

Code No: 07A7EC34

R07

Set No. 2

IV B.Tech I Semester Examinations, MAY 2011

POWER PLANT INSTRUMENTATION

**Common to Instrumentation And Control Engineering, Electronics And
Instrumentation Engineering**

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. Why drum pressure is to be monitored? Explain the methods of drum pressure measurement in detail. What factors govern the choice of pressure sensor? [16]
2. Explain in brief about the pollution monitoring equipments used in power plants? [16]
3. Briefly Explain how power is generated in a Solar power plant by different methods. [16]
4. Describe in detail the salient features of temperature sensors used in Power plants. [16]
5. Differentiate between the Lubricating oil temperature control and Hydrogen cooling system in power plants in detail? [16]
6. Describe the resonance method of measuring frequency using parallel T and bridge T networks. [16]
7. Describe with a neat sketch, the principle and constructional details of B.F.P recirculation control? [16]
8. Write in detail about Hydrogen purity meter with its function and applications in power plants? [16]

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Set No. 4

IV B.Tech I Semester Examinations, MAY 2011

POWER PLANT INSTRUMENTATION

Common to Instrumentation And Control Engineering, Electronics And
Instrumentation Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Explain how power is generated in a hydroelectric plant. [16]
2. What is a current transformer? Explain how C.T. can be used to extend the range of a wattmeter. [16]
3. Write short notes on the following:
 - (a) Head type flow meter to measure the feed water flow rate.
 - (b) Excess air control system used in power plants. [16]
4. What is the basic principle of working of Paramagnetic Oxygen analyzer. Explain the same with necessary diagrams. [16]
5. Explain in detail with neat sketches main and reheat steam temperature control system used in power plants? [16]
6. Write short notes on the following:
 - (a) Furnace Draft and Excessive air control
 - (b) By Pass Damper
 - (c) Super Heater. [16]
7. What are the major pollutants released from partial combustion of fuels? Explain in detail smoke density measurement with respect to its monitoring? [16]
8. How the shell temperature monitored in Lubricating oil temperature control with respect to generator cooling system? [16]

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R07

Set No. 1

IV B.Tech I Semester Examinations, MAY 2011

POWER PLANT INSTRUMENTATION

Common to Instrumentation And Control Engineering, Electronics And
Instrumentation Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Describe the principle of liquid chromatography? Explain with schematic diagram? [16]
2. Explain how the air flow rate is measured in a power plant with a relevant diagram. [16]
3. Explain the role of computers in power plants in detail? [16]
4. Clearly distinguish mechanical draft and natural draft. [16]
5. Explain briefly
 - (a) Wien bridge circuit for the measurement of frequency.
 - (b) Principle of operation of electrical resonance type frequency meter. [16]
6. Explain the constructional details, principle & working of a paramagnetic oxygen analyzer used in power plants. Also explain how the data from the paramagnetic oxygen analyzer can be used to increase the performance of power plants. [16]
7. Write a short account of the measuring devices used for turbine supervisory control and Explain how the turbine is protected against shell temperature? [16]
8. Explain with necessary diagrams the control of different important parameters in a boiler process. [16]

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R07**Set No. 3**

IV B.Tech I Semester Examinations, MAY 2011

POWER PLANT INSTRUMENTATION**Common to Instrumentation And Control Engineering, Electronics And
Instrumentation Engineering****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions
All Questions carry equal marks**

1. Explain the constructional details, principle & working of a Thermal conductivity Analyzer used in power plants? Also explain how the data from the thermal conductivity analyzer can be used to increase the performance of power plants. [16]
2. Write a short note on the following:
 - (a) Condenser Vacuum control
 - (b) Generator cooling system. [8+8]
3. What is re-heater? Explain any one of them in detail. [16]
4. Explain the importance of instrumentation in thermal power plants. [16]
5. Write short notes on the following:
 - (a) Two wattmeter method of measuring three phase power.
 - (b) Sources of error in electrodynamic wattmeter. [16]
6. What is a Spray recirculation control? Explain the same with necessary sketches? [16]
7. Explain how steam temperature and feed water temperature measurements are performed. What are the sources of error in measurement? [16]
8. Explain different methods adopted to control the thermal pollution with regard to nuclear radiation emitted in an area? [16]
