

Code No: 09A52201

R09

SET-1

B. Tech III Year I Semester Examinations, December-2011
INSTRUMENTATION PRACTICES IN INDUSTRIES
(INSTRUMENTATION AND CONTROL ENGINEERING)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks

- 1.a) What is pulp? With neat diagram explain sulfite pulping process in detail.
- b) Explain the working of Fourdriner machine and list out the limitations of the machine. [7+8]
2. Explain the instrumentation involved in the flow consistency measurement in paper manufacturing with neat diagrams. [15]
- 3.a) Explain the different drying processes? List out their limitations.
- b) What is a distillation column made up of? Explain its role in petroleum industry. [15]
- 4.a) What are the different scales available in temperature measurement? Explain the construction of thermocouple instruments.
- b) With a neat sketch explain the operation of optical pyrometer. [8+7]
5. Explain with neat sketches the processes involved in flue gas analysis. [15]
- 6.a) Describe principle of operation of Pitot static system used for the measurement of aircraft speed.
- b) Explain the construction and operation of gyroscope. [8+7]
- 7.a) Explain tachometer method of speed measurement.
- b) Explain the operation of electrical tachometer used in flight speed measurement. [7+8]
8. Explain the various measures taken in boiler safety management. [15]

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SET-2

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Time: 3 hours

Max. Marks: 75

Answer any five questions
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1. Explain with neat sketches the production of paper in industry briefly explaining the various processes involved. [15]
- 2.a) What is pH? Explain the principle of operation in pH measurement. Why is pH scale is 0-14?
b) How moisture measured? Explain any one instrument used to measure moisture in paper industry. [7+8]
- 3.a) Explain the petroleum separation processes.
b) Define catalytic cracking. Explain how it is achieved. [7+8]
- 4.a) Explain the working of mass flow meters.
b) What are the different methods of pressure measurement? Explain any one method of differential pressure measurement. [7+8]
5. With neat block diagram explain the operation of cooling tower system. [15]
6. What are head indicating instruments? Briefly compare the different head indicating instruments with respect to their principle of operation in flight operations. [15]
- 7.a) Explain the principles involved in remote indicating pressure gauges.
b) Explain capacitance type fuel gauge system. [7+8]
8. Describe Safety systems in Steam Turbine with necessary dos and don'ts to be followed. [15]

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SET-3

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Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks

- 1.a) Describe in detail Mechanical and Thermo mechanical Pulping process used in paper industry.
- b) Bring out the operational differences in craft and soda pulping processes. [8+7]
- 2.a) Explain how specific gravity is measured using any one method. What is the unit of measurement?
- b) Describe the methods of measuring brightness. [8+7]
- 3.a) Briefly bring out the methodology adopted in thermal cracking process.
- b) What is polymerization? Explain its role in production of petroleum? [8+7]
- 4.a) Explain in detail the construction and operation of optical pyrometer.
- b) What are the different parameters that need to be measured in a petrochemical industry? [8+7]
- 5.a) List and explain the basic requirements of the quality of water used in cooling tower.
- b) Explain any one instrument used in vibration measurement. [8+7]
- 6.a) Explain the operation Aneroid Barometer with a neat block diagram
- b) Describe the operation of Altimeter and explain its characteristics. [8+7]
- 7.a) Explain how fuel flow is measured in aircrafts.
- b) Explain the operation of mechanical tachometers used in aircraft speed measurement. [8+7]
8. Describe the various interlocks used. Explain their applications in the safety of the process plants. [15]

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SET-4

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Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks

- 1.a) What are the raw materials required for paper manufacture. Explain the desired qualities of the raw materials for soda pulping process.
- b) Explain in detail about wet processing. [8+7]
- 2.a) Explain in detail the freeness measurement of pulp.
- b) Explain the caliper method of measuring thickness of paper. [7+8]
- 3.a) Explain the various parameters that can be measured in a distillation process.
- b) With neat diagrams explain distillation process used in petroleum industries. [7+8]
- 4.a) Explain the methods of vacuum measurement.
- b) Explain the measurement of temperature. Which thermocouples are suitable in petro industry? Explain the characteristics of thermocouples. [7+8]
- 5.a) Bring out the principles in the measurement of flue gas analysis.
- b) Explain with a neat block diagram the processes in cooling tower system. [7+8]
- 6.a) Briefly explain methods of operating gyroscopic flight instruments by bringing out the comparison between them.
- b) Explain the principle of altimeter with a neat sketch. [7+8]
- 7.a) Explain Capacitance type fuel gauge measurement system
- b) Briefly explain different methods of measurement of pressures in aircrafts. [7+8]
8. Explain in detail the safety measures used in cracking furnaces. [15]

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