



C14-EE-306

4248

BOARD DIPLOMA EXAMINATION, (C-14)
SEPTEMBER/OCTOBER - 2020
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 the terms (a) stress and (b) strain.
2. Define factor of safety.
3. Define polar moment of inertia.
4. Define torsion and torsional rigidity.
5. List any six parts of an IC engine.
6. What are the functions of a carburettor?
7. State the principle of water tube boiler.

- * 8. List any three boiler mountings and three accessories.
9. State the properties of lubricants.
10. Write the applications of centrifugal 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 criterion for valuation is the content but not the length of the answer.

11. A bar 900 mm long is 60 mm diameter for 500 mm of length and 40 mm diameter for remaining 400 mm of length. An axial load of 50 kN is acting on the bar. If $E = 2 \times 10^5 \text{ N/mm}^2$, determine (a) stress in each section and (b) total elongation of the bar.

12. A mild steel bar has a diameter of 20 mm and 300 mm long. A tensile load of 64 kN is applied longitudinally. Calculate (a) elongation of the bar, (b) change in diameter and (c) change in volume. Take $E = 2 \times 10^5 \text{ N/mm}^2$ and Poisson's ratio as 0.25.

13. Find the diameter of solid circular shaft required to transmit 500 kW at 200 r.p.m. It is specified that the maximum shear stress must not exceed 50 N/mm^2 and angle of twist must not exceed 2 degrees in a length of 2 m, take $G = 0.8 \times 10^5 \text{ N/mm}^2$.

14. Draw and explain the working of 4-stroke petrol engine.

15. Explain the working of Zenith carburettor with a neat sketch.

- * **16.** Describe the working of Cochran boiler with a neat sketch.
- 17.** Write the differences between impulse turbine and reaction turbine.
- 18.** Explain the working of centrifugal pump with a neat sketch.

030 030 030 030 030

*