Code No: RR310805 **RR** **Set No. 2**

III B.Tech I Semester Examinations,November 2010
PROCESS INSTRUMENTATION
Chemical Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. With a neat sketch, explain the elements of an Instrument. [16]
2. (a) Distinguish between direct and indirect methods of liquid level measurement.
   (b) Briefly explain the features of 'float gauzes' with sketches. [8+8]
3. Describe the important features of instrumentation diagram and illustrate with a typical chemical plant. [16]
4. (a) Describe the construction and working of an infrared absorption spectrometer with a figure.
   (b) Explain the method of finding concentration of a component from a spectrogram. [8+8]
5. What are the various designs of manometers used to measure pressure. [16]
6. (a) Explain with a neat sketch the operation of a self balancing potentiometer used for measuring thermocouple signals.
   (b) Discuss its advantages over the direct reading millivoltmeter. [10+6]
7. A solution having specific gravity 1.15 is flowing through a 75mm diameter pipe at a flow rate of 800litres/min. A sharp edged orifice connected to a simple mercury manometer is installed to measure the flowrate. If the manameter shows a reading of 40cm, what would be the orifice diameter?Assume orifice coefficient as 0.61.[16]
8. (a) Explain how a gas mixture is analyzed by the measurement of thermal conductivity.
   (b) Explain the principle of working of a psychrometer and a hygrometer. [8+8]

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Code No: RR310805 **RR** **Set No. 4**

III B.Tech I Semester Examinations,November 2010
PROCESS INSTRUMENTATION
Chemical Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. Describe the important features of instrumentation diagram and illustrate with a typical chemical plant. [16]
2. What are the various designs of manometers used to measure pressure. [16]
3. A solution having specific gravity 1.15 is flowing through a 75mm diameter pipe at a flow rate of 800litres/min. A sharp edged orifice connected to a simple mercury manometer is installed to measure the flowrate. If the manameter shows a reading of 40cm, what would be the orifice diameter?Assume orifice coefficient as 0.61.[16]
4. (a) Distinguish between direct and indirect methods of liquid level measurement.
   (b) Briefly explain the features of 'float gauzes' with sketches. [8+8]
5. (a) Explain with a neat sketch the operation of a self balancing potentiometer used for measuring thermocouple signals.
   (b) Discuss its advantages over the direct reading millivoltmeter. [10+6]
6. With a neat sketch, explain the elements of an Instrument. [16]
7. (a) Describe the construction and working of an infrared absorption spectrometer with a figure.
   (b) Explain the method of finding concentration of a component from a spectrogram. [8+8]
8. (a) Explain how a gas mixture is analyzed by the measurement of thermal conductivity.
   (b) Explain the principle of working of a psychrometer and a hygrometer. [8+8]

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Code No: RR310805 **RR** **Set No. 1**

III B.Tech I Semester Examinations,November 2010
PROCESS INSTRUMENTATION
Chemical Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. What are the various designs of manometers used to measure pressure. [16]
2. With a neat sketch, explain the elements of an Instrument. [16]
3. (a) Distinguish between direct and indirect methods of liquid level measurement.
   (b) Briefly explain the features of 'float gauzes' with sketches. [8+8]
4. (a) Describe the construction and working of an infrared absorption spectrometer with a figure.
   (b) Explain the method of finding concentration of a component from a spectrogram. [8+8]
5. A solution having specific gravity 1.15 is flowing through a 75mm diameter pipe at a flow rate of 800litres/min. A sharp edged orifice connected to a simple mercury manometer is installed to measure the flowrate. If the manameter shows a reading of 40cm, what would be the orifice diameter?Assume orifice coefficient as 0.61.[16]
6. (a) Explain with a neat sketch the operation of a self balancing potentiometer used for measuring thermocouple signals.
   (b) Discuss its advantages over the direct reading millivoltmeter. [10+6]
7. (a) Explain how a gas mixture is analyzed by the measurement of thermal conductivity.
   (b) Explain the principle of working of a psychrometer and a hygrometer. [8+8]
8. Describe the important features of instrumentation diagram and illustrate with a typical chemical plant. [16]

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Code No: RR310805 **RR** **Set No. 3**

III B.Tech I Semester Examinations,November 2010
PROCESS INSTRUMENTATION
Chemical Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. What are the various designs of manometers used to measure pressure. [16]
2. (a) Explain with a neat sketch the operation of a self balancing potentiometer used for measuring thermocouple signals.
   (b) Discuss its advantages over the direct reading millivoltmeter. [10+6]
3. With a neat sketch, explain the elements of an Instrument. [16]
4. A solution having specific gravity 1.15 is flowing through a 75mm diameter pipe at a flow rate of 800litres/min. A sharp edged orifice connected to a simple mercury manometer is installed to measure the flowrate. If the manameter shows a reading of 40cm, what would be the orifice diameter?Assume orifice coefficient as 0.61.[16]
5. (a) Distinguish between direct and indirect methods of liquid level measurement.
   (b) Briefly explain the features of 'float gauzes' with sketches. [8+8]
6. Describe the important features of instrumentation diagram and illustrate with a typical chemical plant. [16]
7. (a) Explain how a gas mixture is analyzed by the measurement of thermal conductivity.
   (b) Explain the principle of working of a psychrometer and a hygrometer. [8+8]
8. (a) Describe the construction and working of an infrared absorption spectrometer with a figure.
   (b) Explain the method of finding concentration of a component from a spectrogram. [8+8]

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