
BITS, PILANI – DUBAI, ACADEMIC CITY, DUBAI
FIRST SEMESTER 2011 – 2012
EEE C417 COMPUTER BASED CONTROL SYSTEMS
COMPRE (CLOSED BOOK)

MAXIMUM MARKS: 80
DATE: 04/01/12

WEIGHTAGE: 40%
DURATION: 180 MINUTES

1. Explain the working of piezo resistive transducer with neat sketch. Discuss the types & construction of strain gauge. **[7marks]**

2. Draw and explain the velocity algorithm flow chart and derive the relationship between position and velocity algorithm. **[7marks]**

3. (i) Explain the design of control and Baily micro Z system with neat sketch. **[5marks]**
(ii) Draw the behavior of different feedback control actions for P, PI and PID. **[2 marks]**

4. (i) Briefly explain the working of swing through butterfly valve with neat sketch. **[5marks]**
(ii) Draw the operational diagram of automatic optical pyrometer. **[2marks]**

5. Explain the operations of semaphore with suitable real time programming example. **[7marks]**

6. Explain the design of fuzzy controller architecture with neat sketch. **[7marks]**

7. Explain the modeling aspects of kiln automation system in a cement plant. **[7marks]**

PTO

8. Using C programming, Design a micro controller which will convert parallel input into serial output. **[5 marks]**

9. Using timers design a PLC for rectangular wave generator for every TON - 20 seconds & TOFF for 10 seconds. Draw the ladder diagram and write the PLC program. **[7marks]**

10. Explain SCADA architecture with neat sketch. **[5marks]**

11. (i) With diagram explain the empty slot operation in data communications between multi processor systems. **[5marks]**

(ii) Explain the working of Amperometric biosensors **[2marks]**

12. (i) Explain two different display methods and scanning in CRT display. **[3 marks]**

(ii) Explain the adaptive controller with neat sketch. **[4 marks]**

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TEST 1(CLOSED BOOK)

MAXIMUM MARKS: 25
DATE: 02/10/11

WEIGHTAGE: 25%
DURATION: 50 MINUTES

1. Explain and compare P, PI and PID controllers function with neat behavioral graph. **[5 marks]**

2. Explain the basic principle and working of automatic optical pyrometers with neat sketch. **[5 marks]**

3. Explain the design to MEMS Accelerometer for Pulse width modulation output with neat sketch. **[5 marks]**

4. Explain the working principle of Fiber optic Pressure Transducer with neat sketch and its response graph. **[5 marks]**

5. (i) Explain Amperometric Bio Sensor. **[2 marks]**
(ii) Explain Cascade control with neat sketch. **[3 marks]**

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Quiz 2 (CLOSED BOOK)

MAXIMUM MARKS: 14
DATE: 08/12/11

WEIGHTAGE: 7%
DURATION: 20 MINUTES

1. Define Contrast ratio in CRT display [1 mark]

2. Name two types of scanning used in CRT applications. [2 mark]

3. List out the problems exhibit in velocity algorithm [1 mark]

4. Define MTBF & MTTR [2 marks]

5. Name the DCS system used for frequent data communications. [1 mark]

6. Define HTD in Honey well TDC 200 system architecture [1 mark]

7. List at least four qualitative parameters of display systems in control systems. [2 marks]

8. Name the type of the control used in steam flow versus air flow in boiler. [1 mark]

9. Draw the flow chart of position algorithm for PID control. [3marks]

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Quiz 1 (CLOSED BOOK)

MAXIMUM MARKS: 16
DATE: 17/10/11

WEIGHTAGE: 8%
DURATION: 20 MINUTES

1. Write down the two modes of RTU. [1 mark]

2. Define polling in Micro processors [1 mark]

3. Explain in short about bit slice processor [1 mark]

4. List the advantages of Intel i860 processor over other processors [2 marks]

5. Name the sensor using surface Acoustic wave for sensing. [1 mark]

6. Draw the diagram for empty slot method LAN connection. [2 mark]

7. List out the basic functions of SCADA.

[1 mark]

8. Name the type of the control used in steam flow versus air flow in boiler. [1 mark]

9. Define DMA in micro processors. [1 mark]

10. Define in short about backward chaining in expert system [1 mark]

11. Draw the transducer which can measure the conductive liquid level [2 marks]

12. Write the difference between micro processor and micro controller. [1mark]

13. Which controller action is called automatic reset?

[1 mark]