

Seat  
No.

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DII1342

**ELECTIVE - I**  
**Embedded Systems**  
**(New) (1212)**

**P. Pages : 2**

**Time : Three Hours**

**Max. Marks : 100**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any two** subquestion from each unit.
5. Figures to the right indicate full marks.
6. Assume suitable data if necessary.

**UNIT - I**

1. a) Define embedded system ? What are the design challenges in embedded computing system design ? 10
- b) Explain the major levels of embedded system design process with an example. 10
- c) i) Discuss memory organization for an embedded system. 5  
ii) Explain how master & slave works in serial peripheral interface with an embedded system. 5

**UNIT - II**

2. a) i) Justify it, "All microcontrollers are of RISC type architecture". 5  
ii) Explain data flow model showing abstracts components of ARM core. 5
- b) How ARM core differs from any other architecture when it discussed with pipeline characteristics. 10
- c) i) What do you mean by interrupt ? Explain IVT of ARM core. 5  
ii) Explain how MMU employ on the ARM. 5

**UNIT - III**

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|----|----|--|----|
| 3. | a) | Describe building process for executing program for target machine & how it execute & debug on target machine. | 10 |
|    | b) | i) Explain need of interfacing in detail.  | 5  |
|    |    | ii) Interfacing of thermal printer with ARM core.  | 5  |
|    | c) | i) Discuss the languages used for embedded system.   | 5  |
|    |    | ii) Explain the term RF & how it is interfaced with ARM.   | 5  |

**UNIT - IV**

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|----|----|---|----|
| 4. | a) | i) Why there is need of real time operating system.                           | 5  |
|    |    | ii) Discuss kernel architecture of RTOS.                                      | 5  |
|    | b) | Describe overall structure of task and task execution within embedded system. | 10 |
|    | c) | i) Explain salient features of microcontroller operating system version -2.   | 5  |
|    |    | ii) Explain interrupt in $\mu$ cos-II & how it differ from other RTOS.        | 5  |

**UNIT - V**

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|----|----|---|----|
| 5. | a) | Explain linux Kernel & how it differs than embedded linux Kernel.     | 10 |
|    | b) | Describe various debug techniques ?                                   | 10 |
|    | c) | Discuss linux file systems & how it differs from windows file system. | 10 |

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