

**II B.Tech II Semester Supplementary Examinations,
November/December 2005
BIO-MECHANICS AND BIO-FLUIDS
(Bio-Medical Engineering)**

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. Derive the pressure flow relationship of a fluid, if its viscosity satisfies Casson's equation. [16]
2. Discuss the deformability of the red blood cell in microvessels and Hematocrit in very narrow tube. [16]
3. (a) Explain the viscoelastic nature of any two bio-viscoelastic fluids. [8]
(b) Derive the expressions for stress-relaxation and creep of voigt's model. [8]
4. Write short note on:
 - (a) Hooke's law [5]
 - (b) Newtonian and Non-Newtonaian fluids. [6]
 - (c) Constitutive equations. [6]
5. Enumerate the mechanical properties of blood capillaries in detail. [16]
6. (a) What is airway resistance? Give the physics of lung diseases? [8]
(b) How does P.V. curve of lung explain the interaction between blood and lungs?
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hfill[8]
7. What do you mean by soft tissue? Explain the terms viscoelasticity and pseudoe-
lasticity critically? Elaborate your answer how pseudoelasticity and visco elasticity
influence the properties and functions of skin ligaments? [16]
8. (a) Enumerate various mechanical and diffusion properties of cartilage with ex-
amples? [8]
(b) Write briefly about "lubrication" of joints? [8]
