

6240

BOARD DIPLOMA EXAMINATION, (C-16)
OCTOBER/NOVEMBER—2023
DEEE - THIRD SEMESTER EXAMINATION
GENERAL MECHANICAL ENGINEERING

Time : 3 Hours]

[Total Marks : 80

PART—A

3×10=30

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Define stress, strain and state their units. 1½+1½
2. Define Poisson's ratio and write its units. 3
3. Write the formula for polar moment of inertia for (a) solid shaft and (b) hollow shaft. 1½+1½
4. Find the power transmitted by a 75 mm diameter shaft rotating at 140 r.p.m. If the maximum shear stress is 60 N/mm². 3
5. Name any six important parts of an IC engine. 3
6. What are the functions of (a) Spark plug and (b) Fuel injector? 1½+1½
7. List out important boiler mountings. 3
8. Write the working principle of a steam turbine. 3
9. Write the classification of hydraulic pumps. 3
10. Write any three differences between centrifugal and reciprocating pump. 3

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PART—B

10×5=50

- Instructions :** (1) Answer *any five* questions.
(2) Each question carries **ten** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

- 11.** A bar of 25 mm diameter is subjected to a pull of 50 kN. The measured extension over a gauge length of 200 mm is 0.1 mm and the change in diameter is 0.0035 mm. Find the Poisson's ratio and the values of three elastic moduli. 10
- 12.** A solid shaft of 120 mm diameter transmits 80 kW power at 160 rpm. Taking modulus of rigidity as 0.85×10^5 N/mm². Determine the following. 10
- (a) Torque on shaft
(b) Maximum shear stress induced
(c) Angle of twist in a length of 800 mm
(d) Shear stress induced at a radius of 36 mm.
- 13.** Explain with a neat sketch about the working of 4-stroke CI engine. 5+5
- 14.** Explain the working of Zenith carburetor with a neat diagram. 5+5
- 15.** Describe the working of La-Mont boiler with a neat diagram. 5+5
- 16.** Write the differences between impulse and reaction steam turbine. 10
- 17.** Explain the working of single-stage centrifugal pump with a neat sketch. 5+5
- 18.** Explain the working of Kaplan turbine with a neat sketch. 5+5

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