2E3206

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B.Tech. II-Sem. (Main/Back) Examination, May/June - 2025
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 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).

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory. **(10×2=20)**

1. What is meant by superheated steam?
2. List the main mountings of boiler.
3. What is the basic difference between reciprocating and centrifugal pump?
4. List the main components of an IC engine.
5. Define speed ratio in case of simple gear train.
6. Define Ton of Refrigeration.
7. What are the aims of pre-heating of air in a boiler?
8. Explain four basic functions of electrode in welding.
9. Define pattern in metal casting.
10. What is the percentage of carbon in low, medium and high carbon steels?

PART - B

(Analytical / Problem Solving Questions)

Attempt any Five questions. **(5×4=20)**

1. Briefly write the working principle of a steam power plant with diagram.
2. Explain the working of Impulse turbine with neat sketch.

3. Explain the molding process with list of tools used in the process.
4. Explain the arc welding with functions of important components used in the process.
5. Briefly explain about major types of gears with their applications.
6. What is refrigerant? Describe the important properties of a good refrigerant.
7. What are the common stages and main objectives of heat treatment process? Explain in brief.

PART - C

(Descriptive / Analytical / Problem Solving / Design Questions)

Attempt any Three questions. **(3×10=30)**

1. Explain the formation of steam with a graph. Describe the working of Cochran boiler with neat and labelled diagram.
2. Explain the working of centrifugal pump with sketch. Why priming is important in centrifugal pump and how it is done?
3. Classify the different types of IC engine. Explain the working of 4-strike Diesel engine with neat sketch. Also compare it with 4-strike petrol engine.
4. Explain vapour compression refrigeration system with neat sketch.
5. Write short note on any two:
   a) Soldering process.
   b) Hardening heat treatment.
   c) Two stroke petrol engine.
   d) Open belt drive.