C16-**EE-304**

6240

BOARD DIPLOMA EXAMINATIONS

SEPTEMBER/OCTOBER - 2020

DEEE – THIRD SEMESTER

GENERAL MECHANICAL ENGINEERING

Time: 3 hours Max. Marks: 80

PART – A **3 X 10 = 30**

Instructions: *1. Answer **all** questions.*
*2. Each question carries **Three** Marks.*
3. Answer should be brief and straight to the point and should not exceed Five simple sentences.

1. Define the term linear strain and lateral strain.
2. Define factor of safety.
3. Find the power transmitted by a 75 mm diameter shaft rotating at 140r.p.m. if the maximum shear stress is 60 N/mm^2.
4. Write the torsion equation and write the units of each term in the equation.
5. State any three differences between 2-stroke and 4-stroke engines.
6. State the functions of a spark plug.
7. List the various mountings used in a steam boiler.
8. Write the working principle of a steam turbine.
9. How the pumps are classified.
10. Differentiate between Pelton Turbine and Francis Turbine.

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PART – B 5 X 10 = 50

Instructions: *1. Answer any **Five** questions*
*2. Each question carries **TEN** Marks.*
3. Answer should be comprehensive and Criteria for Valuation is the content but not the length of the answer.

11. A bar of 25 mm diameter is subjected to a pull of 50 KN. The measured extension on gauge length of 200 mm is 0.08 mm and the change in diameter is 0.0028 mm. Then calculate the poisson's ratio and the values of three moduli (Young's Modulus, Modulus of rigidity & Bulk Modulus).

12. Determine the diameter of a solid shaft used to transmit 500 kW at 150 r.p.m. The maximum torque is 20% greater than mean torque. The allowable shear stress should not exceed 65 N/mm^2 and the angle of twist over a length of 3 m is 1^0. Take Modulus of Rigidity, G = 0.84 X 10^5 N/mm^2.

13. Explain the working principle of a four stroke petrol engine with a line diagram.

14. Explain the working of Zenith carburetor with a neat sketch.

15. List out the different boiler accessories used to improve the efficiency of a boiler, and explain the functions of any four of them.

16. Explain the working of a De Laval turbine with a neat diagram.

17. Explain the working of a Francis turbine with a neat sketch.

18. What is a hydraulic pump? Explain the working of a double acting reciprocating pump with a neat sketch.