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BME-060

DIPLOMA IN MECHANICAL ENGINEERING (DME)

Term-End Examination

June, 2013

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**.*

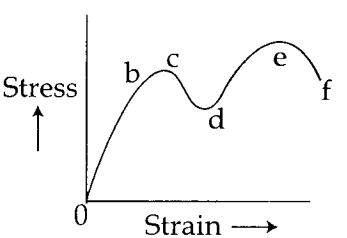
1. Choose the correct answers : **7x2=14**

(a) One of the following activities is not connected with the process of design :

(i) Synthesis (ii) Recognition

(iii) Planning (iv) Analysis

(b) In the following stress-strain diagram the behaviour of specimen material from point 'b' to 'c' is _____.



(i) Elastic (ii) Non-elastic

(iii) Plastic (iv) Deformation

(c) The following is not the property of material but is the behaviour of material under cyclic stress which changes with time :

(i) Fatigue

(ii) Hardness

(iii) Ductility

(iv) Malleability

(d) The following heat treatment results in uniform grain structure :

(i) Normalizing

(ii) Quenching

(iii) Tempering

(iv) Annealing

(e) The following material imparts magnetic property to High Carbon Steel :

(i) Copper (ii) Boron

(iii) Nickel (iv) Cobalt

(f) Torsion test terminates at _____.

(i) Elongation (ii) Creep

(iii) Fracture (iv) Deformation

(g) Keys made integral with shaft are called _____.

(i) Axial shafts

(ii) Round solid shafts

(iii) Transmission shafts

(iv) Splined shafts

2. A shaft is required to transmit a power of 25 kW at 360 rpm. The force analysis due to attached parts results in Bending moment of 830 Nm at a section between bearings. If permissible stresses in the shafts are : 60 N/mm^2 in bending and 40 N/mm^2 in shear. Calculate the diameter of shaft. 14

3. Explain various types of keys with neat diagrams. 14

4. Draw the stress-strain diagram for ductile material and define different properties of material using this diagram. 14

5. Describe Flange coupling with neat diagram. 14

6. Discuss about Hardness, Fatigue and Creep of the material. 14

7. Write short notes on the following : 14
   (a) Annealing
   (b) Normalizing
   (c) Quenching
   (d) Tempering