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17EME14/24

First/Second Semester B.E. Degree Examination, July/August 2022
Elements of Mechanical Engineering

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Briefly explain the various types of Fuels. (10 Marks)
b. With a neat sketch, explain the working of Hydro Power Plant. (06 Marks)
c. Differentiate between Latent heat of Evaporation and Internal latent heat. (04 Marks)

OR

- 2 a. Sketch and explain the working of Lancashire boiler. (10 Marks)
b. With a neat sketch, explain the Principle of Operation of Solar Pond. (05 Marks)
c. Briefly discuss the functions of Boiler Mounting and Accessories. (05 Marks)

Module-2

- 3 a. With a neat sketch, explain Open cycle and closed cycle gas turbine. (06 Marks)
b. Explain the principle of Operation of a Reaction turbine. (07 Marks)
c. Give the classification of Water turbines. Explain any one in detail (07 Marks)

OR

- 4 a. Explain the working of a four stroke petrol engine. (10 Marks)
b. A two stroke diesel engine has a piston diameter of 200mm and a stroke of 300mm. It has mean effective pressure of 2.8 bar and a speed of 400 rpm. The diameter of the break drum is 1m and effective brake load is 64kg. Find i) Brake power ii) Indicated power
iii) Mechanical efficiency iv) Average piston speed. (10 Marks)

Module-3

- 5 a. List and explain the various operations that can be conducted on a lathe. (10 Marks)
b. Differentiate between : i) Drilling and Reaming ii) Boring and counter boring
iii) Counter sinking and Spot facing. (10 Marks)

OR

- 6 a. With neat sketches, explain the classification of robot based on Robot configuration. (10 Marks)
b. Explain the basic elements of an automated system, with a neat block diagram. (10 Marks)

Module-4

- 7 a. Classify and explain the various types of Ferrous metals. (08 Marks)
b. Define Composite. Briefly explain its constituents. (06 Marks)
c. State the applications of Composite Material. (06 Marks)

OR

- 8 a. Sketch and explain the Process of Oxy – Acetylene Welding. (08 Marks)
b. Discuss the method of Soldering. (04 Marks)
c. Give the differences between Welding, Soldering and Brazing. (08 Marks)

Module-5

- 9 a. Sketch and explain the parts of a Refrigerator. (06 Marks)
b. Sketch and explain the working of vapour absorption refrigerator. (10 Marks)
c. Discuss the most commonly used refrigerants. (04 Marks)
- OR**
- 10 a. With a neat sketch, explain the principle of Air Conditioning. (10 Marks)
b. Discuss the properties of a good refrigerant. (10 Marks)
