



Printed Pages : 2

TIC - 603

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 3099

Roll No.

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B. Tech.

(SEM. VI) EXAMINATION, 2008-09

PROCESS CONTROL ENGG.

Time : 3 Hours]

[Total Marks : 100

Note : Attempt all questions.

1 Attempt any **four** parts of the following: $5 \times 4 = 20$

- Explain the operation of a silicon controlled rectifier.
- What are the different types of analog signal conditioning?
- Explain the basic linearization procedure.
- What is integrator? Determine the equation of integrator for output voltage.
- What are the different types of digital to analog convertors?
- What is data acquisition system? Draw the block diagram of it.

2 Attempt any **four** parts of the following: $5 \times 4 = 20$

- Define the different parts of final control operation.
- Explain the operating principles of ac and dc motors.
- Explain the principle of signal conversions.



- (d) Describe the hydraulic activators.
- (e) Explain control valve sizing.
- (f) A measurement of temperature using a sensor that outputs $6.5 \text{ mV}/^\circ\text{C}$ must measure to 100°C . A 6-bit ADC with 10 volt reference is used. Find the temperature resolution.
- 3 Attempt any **two** parts of the following: $10 \times 2 = 20$
- (a) Describe the different composite control modes.
- (b) Explain in detail process load, process lag and self regulation.
- (c) Explain two position and floating control mode.
- 4 Attempt any **two** parts of the following: $10 \times 2 = 20$
- (a) Explain the cascade process control system with suitable block diagram.
- (b) Explain the three standard measures of quality in a control system.
- (c) Describe the control loop stability criteria with respect to a bode plot.
- 5 Attempt any **four** parts of the following: $5 \times 4 = 20$
- (a) Explain how controller modes are implemented in DDC.
- (b) Define the sampling rate and sampling frequency.
- (c) Define the effects of aliasing in data sampling systems.
- (d) Explain the data logging.
- (e) What are the elements of an analog controller?
- (f) Describe the implementation of proportional integral controller using operational amplifier.

