Code :R7321305

III B.Tech II Semester(R07) Regular & Supplementary Examinations, April/May 2011
POWER PLANT INSTRUMENTATION & CONTROL
(Electronics & Control Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE questions
All questions carry equal marks

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1. Describe a solar power generation with the help of block diagram.
2. Mention the types of frequency meters and explain the principle of operation of electrical resonance type with a neat diagram.
3. Explain how steam temperature and feed water temperature measurements are performed. What are the sources of error in measurement?
4. Explain in detail with neat sketches furnace draft control system used in power plants.
5. Explain in detail with neat sketches hot well & deaerator level column control system used in Power plants.
6. What is lubricating oil system? Explain its controls.
7. Describe with a neat sketch, The principle and constructional details of thermal conductive type Oxygen analyzer.
8. Explain how conductivity of liquids can be measured? Explain in detail with a neat diagram.

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1. Explain how power is generated in wind mills.
2. (a) What is a low power factor meter? Explain the salient features of it with a neat diagram.
   (b) Explain the principles of two watt meter method of measuring three phase power with a neat diagram. draw also the phasor diagram under balanced load condition.
3. (a) Explain the principle of head type flow meter to measure the feed water flow rate with a Suitable diagram.
   (b) What is a rotameter? Can it be used to control the flow rate? How the viscosity effects of the fluid can be compensated.
4. Explain in detail with neat sketches Bypass damper control system used in power plants.
5. Explain in detail with neat sketches spray & gas recirculation control system used in Power plants.
6. Explain the necessity of cooling of generator. Describe the method of hydrogen coolant Purity measurement in detail.
7. What are paramagnetic and diamagnetic gases? Give examples. Explain the principle of Operation of a paramagnetic oxygen analyzer with a neat diagram.
8. Draw the schematic circuit diagram of a null balance PH meter and explain the principle of Operation.

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1. Explain The difference between thermal power plant and Nuclear power plant.
2. (a) Draw the circuit diagram of wien bridge and explain how it can be used for the measurement of Frequency.
   (b) Design a wien bridge circuit for the measurement of frequency in the range 0-1500 HZ. The bridge excitation is 0-5 V A A.C sinusoidal signal.
3. Describe with a neat diagram, the principle and working of a smoke density meter.
4. Explain in detail with neat sketches air fuel ratio control system used in power plants.
5. Explain in detail with neat sketches pulverizer control system used in power plants.
6. Explain in detail how turbine temperature is monitored and controlled.
7. Explain in detail with neat sketches spectrum analyzer.
8. Define chromatography. How do you classify chromatography ? Explain the principle of gas Chromatography.

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1. What is the basic principle involved in nuclear power generation. Explain in detail.
2. What is a trivector meter ? Describe the principle and working of a trivector meter With a neat diagram.
3. What is meant by super critical pressure cycle ? Describe the salient features of it.
4. Explain in detail with neat sketches control of main header pressure system used in power Plants.
5. Explain in detail with neat sketches BFP recirculation control system used in power plants.
6. Write a short account of the measuring devices used for turbine supervisory control and Explain how the turbine is protected against over speed.
7. Explain how hydrogen purity can be measured by using hydrogen purity meter.
8. Explain with neat functional block diagram about fuel analyzer.

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