

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022
 Seventh Semester
Electronics and Instrumentation Engineering
EI8092 - THERMAL POWER PLANT INSTRUMENTATION
 (Regulations 2017)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

- | | <i>Marks,
K-Level, CO</i> |
|---|-------------------------------|
| 1. What is meant by saturated steam? | 2,K1,CO1 |
| 2. Mention any two advantages and disadvantages of Hydro-electric plant. | 2,K1,CO1 |
| 3. What are the sensors used for measurement of steam pressure and steam temperature? | 2,K1,CO2 |
| 4. Mention the applications of O ₂ Analyzer. | 2,K1,CO2 |
| 5. Define Draught. | 2,K1,CO3 |
| 6. What is meant by Soot blowing and mention its types? | 2,K1,CO3 |
| 7. How the steam temperature is controlled in fire side? | 2,K1,CO4 |
| 8. Give the methods of combustion control. | 2,K1,CO4 |
| 9. List out the parts in turbine. | 2,K1,CO5 |
| 10. Give the difference between impulse and reaction turbine. | 2,K1,CO5 |

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) With neat diagram explain the building blocks of a thermal power plant. 13,K2,CO1
- OR**
- b) Explain how power is generated using wind energy with a neat sketch. 13,K2,CO1
12. a) With neat sketch describe about the functioning of any two steam pressure measurement devices. 13,K2,CO2
- OR**
- b) Name the important instruments used in pollution monitoring and describe any one in detail. 13,K2,CO2

13. a) Draw the SAMA diagram for a boiler air-fuel ratio control process in feedback and feed forward configuration. 13,K2,CO3

OR

b) Why soot is formed? Explain in detail the working of a soot blower. 13,K2,CO3

14. a) (i) Explain in detail with neat diagram regarding main stream temperature control. 7,K2,CO4

(ii) Explain in detail with neat diagram regarding reheat steam temperature control. 6,K2,CO4

OR

b) Why boiler metal temperature measurement is important? Explain any two types of boiler metal temperature measurement devices. 13,K2,CO4

15. a) Explain the mechanisms adopted to control the steam pressure and temperature at the turbine inlet. 13,K2,CO5

OR

b) Explain with suitable diagrams non-contact type speed measurement methods in turbine. 13,K2,CO5

PART - C (1 × 15 = 15 Marks)

16. a) Explain how the distributed control system in power plants plays a major role in achieving the desired control with a neat diagram. 15,K2,CO4

OR

b) Elaborate the control methodology for the control of pressure/flow, temperature and tank level in a lube oil system. 15,K2,CO5