

Seat  
No.

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मन - 061

**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** sub questions from each unit.
5. Figures to the right indicate full marks.
6. Draw figures wherever necessary.

**UNIT - I**

1. a) What do you mean by NRE and unit cost design metrices. The design of a particular product 'X' has NRE cost of Rs. 400000 and a unit cost at Rs 50. How much will one has to add to the cost of each product cover NRE by assuming the sell. 10
  - i) 2000 units
  - ii) 10,000 units.
- b) Explain design requirements and categories of embedded systems with example. 10
- c) What are recent trends in embedded systems ? Explain testing with respect to embedded systems. 10

**UNIT - II**

2. a) Explain 'USB' and 'reset operation using WDT'. 10
- b) Explain APB, AHB and bridge with suitable diagram to form an advanced bus architecture. Also explain URT and timer. 10
- c) Explain features of ARM processor. Also what do you mean by register bank in ARM 7. 10

**UNIT - III**

3. a) Draw and explain Finger print identification module with some suitable applications and limitations. **10**
- b) Explain modular code for LED blinking and displaying text on LCD. **10**
- c) Discuss "C - programming language used for development of embedded applications" with advantages and limitations Also explain SOC Vs Interfacing. **10**

**UNIT - IV**

4. a) What are design constraints for an embedded RTOS ? Draw and explain RTOS architecture. **10**
- b) Explain different IPC mechanism used in RTOS also explain advantages and disadvantages of RTOS. **10**
- c) What do you mean by interrupt types in RTOS ? Draw and explain various aspects of interrupt handling in RTOS. **10**

**UNIT - V**

5. a) What is embedded Linux and its features ? Why it is preferred in development of embedded systems. Hence explain concept of Linux distributions with design goals for kernel. **10**
- b) What do you mean by selecting a file system ? Compare various file systems with respect to their characteristics explain concept of virtual file system. **10**
- c) Explain various IPC mechanism in embedded system linux. Also explain target setup for debugging with any two debugging techniques. **10**

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