

SECOND SEMESTER DIPLOMA EXAMINATION IN
MECHANICAL ENGINEERING — MARCH, 2016

BASIC MECHANICAL ENGINEERING

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer the following questions in one or two sentences. Each question carries 2 marks.

1. What do you understand by mechanical properties of materials ?
2. What is the basic function of a steam boiler ?
3. Based on combustion of fuel, how engines are classified ?
4. Name any four types of power plants used for power generation.
5. What is the function of safety valve mounted on a boiler ? (5×2=10)

PART — B

(Maximum marks : 30)

II Answer any five of the following questions. Each question carries 6 marks.

1. Explain briefly :
(a) Elasticity (b) Brittleness.
2. Name any six types of steels.
3. Write the functions of an Economiser.
4. Write the function of air pre heater attached to a boiler.
5. Write the sequence of operations in a four stroke Diesel engine.
6. Write the basic difference between Four stroke engine and two stroke engine.
7. Write short notes on :
(a) Solar pond electric power plants (b) Tidal power plants. (5×6=30)

PART — C

Marks

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT—I

- III (a) Explain with neat sketch manufacturing of Cast iron in cupola furnace. 9
 (b) Draw and explain the stress strain diagram for brittle materials. 6

OR

- IV (a) Explain the following electrical properties of materials. (3×3=9)
 (i) Electrical conductivity (iii) Semi conductivity
 (ii) Electrical resistivity
 (b) Illustrate the X-ray radiographic test. 6

UNIT—II

- V (a) With the help of neat diagram, explain the working of a Cochran boiler. 9
 (b) Briefly explain how boilers are classified. 6

OR

- VI (a) Draw the line diagram and show the parts of a water level indicator used in boilers. 7
 (b) With simple line diagram explain the working of super heater in a boiler. 8

UNIT—III

- VII (a) Illustrate the working of a four stroke petrol engine. 9
 (b) Write the special features of a diesel engine. 6

OR

- VIII (a) Write any six comparisons between four stroke and two stroke cycle engines. 9
 (b) Draw the line diagram and show main components of an Internal combustion engine. 6

UNIT—IV

- IX (a) With neat diagram explain the working of a Hydroelectric Power plant. 9
 (b) What are the advantages and limitations of tidal power plants ? 6

OR

- X (a) With line sketch explain working of a low temperature solar power plant. 9
 (b) Write the advantages and limitations of nuclear power plants. 6