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BME-060

DIPLOMA IN MECHANICAL ENGINEERING (DME)

Term-End Examination

December, 2018

00233

BME-060 : MACHINE DESIGN

Time : 2 hours *Maximum Marks : 70*

Note : *Answer any **five** questions in all. Question no. **1** is **compulsory**. Use of scientific calculator is permitted.*

1. Choose the correct answer from the options given below : *7×2=14*

(a) Metric threads are classified as

(i) Fine series

(ii) Coarse series

(iii) Both (i) and (ii)

(iv) UNR series

(b) The factor of safety is defined as

(i) f_s = Allowable stress/Failure stress

(ii) f_s = Working load/Failure load

(iii) f_s = Failure stress/Allowable stress

(iv) f_s = Stress/Strain

(c) In assembly design of shaft, pulley and key, the weakest member is

(i) Pulley

(ii) Key

(iii) Shaft

(iv) None of the above

(d) Pre-loading of the bolts

(i) Prevents leakage

(ii) Improves factor of safety

(iii) Reduces factor of safety

(iv) Secures parts tightly

(e) Annealing process reduces

(i) Stiffness

(ii) Ductility

(iii) Hardness

(iv) Toughness

(f) Creep is progressive deformation with time under a constant

(i) Temperature

(ii) Pressure

(iii) Stress

(iv) Strain

(g) Addition of chromium in steel

(i) Increases hardness

(ii) Increases toughness

(iii) Both (i) and (ii)

(iv) Increases hardness but decreases toughness

2. Define Machine Design. What are the steps involved in the design of machine element ? Explain in detail. *14*

3. Write the procedure for designing a flange coupling to connect two co-axial shafts of an electric motor and worm and worm wheel reducer. *14*

4. (a) Explain various types of shafts and the stress in shafts. *7*

   (b) How do you design a shaft subjected to bending moment ? Explain. *7*

5. (a) Explain different screw threads with neat sketches. *7*

   (b) How do you design a bolt for a cylinder cover ? *7*

6. Explain the procedure for design of spigot and socket. *14*

7. Write short notes on any ***two*** of the following : *2×7=14*

   (a) Mechanical properties of Engineering materials

   (b) Differences between lap joint and butt joint with suitable examples

   (c) Keys and Couplings