

PRACTICE SET

End Semester Examination, December, 2025

Program: DIPLOMA

Semester: III

SUBJECT: Mechanical Engineering

Subject Code: 8DESC201

UNIT: I

Section A (Marks: 5)

1. Define Work, Power and Energy. Write their SI unit and dimensions.
2. Differentiate between fundamental and derived units.
3. Write difference between ferrous and non-ferrous metals with suitable examples.
4. Write the chemical composition, properties and uses of manganese steel.
5. Write the chemical composition, properties and uses of Nickel steel.
6. Write the chemical composition, properties and uses of Chromium steel.

SECTION B (Marks: 10)

7. Define carbon steel. Write the classification of carbon steel depending upon the percentage of carbon in steel. Also write their application.
8. Discuss the following mechanical properties of material:
a. Strength, b. Toughness c. Ductility d. Malleability e. Hardness
9. What are system of units. Write the advantage of S.I unit.
10. Find the dimension of following
 - Pressure
 - Area
 - Acceleration
 - $(\text{Pressure} \times \text{Area} \times \text{Velocity} \times \text{acceleration}) / (\text{Work} \times \text{time} \times \text{displacement})$

UNIT II

Section A (Marks: 5)

11. Define a clutch. Write the classification of clutch.
12. Define brake. Write the advantages and disadvantages of hydraulic brake.
13. Briefly explain the working of internal expanding brake.
14. Explain the working of friction clutch in brief.
15. Write the difference between C.I engine and S.I engine.

SECTION B (Marks: 10)

16. Draw and discuss the working of a Centrifugal clutch.
17. Draw and discuss the working of a Cone clutch. Write its advantages and disadvantages.
18. Explain the working of hydraulic brake used in automobile.
19. Define fuel injection systems. Write the types of fuel injection system used in petrol and diesel engine.
20. What is Otto cycle? Draw P-V and T-S diagram of otto cycle and explain its process.
21. What is Diesel cycle? Draw P-V and T-S diagram of Diesel cycle and explain its process.

SECTION C (20 MARKS)

22. Explain with diagram basic components and terminology of IC engines.
23. Explain the working of four stroke Compression Ignition engine with diagram.
24. Explain the working of four stroke Spark Ignition engine with diagram.

UNIT: III

SECTION A (Marks: 5)

25. Explain the working principle of a compressor.
26. Define inlet pressure, discharge pressure, brake power, theoretical power.
27. Define multistage compression and write its advantages.
28. Define FAD and capacity.

SECTION B (Marks: 10)

29. What are classification of air compressor, explain all the types.
30. Explain the working of centrifugal compressor with diagram and write its uses.

UNIT: IV

SECTION A (Marks: 5)

31. Define fluid and state its properties
32. Define heat treatment. Write its objective and classifications.
33. Differentiate between Annealing and normalizing.
34. Explain the working of centrifugal pump with diagram.
35. Explain the working of reciprocating pump with diagram.

SECTION B (Marks: 10)

36. Draw Hydraulic circuit and explain its components.
37. Explain the working of hydraulic shaper machine with diagram.
38. What is pump? What are the different types of pumps and its uses in mining industry.
39. Explain heat treatment. Also briefly describe the various processes of heat treatment.

SECTION C (20 MARKS)

40. Write the constructional details and working of hydraulic press machine with diagram.
41. Write short notes on:
(a) Quenching (b) Annealing (c) Normalizing (d) Tempering (e) Case hardening of steel

Prepared by: KUNAL SHAHDEO

Disclaimer: - This is a Practice set. The Question in End term examination will differ from the Practice set. This Practice set is meant for practice only.