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C16-EE–304

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BOARD DIPLOMA EXAMINATION, (C-16)

AUGUST/SEPTEMBER—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 Hooke's law and write the equation.
2. A rod of 20 mm diameter of length 1·5 m is subjected to an axial pull of 40 kN. If Young's modulus E = 1×10^5 N/mm^2, calculate stress, strain and elongation.
3. Write the classification of shafts.
4. Write the functions of shafts.
5. State any three differences between diesel engine and petrol engine.
6. State the functions of Carburettor.
7. List the factors to be considered for selecting a steam boiler.
8. How are the steam turbines classified?
9. Write the principle of operation of centrifugal pump.
10. What is hydraulic turbine?

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PART—B

10×5=50

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. Draw the stress-strain diagram for mild steel and explain the salient features of it.

12. A hollow shaft is required to transmit 400 kW at 240 r.p.m. The maximum torque is 15% greater than mean. The permissible shear stress is 65 N/mm^2. The angle of twist over a length of 4 m is not to exceed 15° and ratio of inner and outer diameter is 2/3. Calculate inner and outer diameter of the shaft. Take modulus of rigidity G = 80 kN/mm^2.

13. Explain the working principle of a 4-stroke diesel engine with line diagram.

14. Describe the working of a fuel injection pump with a neat sketch.

15. What is modern high pressure boiler? Describe the working of a La Mont boiler with a neat sketch.

16. Differentiate between impulse and reaction turbine.

17. Explain the working of a Pelton wheel with a neat sketch.

18. Explain the working of submersible pump with a neat sketch.

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