6240

BOARD DIPLOMA EXAMINATION
JUNE - 2019
DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING
GENERAL MECHANICAL ENGINEERING
THIRD SEMESTER EXAMINATION

Time: 3 Hours **Total Marks: 80**

PART - A (3m x 10 = 30m)

Note 1:Answer all questions and each question carries 3 marks

2:Answers should be brief and straight to the point and shall not exceed 5 simple sentences

1. Define stress and list different types of stresses
2. Define linear strain and write mathematical expression for it
3. How shear stress varies radially in circular shafts subjected to twisting moment
4. List the standard sizes of shafts
5. How I.C. engines are classified
6. Distinguish between S.I engine and C.I engine
7. Write the working principle of a fire tube boiler
8. Write the working principle of a steam turbine
9. State the working principle of hydraulic reaction turbine
10. How hydraulic pumps are classified

PART - B (10m x 5 = 50m)

Note 1:Answer any five questions and each question carries 10 marks

2:The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer

11. A steel bar 350 mm long has 20 mm in diameter for 200 mm of length and 15 mm diameter for the remainder. If a tensile load of 20 kN is applied on the bar, calculate the stresses in each section and the total elongation of the bar. Take $E = 2 \times 10^5$ N/mm^2
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/mm^2. 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/mm^2
13. Draw the line sketches of a 2-stroke petrol engine and explain its working cycle

14. Explain the working of a fuel injection pump with governor using a neat sketch
15. List and explain various accessories used in steam boilers
16. Explain the working of an impulse turbine with a neat sketch
17. Explain the working of Kaplan turbine with a neat sketch
18. Describe the working of a jet pump with a neat sketch

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