C14-EE–**306**

4248

BOARD DIPLOMA EXAMINATION, (C-14)

MARCH/APRIL—2021

DEEE - THIRD SEMESTER EXAMINATION

GENERAL MECHANICAL ENGINEERING

Time : 3 hours]   [*Total Marks* : 80

PART—A

4×5=20

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

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

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Define *(a)* stress and *(b)* strain.

2. Define Hooke's law and express it mathematically.

3. State the functions of shaft.

4. List the standard sizes of shafts.

5. How are IC engines classified?

6. Name the important parts of an IC engine.

7. List out popular boiler mountings.

8. Classify steam turbines.

9. Name the components of centrifugal pump.

10. Explain the function of bearings.

PART—B

15×4=60

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

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

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

11. Draw the stress-strain diagram for mild steel (ductile material) and represent salient points on it.

12. A bar 400 mm long is 60 mm in diameter for 175 mm of its length; 40 mm in diameter for the next 125 mm length; and 30 mm in diameter for the remaining length and is subjected to a tensile load of 140 kN. Claculate the maximum and is minimum stresses produced in it and the total elongation. Take Young's modulus $E = 2 \times 10^5 \, N/mm^2$.

13. Select suitable diameter of a solid shaft to transmit 90 kW power at 300 r.p.m. The allowable shear stress should not exceed 65 N/mm².

14. Explain the working cycle of a 4-stroke SI engine with the help of line sketches.

15. Explain the working cycle of a 4-stroke CI engine with neat sketches.

16. Explain fire-tube and water-tube boilers.

17. Explain the working of an impulse turbine with a neat sketch.

18. Explain the working of centrifugal pump.

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