C16-EE–304

6240

BOARD DIPLOMA EXAMINATION, (C-16)

MARCH/APRIL—2021

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 Young's modulus and write the relation between Young's modulus and shear modulus.

2. Define the following terms :

(a) Factor of safety

(b) Thermal stresses

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 160 rpm. Find the torque transmitted by the shaft and maximum shear stress induced.

5. State the functions of the following :

(a) Carburettor

(b) Governor

6. Write any three differences between two-stroke and four-stroke engine.

7. List out various boiler accessories.

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

9. What is Primming?

10. What is hydraulic turbine? List the various parts of a hydraulic turbine.

PART—B

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 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 $E = 2 \times 10^5$ N/mm^2 and Poisson's ratio as 0·3. 10

12. Select a suitable diameter of a steel shaft to transmit 100 kW of power at 240 rpm if the allowable stress is not to exceed 70 N/mm^2 and twist not to exceed 1° in a length of 3 m. Take $G = 0{\cdot}8 \times 10^5$ N/mm^2. 10

13. Explain the working of two-stroke SI engine with a neat sketch. 6+4

14. Explain the working of fuel injection pump with a neat sketch. 6+4

15. Explain the working of La Mont boiler with a neat sketch. 6+4

16. Write the differences between Impulse and Reaction steam turbine. 10

17. Explain the working of Kaplan turbine with a neat sketch. 6+4

18. Describe the working of submersible pump with neat diagram. 6+4

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