internal Examination 2016-17**

**Year: I**

**Date: 31.01.2017**

**Subject Code: 07101106**

**Time: 2 Hour**

**Subject Name: BIOMECHANICS & KINESIOLOGY-I**

**Total Marks: 35**

Instructions:

1. All questions are mandatory
2. Figures to the right indicate full marks.
3. Draw Diagram wherever necessary.
4. Write separate sections on separate answer sheets.

**SECTION- A**

**Q.1** Draw a labeled diagram of contractile unit of muscle and write in detail about the types of muscle contraction with examples in detail. [15]

**OR**

**Q.1** Types of lever and examples of types of lever in human body and explain about mechanical advantage in lever. [15]

**Q.2 Write Short Notes (2 out of 3) (5 Marks each)** [10]

- (a) Write a note on Center of Gravity and Line of Gravity with examples.
- (b) Load Deformation Curve
- (c) Joint Arthrokinematics with examples

**SECTION- B**

**Q.3 Multiple Choice Question (10 out of 10) (1 Marks each)** [10]

- (1) The resting membrane potential of skeletal muscle fiber is:
  - a. -90 mv
  - b. -0.9mv
  - c. -0.09mv
  - d. -0.009 mv
- (2) In the second order lever the arrangement is:
  - a. Weight in middle, fulcrum and effort point are either end
  - b. Fulcrum is in middle, weight and effort point are on either end
  - c. Effort point is in middle, weight and Fulcrum are on either end
  - d. None of the above
- (3) According to concave-convex rule, if the bone with convex joint surface moves on concave bony surface, the convex joint surface
  - a. Glide in same direction, Rotate in opposite direction
  - b. Glide in opposite direction, Rotate in same direction
  - c. Glide in same direction, Rotate in same direction
  - d. Glide in opposite direction, Rotate in opposite direction

- (4) The contractile unit of muscle is:
- Sarcolemma
  - Sarcomere
  - Sarcoplasmic reticulum
  - None of the above
- (5) A person throws a baseball at an acceleration of  $120\text{m/s}^2$  with  $37\text{N}$  of Force. What's the Mass of the ball?
- $4,440\text{kg}$
  - $0.40\text{kg}$
  - $3.24\text{kg}$
  - None of the above
- (6) Hip joint is which variety of joint??
- Saddle
  - Ball and Socket
  - Pivot
  - Hinge
- (7) Water content of Articular cartilage is:
- $50\%-60\%$
  - $60\%-85\%$
  - $90\%-95\%$
  - $30\%-40\%$
- (8) The CoM of the human body lies approximately at
- Anterior to S2 vertebra
  - Anterior to S1 vertebra
  - Anterior to L4 vertebra
  - Anterior to T12 vertebra
- (9) During a concentric contraction, muscle
- Lengthens
  - Shortens
  - No change in muscle
  - None of the above
- (10) The third order lever is also called as
- Lever of Stability
  - Lever of Power
  - Lever of Velocity
  - None of the above