10EE665

USN ☐☐☐☐☐☐☐☐☐☐

Sixth Semester B.E. Degree Examination, July/August 2021
Embedded Systems

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1   a.   Compare the characteristics of different memories used in embedded system.   **(08 Marks)**
    b.   Explain the registers of 68HC11 and 68HC08.   **(06 Marks)**
    c.   Explain different addressing modes of 68HC11 micro controller, with an example for each.
                                                                                        (06 Marks)

2   a.   With a neat block diagram, explain the architecture of MC 68HC11 microcontroller.
                                                                                        (08 Marks)
    b.   Explain different operating modes of 68HC11 and differentiate single chip mode and expanded mode.   **(06 Marks)**
    c.   What is a system on chip? With a neat block diagram, explain the SOC for cell phone.
                                                                                        (06 Marks)

3   a.   Explain briefly various issues for selection of DAC.   **(08 Marks)**
    b.   Explain the working of 8-bit Ramp ADC.   **(06 Marks)**
    c.   With reference to a data a acquisition system explain :
         i)   Resolution
         ii) Precision
         iii) Reproducibility.   **(06 Marks)**

4   a.   Discuss on the porting issues of operating system in an embedded system.   **(10 Marks)**
    b.   Explain the performance modeling in embedded system design.   **(10 Marks)**

5   a.   Define different data structures in C and when they are used.   **(10 Marks)**
    b.   Explain with the help of its pseudocode the Round–Robin architecture with interrupts. Also discuss the draw backs of this architecture.   **(10 Marks)**

6   a.   Discuss about the problems associated with use of semaphores.   **(10 Marks)**
    b.   Differentiate the characteristics of various software architecture.   **(10 Marks)**

7   a.   Design an interface circuit to connect 8K × 8-bit RAM to 68HC11 microcontroller select RAM address from 2000H to 3FFFH. Draw read and write timing diagram.   **(12 Marks)**
    b.   With a neat block diagram, explain the isolated H-bridge used to drive the motor in both directions.   **(08 Marks)**

8   a.   Differentiate memory mapped I/O and isolated I/O computer architecture.   **(08 Marks)**
    b.   Illustrate the concept of pull-up and pull down key interface.   **(06 Marks)**
    c.   With reference to serial communication explain :
         i)   Full duplex
         ii) Half duplex
         iii) Simplex communication.   **(06 Marks)**

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