

CBCS SCHEME

Division

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17EME14/24

First/Second Semester B.E. Degree Examination, Feb./Mar. 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. Explain with neat sketch the working principle of Hydro power station. (08 Marks)
- b. What are Biofuels? Compare biofuels with petroleum fuels. (06 Marks)
- c. Define the following term: i) Fuel ii) Calorific value iii) Solar pond. (06 Marks)

OR

- 2 a. Explain the construction and working of Babcock and Wilcox boiler. (08 Marks)
- b. What are advantages of water tube boilers over fire tube boilers? (06 Marks)
- c. Define the following terms: i) Boiler ii) Dryness fraction iii) Sensible heat. (06 Marks)

Module-2

- 3 a. Explain the working of Pelton wheel with neat sketch. (08 Marks)
- b. Explain the closed cycle gas turbine with block diagram. (06 Marks)
- c. 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 400rpm. The diameter of the brake drum is 1 metre and effective brake load is 64kg. Find the indicated power, brake power and the average Piston speed. (06 Marks)

OR

- 4 a. Explain construction and working of two stroke petrol engine with neat sketch. (08 Marks)
- b. Differentiate between closed and open cycle gas turbine. (06 Marks)
- c. Define the following terms:
i) Steam Turbine ii) IC Engine iii) Mechanical efficiency of IC engine. (06 Marks)

Module-3

- 5 a. List the various operations performed on lathe. Explain with neat sketch the thread cutting and facing operations. (08 Marks)
- b. Name the various operations performed on drilling machine. Explain with the neat sketch tapping operation. (06 Marks)
- c. Define the following terms:
i) Milling ii) Drilling iii) Taper turning. (06 Marks)

OR

- 6 a. Write the classification of Robot based on physical configuration. Explain the cylindrical configuration. (08 Marks)
- b. Explain the types of automation with examples. (06 Marks)
- c. Define the following terms:
i) Robot ii) Automation iii) Numerical control. (06 Marks)

Module-4

- 7 a. Define composite materials. Write a note on composite materials and its applications. (08 Marks)
b. Write a note on non ferrous metals and its alloys (any two). (08 Marks)
c. How do you classify the Engineering Materials? (04 Marks)

OR

- 8 a. Explain Oxy-acetylene welding process with neat sketch. (08 Marks)
b. Differentiate between welding, brazing and soldering. (06 Marks)
c. Define brazing. Explain torch brazing with neat sketch. (06 Marks)

Module-5

- 9 a. Explain the basic concepts of refrigeration. (06 Marks)
b. With neat sketch, explain the working of vapour absorption refrigerator. (08 Marks)
c. Define the following terms:
i) Ice making capacity
ii) Tons of Refrigeration
iii) COP. (06 Marks)

OR

- 10 a. With neat sketch, explain the working of Room Air Conditioner. (08 Marks)
b. What are the desirable properties of a good refrigerant? (08 Marks)
c. Define the following terms:
i) Air-conditioning
ii) Absolute Humidity. (04 Marks)
