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A23 - 03773

Reg.No.....
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, APRIL- 2023

BASIC MECHANICAL ENGINEERING

[Maximum marks: 100] (Time: 3 Hours)

PART – A

Maximum marks : 10

I (Answer ***all*** the questions in one or two sentences. Each question carries 2 marks)

1. Define the mechanical property – creep.
2. Define boiler mountings.
3. Write the function of piston in an I.C engine.
4. Write the purpose of biological shielding in a Nuclear power plant.
5. State the function of cooling system in a Diesel engine power plant. (5 x 2 = 10)

PART – B

Maximum marks : 30

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

1. Define the following terms. (i) Hardness (ii) Ductility (iii) Malleability.
2. Discuss about high speed steel and its two types.
3. Distinguish wet saturated, dry saturated and super-heated steam.
4. Write any six comparisons between fire tube and water tube boiler.
5. Describe any six comparisons between 4-stroke and 2-stroke engine.
6. Briefly explain the crank and crankshaft of an I.C. engine and also draw a line diagram of a crankshaft for a 4-cylinder engine.
7. Write the disadvantages of nuclear power plant. (5 x 6 = 30)

PART – C

Maximum marks : 60

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

UNIT –I

III. (a) Illustrate with figure about the Brinell hardness test (8)

(b) Write the procedure for conducting impact testing. (7)

OR

IV.(a) Define the following terminologies related to stress-strain diagram.

(i) Elasticity (ii) Elastic limit (iii)Hooke's law (iv)Poisson's ratio (8)

(b) Classify plain carbon steel and write their chemical composition and uses. (7)

UNIT-II

V.(a) Write the function, location and construction with figure of a steam stop valve. (8)

(b) Classify steam boilers based on any seven criteria. (7)

OR

VI. (a) Sketch and explain the working of La-Mont boiler. (8)

(b) Explain with sketch about the working of air pre-heater in a boiler. (7)

UNIT-III

VII. (a) Classify I.C engines based on any eight criteria. (8)

(b) Write any seven comparisons between spark ignition and compressed ignition engine. (7)

OR

VIII.(a) Explain with sketch the working of a 4-stroke petrol engine. (8)

(b) Illustrate the constructional features of 2-stroke petrol engine. (7)

UNIT-IV

IX. (a) With line sketch explain the construction and working of a steam power plant. (8)

(b) Mention any seven advantages of diesel engine power plant. (7)

OR

X. (a) Sketch the layout of a hydroelectric power plant and explain its any four essential constructional features. (8)

(b) Write the merits and demerits of tidal power plant. (7)

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