B.E. Electrical (Electronics & Power) Engineering (Model Curriculum) Semester-VII
# OEC-3-1 / FE103-1 - Embedded Systems

||||||| *2526* |||||||

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Notes :   1.   All questions carry marks as indicated.
          2.   Assume suitable data wherever necessary.
          3.   Illustrate your answers wherever necessary with the help of neat sketches.

**1.**   a)   Draw and explain block diagram of LPC 2138.   **8**

         b)   With the help of suitable block diagram explain functional circuits in a Microcontroller   **8**
              Chip or Core in an embedded system.

**OR**

**2.**   a)   Give the examples of small scale embedded system application.   **8**

         b)   Explain in detail: Design life cycle in embedded system.   **8**

**3.**   a)   Describe the memory allocation maps in the locator programs for four exemplary systems.   **8**

         b)   With the help of neat diagram explain organization of processor and memory in a system.   **8**

**OR**

**4.**   a)   Explain the processor- specific features that a hardware designer must take into account.   **8**

         b)   What is stack? Explain different stack structure at the memory blocks.   **8**

**5.**   a)   Explain:   **8**

              i)    Arrangement of the items in an ordered list.

              ii)   An insertion into the list after its first item.

              iii)  A deletion in the list of its first item.

         b)   Draw and explain a programming model for the multiple function pointers that are queued   **8**
              by the interrupt service routine.

**OR**

**6.**   a)   Write a note on preprocessor Directives in embedded  C program.   **8**

         b)   What are the advantages of Object-Oriented Programing (OOP).   **8**

**7.**   a)   With different steps explain "Direct call to an ISR by an interrupting source and ISR   **8**
              sending an ISR enter message"

| b) | Write a note on Earliest Deadline Frist (EDF) precedence Model. | **8** |

**OR**

| **8.** | a) | What is RMA? Explain necessary and sufficient condition of RMA. | **8** |
| | b) | Define semaphore and explain details about the types of semaphore. | **8** |
| **9.** | a) | What is meant by tasks and explain various states present in the tasking process. | **8** |
| | b) | What is $\mu\cos-\text{II}$ ? Explain features of $\mu\cos-\text{II}$. | **8** |

**OR**

| **10.** | a) | Discuss in detail about inter process communication. | **8** |
| | b) | List the common options available for selecting a Real-Time Operating System (RTOS). | **8** |

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