

**6448**

**BOARD DIPLOMA EXAMINATION, (C-16)**

**MAY/JUNE—2023**

**DME - FOURTH SEMESTER EXAMINATION**

**THERMAL ENGINEERING—II**

*Time : 3 Hours ]*

*[ Total Marks : 80*

**PART—A**

*3×10=30*

- Instructions :** (1) Answer **all** questions.  
(2) Each question carries **three** marks.  
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Differentiate between wet steam and superheated steam.
2. List out various boiler mountings.
3. What are the different methods of measurement of quality of steam?
4. Draw P-V and T-S diagrams for isothermal process.
5. What is the effect of friction on steam flow through nozzle?
- \* 6. Write the differences between impulse turbine and reaction turbine.
7. Why is compounding necessary for a steam turbine?
8. What are the advantages of gas turbine over steam turbine?
9. Write the differences between turbojet and turbo propeller engine.
10. What are the advantages of multi plate clutch over single plate clutch?

\*

## PART—B

10×5=50

- Instructions :** (1) Answer *any five* questions.  
(2) Each question carries **ten** marks.  
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

- 11.** Find the specific volume, enthalpy, internal energy and entropy of wet steam at 15 bar pressure and dryness fraction 0.9.
- 12.** Explain the working of Benson boiler with a neat sketch.
- 13.** Steam is compressed hyperbolically from a dry saturated state at 1 bar to 14 bar pressure. Determine (a) final condition of the steam and (b) heat transferred through cylinder walls per kg of steam.
- 14.** A superheated steam expands adiabatically at a pressure of 12 bar and 250 °C in a nozzle and leaves at a pressure of 2 bar. If the mass flow rate is 10 kg/min, neglecting initial velocity of steam. Determine (a) throat area, (b) exit area and (c) final velocity of steam.
- 15.** In a simple impulse turbine, the nozzle delivers 25 kg of steam per second. The nozzle angle is 15°, the steam issues from the nozzle with a velocity of 900 m/s. The steam blade velocity is 350 m/s and the inlet and outlet angles of the blades are equal. Neglecting the friction, calculate (a) the blade angles and (b) power developed.
- 16.** Explain the working of constant volume gas turbine with a neat sketch.
- \* **17.** Write the working of rocket engine with a neat sketch.
- 18.** Explain the construction and operation of a sliding mesh gearbox.

★ ★ ★

\*