

6240
BOARD DIPLOMA EXAMINATION
MARCH/APRIL - 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 shear modulus and write the relation between shear modulus and modulus of elasticity**
2. **Draw the stress – strain diagram for mild steel (ductile material) and indicate salient points on it**
3. **What is a shaft? List the materials used for manufacturing the shaft**
4. **Define power. Write the formula for power transmitted by the shaft**
5. **State any three differences between 2-stroke and 4-stroke engines**
6. **What are the functions of (a) spark plug (b) Fuel injector**
7. **Write three important differences between fire tube and water tube boilers**
8. **Give the classification of steam turbine based on action of steam with example for each one**
9. **Write disadvantages of submersible pumps**
10. **What is a hydraulic turbine? List the parts of a hydraulic turbine**

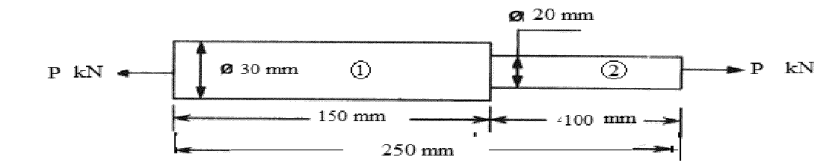
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Note 1: Answer any five questions and each question carries 10 marks

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

11. ^{*} A copper bar 150 mm long is 30 mm in diameter and for remainder 100 mm of length, 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



12. Find the diameter of solid circular shaft required to transmit 750 kW at 250 r.p.m. It is specified that the maximum shear stress must not exceed 50 N/mm² and the angle of twist must not exceed 2° in a length of 2 m. Take $G = 0.8 \times 10^5$ N/mm²
13. Describe the parts of a Zenith carburetor with a neat sketch
14. Draw the line sketches of a 4-stroke petrol engine and explain its working cycle
15. List and explain various accessories used in steam boilers
16. Explain the working of De-Laval 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