

**DIPLOMA IN MECHANICAL ENGINEERING
(DME)**

Term-End Examination

December, 2012

BME-060 : MACHINE DESIGN

Time : 2 hours

Maximum Marks : 70

*Note : Answer **any** 5 Questions. Q. No. 1 is compulsory. Use of scientific calculator is **permitted**.*

1. Choose the correct answer. **7x2=14**

(a) Which one of the following is not a isotropic material.

- (i) Steel
- (ii) Copper
- (iii) Aluminium
- (iv) Plastic

(b) The l/d ratio of standard specimen in a tension test is given by (where l =gauge length and d =diameter)

- (i) $\frac{l}{d} = 3$
- (ii) $\frac{l}{d} = 5$
- (iii) $\frac{l}{d} = 6$
- (iv) $\frac{l}{d} = 9$

- (c) In medium carbon steels the carbon varies between
- (i) 0 – 0.1%
 - (ii) 0.57% and above
 - (iii) 0.27% to 0.57%
 - (iv) 0.1 to 0.27%
- (d) The alloys of tin, copper, lead and antimony are called_____ .
- (i) Gun metals (ii) Bronze
 - (iii) Brass (iv) Babbitts
- (e) The ability of a material to resist deformation under stress
- (i) Stiffness
 - (ii) Strength
 - (iii) Fatigue
 - (iv) Elasticity
- (f) The deflection of a shaft is reduced by ----
- (i) Making mounted parts lighter
 - (ii) Keeping mounted parts balanced
 - (iii) Mounting the parts close to bearing
 - (iv) All the above
- (g) The process of pressing rivet edges against the plates and edges of plates against other plate to ensure leak proofness is called-----
- (i) Double rivet joint
 - (ii) Double lap joint
 - (iii) Caulking
 - (iv) Butt Joint.

2. Explain the complete procedure of 'Design of mechanical systems. 14
 3. Draw and explain the stress-strain diagram of mild steel. 14
 4. What is stainless steel? Explain different types of stainless steels. 14
 5. Explain the geometry of following threads with diagram. 14
 - (a) V-thread
 - (b) Square thread
 6. Explain different types of shafts with diagram 14
 7. Design the rectangular key for a shaft of 50mm diameter. The shearing and crushing stresses for the key material are 42MPa and 70MPa respectively. 14
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