CBCS SCHEME

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18ME15/25

First/Second Semester B.E. Degree Examination, Dec.2024/Jan.2025
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. With a neat sketch, explain briefly hydro-electric power plant. **(10 Marks)**

b. Discuss briefly global warming and ozone depletion. **(10 Marks)**

OR

2 a. Define : i) open system ii) closed system. **(05 Marks)**

b. State and explain Zeroth law of thermodynamics. **(05 Marks)**

c. Explain briefly formation of steam at constant pressure with temperature enthalpy diagram. **(10 Marks)**

Module-2

3 a. Explain briefly the working of Babcock and Wilcox boiler. **(10 Marks)**

b. Define turbine. Explain with a neat sketch working of pelton wheel turbine. **(10 Marks)**

OR

4 a. Briefly explain the construction and working of Francis turbine. **(10 Marks)**

b. Write short notes on : i) Cavitation ii) Priming. **(10 Marks)**

Module-3

5 a. With a neat sketch, explain constructional details of 2 stroke petrol engine. **(10 Marks)**

b. The following datas were obtained for 4-stroke diesel engine.

Cylinder diameter	=	25 cm
Stroke	=	40 cm
Speed	=	250 rpm
Brake load	=	70 Kg
Brake drum diameter	=	2 m
Mean effective pressure	=	6 bar
Diesel oil consumption	=	0.1 m^3/min
Specific gravity of diesel	=	0.78
Calorific value of fuel diesel	=	43,900 kJ/Kg

Find i) Brake power ii) Indicated power iii) Friction power iv) Mechanical Efficiency v) Brake Thermal Efficiency. **(10 Marks)**

OR

6 a. Define : i) Ton of refrigeration ii) COP iii) Refrigeration effect iv) Ice making capacity v) Refrigeration. **(10 Marks)**

b. Explain briefly with a neat sketch working of vapour compression Refrigeration. **(10 Marks)**

Module-4

7 a. Write a note on Ferrous Alloys (Any two). **(10 Marks)**

b. Explain briefly the types and applications of Non-Ferrous Alloys (Any three). **(10 Marks)**

OR

8 a. What is Welding? With neat sketch explain arc welding. **(10 Marks)**
b. With a neat sketch, explain briefly soldering method. **(10 Marks)**

Module-5

9 a. Explain briefly with neat sketches the following lathe operations :
i) Turning ii) Facing iii) Knurling iv) Drilling. **(10 Marks)**
b. Explain with a neat sketch taper turning by swivelling compound rest method. **(10 Marks)**

OR

10 a. Sketch and explain polar and Cartesian coordinate Robot configuration. **(10 Marks)**
b. Explain briefly working of horizontal milling machine with a neat sketch. **(10 Marks)**

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