5686

C16-M-403

5686

BOARD DIPLOMA EXAMINATION, (C-16)
OCTOBER/NOVEMBER-2018
DME - FOURTH SEMESTER EXAMINATION

HEAT POWER ENGINEERING

Time : 3 Hours] [Total Marks: 80

PART-A

3X10=30

Instructions : 1. Answer **All** questions.
2. Each question carries **Three** marks.
3. Answer should be brief and straight to the point and shall not exceed five simple sentences. Use of steam tables is permitted

1. State the uses of compressed air.
2. State any three advantages of gas turbines over IC engines.
3. List out the fuels used in jet propulsion.
4. Define the following terms
   (a) Latent heat of vaporization (b) Internal latent heat of steam
5. List any six boiler mountings.
6. Define (a) Equivalent evaporation (b) Boiler efficiency.
7. Write an expression for critical ratio and name the terms in it.
8. State the differences between impulse turbine and reaction turbine.
9. Define the terms (a) Bleeding (b) Reheating
10. State the functions of steam condenser.

PART-B

10X5=50

Instructions :

1. Answer any **Five** questions.
2. Each question carries **ten** marks.
3. Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer

11. Explain the working principle of centrifugal compressor with a neat sketch.
12. (a) State the applications of gas turbines.

    (b) Explain the working of Ramjet engine with a neat sketch.
13. 2 kg of steam at a pressure of 700kPa and 0.7 dry is heated at constant pressure until the final temperature is 200^0C. How much heat is added and what is the change in internal energy. Assume specific heat for superheated steam as 2.1 kJ/kgK.
14. Explain the working principle of Benson boiler with a neat sketch.
15. Dry saturated steam at 9 bar expands irentropically through a convergent divergent Nozzle to a pressure of 2 bar. The cross sectional area of throat is 475 mm^2. Find the mass of steam passing through Nozzle per second.
16. Steam with a velocity of 600m/s enters the row of blades of an impulse turbine. The blade angel at entry is 25^0. The mean blade speed is 250m/s. The exit angle of the blade is 30^0. There is 10% loss in relative velocity due to friction in the blades. Determine
    a) The nozzle angle.
    b) Work done per kg of steam
    c) Diagram efficiency and
    d) Axial trust per kg of steam
17. (a) State the differences between jet condenser and surface condenser

    (b) Explain the working of Air pump with a sketch.
18. (a) Define draught. State the differences between natural draught and artificial draught.

    (b) What is the necessity of governing in a turbine? List out the methods of governing.

****