3505

BOARD DIPLOMA EXAMINATION, (C-09)

MARCH/APRIL - 2019

DIPLOMA IN MECHANICAL ENGINEERING

THERMAL ENGINEERING-II

FOURTH SEMESTER EXAMINATION

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

PART - A (10 x 3 = 30 Marks)

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. Find the Brake power of an I.C engine when the speed is 1000RPM and the brake torque is 750N-m.
2. Define "Heat engine".
3. Write any three differences between axial flow and radial flow compressors.
4. What are the different fuels used in jet Propulsions.
5. Write the objectives of vehicle suspension.
6. List the factors to be considered for the selection of a boiler.
7. Write the advantages of using accessories in a steam boiler.
8. Draw H-Φ diagram for frictional adiabatic flow of steam through a Steam Nozzle.
9. Write the working principle of a reaction turbine.
10. Find the maximum efficiency and optimum blade speed ratio of a De Laval turbine where the nozzle angle is 20^0.

PART - B (5 x 10 = 50 Marks)

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. Explain the working of battery - coil ignition system with the help of a line diagram.
12. Explain the working principle of single stage single acting reciprocating air compressor with a line diagram.
13. Explain the working principle of constant pressure gas turbine with help of a neat sketch.
14. Describe the working principle of friction clutch with the help of neat sketch.
15. The following observations were made in boiler trial: coal used 250 kg of calorific value 29,800 kJ/kg, water evaporated 2000kg, and steam pressure 12 bar, dryness fraction of steam 0.9 and feed water temperature 35^0C. Calculate the equivalent evaporation from and at 100^0C per kg of coal and the efficiency of the boiler.
16. A convergent divergent nozzle for a steam turbine has to deliver 320kg of steam per hour under a supply condition of 10bar, dry and saturated and a back pressure of 0.15bar. Initial velocity of steam is 140m/s. Neglecting friction, find throat and outlet areas.
17. Explain pressure compounding of steam turbine with a neat sketch.

18A. Explain quality governing method of an IC engine.

B. Derive an expression for work done and power developed by an Impulse turbine.