

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII • EXAMINATION – WINTER 2013****Subject Code: 170301****Date: 26/11/2013****Subject Name: Biomechanics****Time: 10:30 TO 01:00****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 below given terminologies for blood vessels: **07**
1. Homogeneity
2. Incompressibility
3. Inelasticity
4. Residual Stress and Strain
- (b) Enlist and explain various techniques being used for Analysis of Motion? **07**
- Q.2** (a) Explain muscular movements and muscular efficiency with proper equations. **07**
(b) Describe the viscoelastic behavior of bone using Boltzmann superposition integral as a constitutive equation. **07**
- OR**
- (b) Draw and explain the GAIT postures during human walking. **07**
- Q.3** (a) Briefly explain inertia and the contact forces acting along the mass inertia. **07**
(b) Explain the extrinsic mechanical properties of fluid. **07**
- OR**
- Q.3** (a) What is the cause of fatigue? Explain its characteristics with necessary equations. **07**
(b) Explain the heat transfer by respiration system. **07**
- Q.4** (a) Explain the material properties of cartilage. **07**
(b) Write a short note on UHMWPE. **07**
- OR**
- Q.4** (a) Draw and explain the GRF acting along the ankle during human running. **07**
Q.4 (b) Describe the material properties of Tendon and Ligament. **07**
- Q.5** (a) Draw and explain the joint moments & Power during locomotion of human. **07**
(b) Explain the method of accelerometry for GAIT analysis. **07**
- OR**
- Q.5** (a) Write a short note on force platform. **07**
(b) Describe the application of electrogoniometry for GAIT analysis. **07**
