2E3206

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B. Tech. II - Sem. (Main / Back) Exam., - 2024

2FY3-07 Basic Mechanical Engineering

Time: 3 Hours **Maximum Marks: 70**

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

[10×2=20]

PART – A

(Answer should be given up to 25 words only)

All questions are compulsory

Q.1 State Zeroth Law and First Law of Thermodynamics.

Q.2 What is forging?

Q.3 Name different types of power plant.

Q.4 Distinguish between a heat engine and a refrigerator.

Q.5 Write different types of gears.

Q.6 Write the difference between Brazing and Soldering.

Q.7 Classify the IC engines.

Q.8 What is the application of boiler in industry?

Q.9 Write difference between manufacturing engineering and design engineering.

Q.10 Define any two 'mechanical properties' of materials.

PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

Q.1 Write the differences between 2 stroke and 4 stroke engines.

Q.2 Explain the process in brief -

(a) Gas welding

(b) Arc welding

Q.3 Explain the working principle of centrifugal pump with a neat sketch.

Q.4 Explain any two in brief -

(a) Rolling (b) Extrusion (c) Drawing

Q.5 Write the applications of refrigeration and air-conditioning.

Q.6 What do you mean by heat treatment of steel? Explain in brief.

Q.7 Define system, surrounding and boundary in thermal engineering (with neat and clean diagram).

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

Q.1 Explain the working of 4 stroke SI engine (petrol engine). Also write all component of SI engine (with neat and clean diagram).

Q.2 Write classification and types of refrigeration systems and air-conditioning. Also explain the working of domestic refrigerator (with neat and clean diagram).

Q.3 Explain the Metal Casting Process in detail. Also explain any 5 tools used in the casting process.

Q.4 Derive the expression for length of the cross-belt transmission.

Q.5 Classify steam boilers. Explain the construction details and working of Cochran boiler with neat sketch.
