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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belgaum)
Second Semester, B.E. - Semester End Examination; June - 2016
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.	How are boilers classified? Explain briefly.	6
b.	List the applications of boilers.	4
c.	Explain the formation of steam at constant pressure with T - H diagram.	10
2 a.	Define compounding. Explain the pressure compounding in impulse turbine.	10
b.	Sketch and explain closed cycle gas turbine.	10

UNIT - II

3 a.	Differentiate between two stroke and four stroke engine.	8
b.	Sketch and explain the working principle of Four stroke petrol engine with P-V diagram.	12
4 a.	Differentiate between petrol and diesel engine.	8
b.	Four stroke diesel engine has a piston diameter 250 mm and stroke 400 mm. The mean effective pressure is 4 bar and speed is 500 rpm. The diameter of the brake drum is 1000 mm and the effective brake load is 400 N. Find; Indicated Power (IP), Brake Power (BP) and Frictional Power (FP).	12

UNIT - III

5 a.	Sketch and explain centrifugal pump and its applications.	10
b.	Explain working of single acting and double acting reciprocating pumps.	10
6 a.	Explain briefly properties of refrigerant.	8
b.	Sketch and explain vapour compression refrigeration system.	12

UNIT - IV

7 a.	With neat sketch explain any two lathe operations.	6
b.	How to specify a lathe?	4
c.	Sketch and explain working principle of vertical milling machine.	10
8 a.	Sketch and explain centre lathe and label the parts.	10
b.	Explain with neat sketch, i) Reaming　　ii) Counter sinking.	6
c.	Differentiate between up milling and down milling.	4

UNIT - V

9 a.	Compare Soldering, Brazing and Welding process.	10
b.	Derive an expression for length of closed belt drive.	10
10 a.	Sketch and explain electric arc welding process.	10
b.	List any four application of soldering.	4
c.	The velocity ratio of a gear drive is 2. The driving wheel has 16 teeth and turns at 120 rpm. Find the rpm and the number of teeth on the driven wheel.	6

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