MCA (Sem.5TH)
EMBEDDED SYSTEM
Subject Code: MCA-501
Paper ID: [A3159]

Time: 3 Hrs.   **Max. Marks: 100**

INSTRUCTION TO CANDIDATES:-

1. **Attempt any five questions in all.**
2. **Including Q-9 in Section-E, Which is compulsory and selecting one each from section-A to Section-D**

SECTION-A

1. What are the main components of an embedded system? Explain three main characteristics of Embedded systems that distinguish such systems from others computing systems? What are the typical applications of an embedded system? **(20)**

2. a)   Explain the various parameters of an embedded system and its significance. Also, explain the embedded system design lifecycle.

    b)   Highlight the recent trends in embedded system design. **(10, 10)**

SECTION-B

3. Describe the architecture of a typical micro controller (PIC16F877A) with a neat diagram. Explain the various forms of memory and the functions assigned to them. **(20)**

4. Write short notes on:

a) Various bus structures used in embedded systems

ern microcontrollers **(10,10)**

SECTION-C

5. What is assembly language programming? What is its purpose? Give the instruction set for programming of PIC16F877A microcontroller. **(20)**

6. Write short notes on:

a) Assembler Directives

b) Prioritized and vecto(**10,10**)errupts and their handling

SECTION-D

7. Explain in brief steps required to design Automatic chocolate vending machine system with neat diagram. **(20)**

8. What is multimedia? Explain the design steps involved in designing any multimedia application with a diagram. **(20)**

SECTION-E

9. a) What are the complicating factors in embedded design?

    b) Explain the software tools in designing of an embedded system.

    c) What are the two essential units of a processor on an embedded system?

    d) What is the need for LCD and LED displays in embedded systems?

    e) Explain the various timer and counting devices in PIC microcontrollers PIC16F877A.

    f) Give difference between direct addressing and indirect addressing mode.

    g) What are the four types of data transfer used in USB?

    h) What are analog comparators?

    i) Explain the methods used in the embedded system on a chip.

    j) Define instruction set. **(2x10=20)**

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