U.S.N | | | | | | | | |

P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belagavi)
Second Semester, B.E. - Semester End Examination; June - 2017
Elements of Mechanical Engineering
(Common to all Branches)

Time: 3 hrs   *Max. Marks: 100*

Note: i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.
       ii) Assume suitably missing data, if required.

UNIT - I

1 a. What is a steam boiler? List any applications of steam.   7

   b. Define :

     i) Dryness friction   ii) Superheated steam   iii) Latent heat of steam.   3

   c. With a neat sketch, explain Temperature-Enthalpy the formation of steam.   10

2 a. Give a brief classification of steam turbines. List any five advantages of steam turbines. Give examples.   10

   b. With a neat labeled sketch, explain the working of an open cycle gas turbine. Mention the differences between the open cycle and closed cycle gas turbine.   10

UNIT - II

3 a. Differentiate between a spark ignition and a compression ignition engine giving three most important merits and demerits for both.   10

   b. With a neat labeled sketch, explain the working of a two stroke engine.   10

4 a. Give a detailed classification of Internal combustion engines.   8

   b. A two stroke diesel engine has a piston diameter of 200 mm and a stroke of 300 mm. It has a mean effective pressure of 2.8 bars and a speed of 400 rpm. The diameter of the brekedrum is 1 m and the effective brakeload is 64 kg. Find the indicated power, the brake power and the mechanical efficiency.   12

UNIT - III

5 a. With a neat sketch, explain a double acting positive displacement pump and list any three advantages and disadvantages.   10

   b. List any five advantages and disadvantages of centrifugal pumps. Give a classification of pumps.   10

6 a. List any ten properties of a good refrigerant. Explain COP.   10

   b. With a neat sketch, explain the working principle of a room Air-conditioner.   10

UNIT - IV

7 a. With a line sketch, show how you would specify an engine lathe? 4

b. With simple sketches, explain any two basic operations that could be performed on a lathe. 6

c. With a neat sketch, explain the working of a drilling machine. 10

8 a. Distinguish between up-milling and down-milling and mention their applications. 4

b. With simple line sketches, explain any two operation that could be performed on a horizontal milling machine. 6

c. With a neat line sketch, explain the working of a centreless grinding machine. 10

UNIT - V

9 a. Briefly explain the different types of belt drives with simple line diagram and mention their application. 10

b. A motor running at 1750 rpm drives a line shaft at 800 rpm. If the diameter of the pulley on the motor shaft is 160 mm, find the diameter of the pulley on the driven shaft. 10

10 a. Define soldering and list any four features. 4

b. Explain the process of brazing and mention any three features. 6

c. Give a detailed classification of welding process and mention the advantages and disadvantages of arc welding. 10

∗ ∗ ∗ ∗