

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**ME – SEMESTER (NEW) - EXAMINATION – SUMMER - 2017**

**Subject Code: 2733104****Date:02/05/2017****Subject Name: BIODYNAMICS****Time:02:30 pm to 05:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain different types of lever system found in human body. Explain the anatomical notation used to describe various movements of body parts. **07**
- (b) Discuss your observations for the Physical Properties of Physical Properties of Skeletal Muscle, Muscle Groups and Movement. **07**
- Q.2** (a) Enlist and explain the types of Joints in Human Body **07**
- (b) Explain the Moment of Momentum About a Stationary Point. **07**

**OR**

- (b) Explain the Moment of Momentum About the Center of Mass **07**
- Q.3** (a) Elaborate the mathematical model of professional vertical jumper with necessary illustrative diagrams. **07**
- (b) Discuss your observations for the Example from Weight Lifting. **07**

**OR**

- Q.3** (a) Draw and explain the instantaneous center of rotation of an arbitrary rigid body in planar motion. **07**
- (b) Discuss your observations for the Example from walking. **07**
- Q.4** (a) Discuss with diagram the Multiple Muscle Involvement in Flexion of the Elbow. **07**
- (b) Write a technical note on Musculoskeletal Tissues. **07**

**OR**

- Q.4** (a) Discuss with diagram the Multiple Muscle Involvement in Extension of the Elbow. **07**
- (b) Write a technical note on Biarticular Muscles. **07**
- Q.5** (a) Describe the Bones, Ligaments and Tendons with respect to their applications in biodynamics. **07**
- (b) Explain the Principle of Impulse and Momentum in brief. **07**

**OR**

- Q.5** (a) Draw and explain the Biodynamics of Twisting Somersaults **07**
- (b) Define the Structural Stability and Redundancy of human body with consideration of various body movements. **07**

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