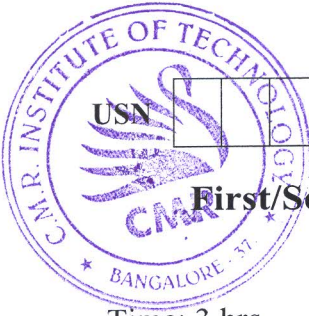


CBCS SCHEME

15EME14/24



First/Second Semester B.E. Degree Examination, June/July 2023 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. Write a brief note on Bio fuels. (06 Marks)
b. With a neat sketch, explain the utilization of wind energy into electrical energy through horizontal axis wind mill. (10 Marks)

OR

- 2 a. Define the terms:
i) Wet steam
ii) Saturated steam
iii) Superheated steam
iv) Internal energy. (04 Marks)
b. Explain how steam boilers are classified. (06 Marks)
c. Distinguish between boiler mountings and accessories with examples. (06 Marks)

Module-2

- 3 a. Explain in brief, the working principle of impulse steam turbine. (06 Marks)
b. Explain with the aid of sketch, the constant pressure closed cycle gas turbine. (06 Marks)
c. Compare Francis turbine and Kaplan turbine. (04 Marks)

OR

- 4 a. How are internal combustion engines classified? (04 Marks)
b. Compare spark ignition engines and compression ignition engines. (06 Marks)
c. The following observations refer to a trial on a single cylinder diesel engine:
Brake power = 75kW, Brake thermal efficiency = 35%, Mechanical efficiency = 80%,
Calorific value of oil used = 42000 kJ/kg. Determine:
i) Indicated power
ii) Friction power
iii) Fuel consumption per brake power hour. (06 Marks)

Module-3

- 5 a. Briefly explain the following lathe operations:
i) Facing ii) Plain turning iii) Threading iv) Knurling v) Taper turning. (10 Marks)
b. Distinguish between drilling, boring and reaming. (06 Marks)

OR

- 6 a. With a neat sketch, explain the polar configuration robot and Cartesian co-ordinate. (08 Marks)
b. What is automation? Explain any two types of automation. (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-4

- 7 a. Enumerate the applications of ferrous metals (08 Marks)
b. Give the detailed classification of composite materials. (08 Marks)

OR

- 8 a. Differentiate between soft soldering and hard soldering. (06 Marks)
b. Describe the construction and working of oxyacetylene gas welding. (10 Marks)

Module-5

- 9 a. List out the desirable properties of an ideal refrigerant or good refrigerant. (06 Marks)
b. Compare vapour compression refrigeration and vapour absorption refrigeration. (06 Marks)
c. List the commonly used refrigerants mentioning their uses. (04 Marks)

OR

- 10 a. State the principle of air conditioning and its applications. (08 Marks)
b. Explain the working of room air conditioner with neat diagram. (08 Marks)

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