

B.E. Mechanical Engineering Seven Semester
ME7011 - Elective-I : Power Plant Engineering

P. Pages : 2

Time : Three Hours



GUG/W/18/1834

Max. Marks : 80

- Notes :
1. All questions carry equal marks.
 2. Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.
 3. Illustrate your answers wherever necessary with the help of neat sketches.
 4. Discuss the reaction, mechanism wherever necessary.
 5. Mobiles are strictly prohibited.
 6. Use of Logarithmic tables, Steam tables is permitted.

1. a) Discuss briefly the outplant Coal handling system with individual merits and demerits. **7**
b) Discuss in brief the different types of impurities present in water. **6**
c) State the advantages of Pulverised fuel firing. **3**

OR

2. a) Classify the different types of boilers? Explain briefly with neat sketch high pressure Boiler with its advantages & Disadvantages. **10**
b) Explain briefly with neat sketch. The natural draft Hyperbolic cooling tower, also state its advantages and disadvantages. **6**
3. a) Explain briefly with neat sketches the different types of ash handling systems. **10**
b) Discuss in brief with neat sketches the different types of mechanical type dust collectors. **6**

OR

4. a) Discuss briefly with neat sketches the pressure compounding. (Roteau) and velocity compounding (Curtis) steam turbines. **8**
b) The following readings were taken during a test on a surface condenser. **8**
Mean condenser temperature = 35°C,
Hot well temp. = 30°C;
condenser vacume = 69 cm Hg;
barometer reading 76 cm Hg;
Condensate collected 960 Kg/hr.
Cooling water enters at 20°C and leaves at 32.5°C;
Flow rate being 37,500 Kg/hr;
 $h_{fg} = 2418.8 \text{ kJ/kg}$
calculate
a) Mass of air present per cubic meter of condenser and
b) Condenser efficiency.
5. a) Explain briefly with neat sketch the different component of a Nuclear Reactor and their function in the working of reactor. **10**

- b) Discuss briefly about Radiation shielding and shielding materials. 6

OR

6. a) Explain with neat sketch the working of 'CANDU' Reactor also write its advantages and disadvantages with other type of Reactors. 10

- b) List the different types of Nuclear waste and its disposal methods. 6

7. a) Discuss the terms 'Hydrograph' 'Flow duration curve' and 'mass curve' in brief. 8

- b) What are the different factors to be considered while selecting a site for Hydroelectric power plant. 8

OR

8. a) Discuss with neat sketch the working of runoff river plant. With its advantages and disadvantages. 9

- b) Explain combine operation of Hydroelectric power plant with steam power plant. also states its advantages and disadvantages. 7

9. a) What are the different forms of waste heat recovery equipment's. 4

- b) Explain briefly with neat sketches the different types of compressed air storage plant. 12

OR

10. Write short notes on.

- a) Load curves. 5

- b) Tariff Analysis. 6

- c) Economics of combine power plant. 5
