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**B.E / B.Tech. ARREAR EXAMINATION, NOV/DEC 2012**

**B.E – Biomedical Engineering**

**Sixth Semester**

**BM 9352 – BIOMECHANICS**

**(Regulation 2008)**

Time : Three hours

Maximum : 100 Marks

Answer ALL questions

**PART A – (10 × 2 = 20 Marks)**

1. Mention the types of cells that constitute the structure of bone.
2. What are the factors affecting bone strength?
3. Define Reynold Number.
4. Name the two forces governing laminar blood flow.
5. Differentiate the terms Kinetics and Kinematics.
6. Define Hydrodynamic Lubrication.
7. Explain the need for the study of dynamics of Fluid filled catheters.
8. The cardiac output of an average person is 5.5 litres, Flow rate is  $10^{-4} \text{ m}^3/\text{s}$  and pressure is  $10^4 \text{ Pa}$ . Calculate the power developed by the heart.
9. What are the two ways to protect man against the effects of mechanical forces/vibration.
10. Define Instantaneous Centre of Rotation (ICR)

**PART B – (5 × 16 = 80 Marks)**

11. Discuss in detail on the various mechanical properties of bone. (16)
12. (a) Write detailed notes on the shear stresses involved in extra-corporeal circuits. (16)
- Or**
12. (b) Explain in detail on the dynamics of fluid flow in cardiovascular system. (16)
13. (a) Give a detailed note on the mechanics of heart valve. (16)
- Or**
13. (b) Explain the procedure followed in building a finite element model. (16)
14. (a) Explain the process of diffusion in Articular cartilage. (16)
- Or**
14. (b) Mention the types of Synovial joint and give a brief explanation on each type. (16)
15. (a) Explain Gait Cycle in detail (16)
- Or**
15. (b) Explain 'Screw-Home Mechanism' in detail. (16)