



C16-EE-304

6240

BOARD DIPLOMA EXAMINATION, (C-16)  
OCT/NOV—2018  
DEE—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.

**2.** A steel bar 2.4 m long and 20 mm diameter was stretched by 1.2mm under an axial pull of 30 kN. Determine stress, strain and Young's modulus.

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

**4.** A solid steel shaft 100 mm diameter transmits 80 kW at 160PRM. Find the torque transmitted by the shaft and maximum shear stress induced.

**5.** How are I.C Engines classified?

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6. State the functions of:

(a) Carburettor

(b) Governor

7. What is the function of boiler?

8. What is the steam turbine? How is it classified?

9. What are the differences between single-stage and multistage centrifugal pumps?

10. Write the working principle of hydraulic turbine.

**PART—B**

5×10=50

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

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

(3) The answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. A mild steel bar has a diameter of 40 mm and is 500 mm long. A tensile load of 70 kN is applied longitudinally. Calculate the elongation of the bar, the change in diameter and the change in volume. Take  $E = 2 \times 10^5 \text{ N/mm}^2$  and Poisson's ratio as 0.3.

12. A solid shaft of 150 mm diameter transmits 100 kW power at 250 RPM. Taking modulus of rigidity as  $0.85 \times 10^5 \text{ N/mm}^2$ . Determine:

(a) Angle of twist in a length of 600 mm;

(b) Shear stress at a radius of 45 mm.

13. Explain the working of four-petrol engine with neat sketch.

- \* 14. Describe the working of fuel injection pump with governor with a neat sketch.
15. Explain the working of LaMont boiler with a neat sketch.
16. Describe the working principle of steam turbine with a neat sketch.
17. Explain the working principle of Francis turbine with a neat sketch.
18. Describe the working of submersible pump with neat diagram.

A.A.N.M & V.V.R.S.R POLYTECHNIC GUDLAVALLERU, KRISHNA...AP

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