Code No: RR322201 **Set No. 1**

III B.Tech II Semester Supplementary Examinations,
November/December 2005
POWER PLANT INSTRUMENTATION
(Instrumentation & Control Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. Explain how power is generated in Wind mills. [16]
2. Explain the importance of instrumentation in nuclear power plant. [16]
3. (a) What is meant by transfer function of an instrument? Explain the principle and operation of electrodynamometer ammeter with a neat diagram. How it operates on A.C. and D.C.?
   (b) A basic d'Arsonval movement with internal resistance of 100 Ω and full scale current of 1mA is to be converted into a multirange ammeter with ranges 0-10mA, 0-50mA, 0-100mA and 0-250mA. Design the multirange ammeter and draw the circuit arrangement.
   (c) What are the sources of error in measurement of current using moving iron ammeter? How the errors can be compensated? [8+4+4]
4. Why steam generator outlet temperature is to be measured and controlled? Explain in detail the choice of sensors and the method of measurement. [16]
5. With the help of neat sketches. Explain fuel and ash handling system used in power plants? [16]
6. With the help of neat sketches. Explain fuel dust collection system used in power plants? [16]
7. Discuss the measurements needed for the determination of condenser performance. [16]
8. What is the principle of liquid chromatography? Explain the instrumentation involved in liquid chromatography with applications. [16]

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Code No: RR322201 **Set No. 2**

III B.Tech II Semester Supplementary Examinations,
November/December 2005
POWER PLANT INSTRUMENTATION
(Instrumentation & Control Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. Explain how power is generated in thermal power plant. [16]
2. Explain the Controllable parameters in Hydroelectric power plant. [16]
3. (a) Discuss in detail the methods of damping employed in electromechanical indicating instruments.
   (b) What is a current transformer? Explain how C.T. can be used to extend the range of a wattmeter. [10+6]
4. Discuss the principle of operation of steam flow rate measurement. [16]
5. Explain the criterion for selection of fan for draft systems in detail? [16]
6. Explain in detail with neat sketches hotwell & deaerator level column control system used in power plants? [16]
7. Explain how the turbine is protected from severity of the vibrations. [16]
8. (a) Describe the principle and working of a smoke detector with a neat sketch.
   (b) Explain the principle of CO monitor with a neat diagram. [8+8]

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Code No: RR322201 **Set No. 3**

III B.Tech II Semester Supplementary Examinations,
November/December 2005
POWER PLANT INSTRUMENTATION
(Instrumentation & Control Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. Give a brief description of Nuclear power generation scheme. [16]
2. Explain the controllable parameters in tidal mill. [16]
3. Describe one wattmeter method of measuring 3 phase reactive power with a neat diagram. Assuming balanced load condition, draw the phasor diagram. [16]
4. What is a pyrometer? What are the types of pyrometers? Explain the principle and working of any one type with a neat sketch. [16]
5. Explain in detail with neat sketches Drum level control system used in power plants? [16]
6. What is reheater. Explain any one of them in detail. [16]
7. How the performance of turbine is monitored . Explain. [16]
8. Discuss in detail the method of monitoring CO_2 and NO_2 present in flue gases with neat sketches. [16]

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Code No: RR322201 **Set No. 4**

III B.Tech II Semester Supplementary Examinations,
November/December 2005
POWER PLANT INSTRUMENTATION
(Instrumentation & Control Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. Explain the Non-conventional sources of energy. [16]
2. Explain the importance of instrumentation in hydroelectric power plant. [16]
3. Explain in detail the sources of error in electrodynamometer wattmeter and the method of compensation. [16]
4. Explain how the air flow rate is measured in a power plant with a relevant diagram. [16]
5. With the help of neat sketch explain the working of water tube boiler? [16]
6. Explain in detail about interlocks in boilers used in 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 over speed [16]
8. Draw the schematic circuit diagram of a null balance pH meter and explain the principle if operation. [16]

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