6240

C16–EE–304

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BOARD DIPLOMA EXAMINATION, (C–16)

OCT/NOV—2018

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.

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

3. Write the formula for polar moment of inertia for solid shaft and hallow 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?

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 10^5 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 10^5N / 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.

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