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C16-EE-304

6240

BOARD DIPLOMA EXAMINATION, (C-16)

JUNE/JULY—2022

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 linear strain and lateral strain. State the relation between them.
2. Draw the stress strain diagram for mild steel and locate the salient points on it.
3. Define torsional rigidity and torsional stiffness.
4. How shear stress varies radially in circular shafts subjected to twisting moment?
5. State the functions of (a) spark plug and (b) fuel injector.
6. Distinguish between diesel engine and petrol engine.
7. Write three important differences between fire tube and water tube boilers.
8. Write working principle of steam turbine.
9. Write the disadvantages of submersible pumps.
10. Write the working principle of hydraulic turbine.

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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 stepped copper bar is 30 mm in diameter for a length of 150 mm and for remaining length of 100 mm its diameter is 20 mm. A tensile load is applied to the bar so that the maximum stress induced in the material is 50 N/mm². Determine the magnitude of the load and calculate the total extension of the bar. For copper $E = 1.03 \times 10^5$ N/mm². 10
- 12.** A hollow shaft is required to transmit 400 kW at 240 r.p.m. The maximum torque is 20% greater than mean. The permissible stress is 60 N/mm². The twist in a length of 4 m is not to exceed 1°. The ratio between inner and outer diameter is 2/3. Calculate inner and outer diameter of the shaft. Take modulus of rigidity as 80 kN/mm². 10
- 13.** Explain the working of four-stroke CI engine with a neat sketch. 6+4
- 14.** Explain the working of Zenith carburetor with a neat sketch. 6+4
- 15.** List and explain various accessories used in steam boilers. 3+7
- 16.** Explain the construction and working of Parson's reaction turbine. 6+4
- 17.** Explain construction and working of Pelton wheel with a neat sketch. 6+4
- 18.** Explain the working of single stage centrifugal pump with a neat sketch. 6+4

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