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15EME14/24

First/Second Semester B.E. Degree(CBCS)Examination**Elements of Mechanical Engineering**

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.**Module-1**

- 1 a. With a neat sketch briefly explain the Hydro-electric power plant. (08 Marks)
 b. Write the difference between Renewable & Non Renewable energy resources. (08 Marks)

OR

- 2 a. Briefly explain the construction & working of Lancashire Boiler with a neat sketch. (08 Marks)
 b. Define: i) Wet Steam; ii) Enthalpy of wet steam; iii) Dryness fraction. (08 Marks)

Module-2

- 3 a. Explain the De Laval's Turbine and Parson's Turbine with a neat sketch. (08 Marks)
 b. With a neat sketch explain the working principle of Pelton wheel turbine. (08 Marks)

OR

- 4 a. With a neat sketch Briefly explain the 4 stroke Diesel engine. (08 Marks)
 b. The following observations were obtained during a trial on a 4 stroke diesel engine. Cylinder diameter = 25 cm, stroke of the piston = 40cm, crankshaft speed = 250 rpm, Brake load = 70 kg, brake drum diameter = 2m, Mean Effective pressure = 6 bar, Diesel oil consumption = 0.1 m³/ min, Specific gravity of diesel = 0.78, Calorific value of diesel = 43,900 kJ/kg. Find Break Power, Indicated Power, Friction Power, Mechanical Efficiency, Break Thermal Efficiency, and Indicated Thermal Efficiency. (08 Marks)

Module-3

- a. Briefly Explain the following machining processes on a lathe with the help of neat sketches:
 i) Knurling ii) Facing iii) Drilling. (08 Marks)
 b. Explain with a neat sketch the taper turning by swivelling compound rest method and also the countersinking process in a lathe. (08 Marks)

OR

- 6 a. Briefly explain the different types of Automation. (08 Marks)
 b. Sketch the polar and Cartesian coordination of Robotic Configuration. (08 Marks)

Module-4

- 7 a. Write a note on Ferrous Alloys.(Any Two) (08 Marks)
 b. Briefly explain the types and applications of Non-ferrous alloys.(Any three) (08 Marks)

OR

- 8 a. With a neat sketch briefly explain the Oxy-acetylene Welding method. (08 Marks)
 b. With a neat sketch briefly explain the Soldering Method. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

Module-5

- 9** a. Briefly explain the construction & working of Vapor Compression Refrigeration. (08 Marks)
b. Differentiate between Vapour Absorption and Vapour Compression Refrigeration. (08 Marks)

OR

- 10** a. What is air-conditioning? How is it achieved in a domestic air conditioner? (08 Marks)
b. Explain the properties of good refrigerant. (08 Marks)

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