C-16/C-168-EE-406

5659

BOARD DIPLOMA EXAMINATION, (C-16/C-168)

MARCH / APRIL - 2019

DEEE - IV 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) Answer should be brief and straight to the point.

(4) Assume suitbale data whenever necessary.

1 Define (a) Ultimate stress (b) Factor of safety.

2 Write the relation between three elastic constants.

3 Define - torsional rigidity.

4 Write the formula for polar moment of inertia for solid shaft and hollow shaft.

5 Define terms : (a) Swept volume (b) Clearance volume

6 Write the functions of carburettor.

7 State the function of (a) Economiser (b) Safety valve.

8 Write the working principle of steam turbine.

9 What is a lubricant and state its functions.

10 What is priming ?

PART - B **10×5=50**

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

11 A bar of 16 mm diameter is subjected to a pull of 27 KN. The measured extension over a gauge length of 80mm is 0.12 mm and the change in diameter is 0.007 mm. Find the lateral strain, longitudinal strain, modulus of elasticity and poissions ratio.

12 A steel bar 350 mm long is 20 mm in diameter for 200mm of length and 15 mm diameter for the remainder. If a tensile load of 20 KN is applied on the bar, calculate the stresses in each section and the total elongation of the bar.

13 Determine the diameter of the solid shaft to transmit 450 KW of power at 100rpm. The maximum torque is 15% greater than mean torque. The allowable shear stress should not exceed 65 N/mm^2 and angle of twist in 3 m should not exceed 1°. Take $G = 0.82 * 10^5 N / mm^2$

14 Explain the working of a two stroke petrol engine with a line diagram.

15 Write short notes on : (a) carburetor (b) fuel injection pump.

16 Draw a neat sketch of Lamont boiler and explain its working.

17 Distinguish between impulse and reaction steam turbines.

18 Describe the working of Francis turbine with neat sketch.
