23439

**C23-EE-405**

# 23439

**BOARD DIPLOMA EXAMINATION, (C-23)**

**MARCH/APRIL—2026**

**DEEE – FOURTH SEMESTER EXAMINATION**

GENERAL MECHANICAL ENGINEERING

*Time* : 3 hours ] [ *Total Marks* : 80

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## 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.** Draw the stress strain diagram for brittle material.

**2.** List out any three mechanical properties of the materials.

**3.** Write down the torsion equation and expand the terms.

**4.** Find out polar moment of inertia of 20 mm diameter shaft.

**5.** State the functions of (a) piston rings and (b) crank.

**6.** List out the applications of IC engines.

**7.** Differentiate between fire-tube and water-tube boilers.

**8.** Write the classifications of steam turbines.

**9.** List out main components of reciprocating pump.

**10.** Write any three differences between centrifugal pump and reciprocating pump.

## PART—B

10×5=50

**Instructions :** (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criteria for valuation is the content but not the length of the answer.

**11.** A stepped bar 600 mm long is subjected to axial pull of 38 kN. The bar has 25 mm diameter for 400 mm length and remaining is 20 mm diameter. Determine the total elongation of the bar take $E = 2.1 \times 10^5$ N/mm$^2$. 10

**12.** A hallow steel shaft transmits 650 kW power at 380 r.p.m. The maximum shear stress is 72 N/mm$^2$. Find the outside and inside diameter of the shaft. If the outside diameter is twice that of the inside diameter. 10

**13.** Explain the working of two stroke petrol engine with a neat sketch. 10

**14.** Differentiate between the petrol engine (S.I) and diesel engine (C.I). 10

**15.** *(a)* State the difference between boiler mountings and boiler accessories. 4

*(b)* Write the working principle of hydraulic reaction turbine. 6

**16.** Explain the working of Kaplan turbine with a neat sketch. 10

**17.** Explain the working principle of centrifugal pump with a neat sketch. 10

**18.** Describe the working of submersible pump with a neat sketch. 10

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