

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (OLD) - EXAMINATION – SUMMER 2017****Subject Code: 170301****Date: 09/05/2017****Subject Name: Biomechanics****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) What Is Continuum Mechanics? Explain the flowchart of traditional division of study. **07**  
(b) Explain the role of biomechanics in health care research with specified examples. **07**
- Q.2** (a) Explain the principal stresses and strains during torsion movement. **07**  
(b) Explain the properties of Tendon and Ligament. **07**
- OR**
- (b) Explain the properties of bone and cartilages. **07**
- Q.3** (a) Explain Non-Newtonian Behavior. What do you mean by rouleaux formation? **07**  
(b) Explain the property of friction with appropriate examples. Explain wear and surface damage due to friction of surfaces. **07**
- OR**
- Q.3** (a) Explain the experimental setup of measurement of flow between two rigid parallel plates. **07**  
(b) Explain the property of viscoelastic with appropriate examples. **07**
- Q.4** (a) Explain the structure and function of hip joint. **07**  
(b) What is GRF? Explain the techniques for ground reaction measurement. **07**
- OR**
- Q.4** (a) Draw and explain the GAIT postures during human walking. **07**  
(b) Draw and explain typical pressure and flow curves for the aortic and mitral valves. **07**
- Q.5** (a) Write a short note on cardiac cycle with necessary sketches. **07**  
(b) Explain mathematical model of bioheat transfer. **07**
- OR**
- Q.5** (a) Explain the structure and function of knee joint. **07**  
(b) Explain the process of Lubrication. Explain types of lubrication. **07**

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