

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – 7 SEMESTER – • EXAMINATION – SUMMER 2018****Subject Code:170301****Date: 08-05-2018****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) Define Biomechanics. What are the different techniques used for Analysis of motion? **07**
- (b) Define Newtonian and Non-Newtonian fluid. Blood is Newtonian or Non-Newtonian fluid? Give proper justification. **07**
- Q.2** (a) Explain the importance of blood rheology in detail. **07**
- (b) Explain muscular movements and muscular efficiency with proper equations. **07**
- OR**
- (b) Draw and explain Joint moments & Power during locomotion. **07**
- Q.3** (a) Draw and explain the GAIT postures during human walking. **07**
- (b) Explain the heat transfer by respiration system in detail. **07**
- OR**
- Q.3** (a) Define Laminar flow and turbulence flow. Draw and explain electrical model of blood flow mechanics. **07**
- (b) Explain the fluid mechanics of cochlea. **07**
- Q.4** (a) Define Vorticity and Viscoelasticity of fluid. Explain their importance in fluid mechanics. **07**
- (b) Explain the mechanical events in cardiac cycle and its correlation with electrical events. **07**
- OR**
- Q.4** (a) Draw and explain types of forces acting on body. Explain inertia and the contact forces acting along the mass inertia. **07**
- (b) Explain the structure and mechanism of mitral valve. **07**
- Q.5** (a) Describe the material properties of Tendon and Ligament. **07**
- (b) Explain the application of electrogoniometry for GAIT analysis. **07**
- OR**
- Q.5** (a) Describe the material properties of cartilage. **07**
- (b) Explain the mechanism of control of blood pressure. **07**
