1126

Code : 9ME-02M

Register Number | | | | | | | |

I/II Semester Diploma Examination, Nov./Dec., 2014

MECHANICAL ENGINEERING SCIENCE

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer question No. **1** which is compulsory.
(ii) Answer any **two** questions from each Section – **II, III & IV.**

SECTION – I

1. Fill in the blanks : **4**

   (i) Two pulleys rotate in the same direction in _____ system of belt drive.

   (ii) Sprocket wheels are used in _____ drives.

   (iii) In wick lubricator oil is carried to the bearing by _____ action.

   (iv) Gun metal is an alloy of copper and _____.

   (v) To support the load which comes along the axis of shaft _____ type bearing is used.

SECTION – II

2. (a) Define renewable energy sources and list different types of renewable energy sources. **4**

   (b) List the application of solar energy. **5**

   (c) Explain the working of a Wind Mill with neat sketch. **7**

3. (a) With a neat sketch, explain the working of CUPOLA. **6**

   (b) List the different properties of metals considered in engineering applications. **4**

   (c) Define the following : **6**

   (i) Elasticity

   (ii) Brittleness

   (iii) Resilience

[Turn over

4. (a) State the properties and uses of copper. 4
   (b) Explain the different grades of steel based on the carbon content. 4
   (c) Explain the manufacturing of steel by Bessemer Converter with a neat sketch. 8

SECTION – III

5. (a) List the different heat treatment processes. 4
   (b) Explain the purposes of heat treatment. 6
   (c) Explain cyaniding heat treatment process. 6

6. (a) Define friction and explain laws of solid friction. 4
   (b) Explain Needle lubricator with a neat sketch. 5
   (c) The velocity ratio in a belt drive is 2 and the speed of the driven pulley is 600 rpm. Find,
      (i) the speed of driver pulley
      (ii) diameter of driver pulley if diameter of driven pulley is 200 mm. 7

7. (a) List the properties of lubricants. 5
   (b) Explain the composition and uses of 6
      (i) Muntz metal
      (ii) Gun metal
   (c) Explain the role of friction and lubrication in machine elements. 5

SECTION – IV

8. (a) Compare welding and soldering. 4
   (b) Explain locknuts with a neat sketch. 6
   (c) Explain different types of flames used in gas welding. 6

9. (a) Define bearing and list different types of bearings used in industries. 5
   (b) List various equipments used in gas welding. 5
   (c) Explain Radial Ball bearing with a neat sketch. 6

10. (a) Explain Right hand and Left hand threads. 4
    (b) Name the different forms of screw threads. 5
    (c) Explain Arc welding with a neat sketch. 7

———————