Printed Pages : 3

TIC-603

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

PAPER ID : 3099 Roll No. | | | | | | | | | | |

B. Tech.

(SEM. VI) EXAMINATION, 2007-08

PROCESS CONTROL ENGG.

Time : 3 Hours] *[Total Marks : 100*

Note : *Attempt **all** questions.*

1 Attempt any **four** parts of the following : **5×4=20**

(a) Describe the operation of current balance bridge.

(b) What is operational amplifier ? Draw the transfer characteristics of it.

(c) Explain RC low pass and high pass filters with suitable diagrams and characteristics.

(d) What are the different types of analog to digital conversion techniques ? Explain.

(e) Define the conversion resolution of analog to digital converters.

(f) Find the 10 base equivalent of the following :

(1) $(0.11010)_2 = (\_\_\_\_\_)_{10}$

(2) $(567)_9 = (\_\_\_\_\_)_{10}$

(3) $(548)_{16}$ = (_____)$_{10}$

(4) $(365.40)_{8}$ = (_____)$_{10}$

(5) $(A81F)_{16}$ = (_____)$_{10}$

2 Attempt any **four** parts of the following : 5×4=2

(a) Explain the operating principle of stepper motors.

(b) Describe the operating principle of nozzle pneumatic system.

(c) Explain how a pneumatic positioning actuator function in direct mode.

(d) Explain the principle of current to pressure converts.

(e) Describe the principle of control valves.

(f) Alcohol is pumped through a pipe of 10 cm diameter at 2 m/s flow velocity. Find the volume flow rate.

3 Attempt any **two** parts of the following : 10×2=2

(a) Describe derivative control mode.

(b) Describe the three mode controllers.

(c) Describe the two position and floating control mode.

4 Attempt any **two** parts of the following : **10×2=20**

(a) Describe with the help of suitable diagram the implementation of two position mode using operational amplifier.

(b) Describe the essential elements of an analog controllers.

(c) Determine the computer flow diagram of typical DDC applications on process control.

5 Attempt any **two** parts of the following : **10×2=20**

(a) Explain the characteristic of single variable and multi variable control.

(b) Describe the open loop transient disturbance method of loop tuning.

(c) Explain how the frequency response method can be used to tune a process control loop.