M.Sc.(Electronics) (New CBCS Pattern) Semester - II

PSCELET05 - Paper-I : Embedded Systems and Applications

P. Pages : 1 **GUG/S/23/11199**

Time : Three Hours * 1 3 7 7 * Max. Marks : 80

Notes : 1. All questions are compulsory are carry equal marks.
2. Draw well labelled diagrams wherever necessary.
3. Use of calculator is allowed.

Either :-

1. a) Draw Architecture of 8051 microcontroller and explain each block. **8**

b) Explain various addressing Modes of 8051 microcontroller. **8**

OR

c) What is an Interrupt? Explain how interrupts are handle in 8051. **8**

d) Describe various data transfer Instruction of 8051 microcontroller with suitable examples? **8**

Either

2. a) Describe the following. **8**
i) SPI (Serial Peripheral Interface. ii) Inter Integrated Circuits (I^2C)

b) Explain modes of Serial Communication. **8**

OR

c) State and explain the characteristics and specifications of DAC. Explain the interfacing of DAC with 8051. **8**

d) Draw circuit diagram and explain interfacing of dual slope ADC with 8051. **8**

Either :-

3. a) What are ARM processor? Draw its general architecture and explain. **8**

b) Explain any two ARM instruction set. **8**

OR

c) Describe with the block diagram general architecture of AMTEGA microcontroller. **8**

d) What are advantages of PIC microcontroller over other microcontroller. **8**

Either :-

4. a) What is PLC? Explain basic internal structure of PLC. **8**

b) Explain : **8**
i) The CPU ii) The buses.

OR

c) Describe process of control loop using direct digital control. **8**

d) Describe alarm signal generation for heating and cooling process. **8**

5. a) Explain any arithmetic instructions in 8051. **4**

b) Explain how data is exchange using the SPI interface. **4**

c) What is watchdog timer? **4**

d) What is DDC algorithm? Explain. **4**

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