

FACULTY OF ENGINEERING**B.E. 4/4 (CSE) I-Semester (Supplementary) Examination, May / June 2018****Subject : Principles and Applications of Embedded Systems****Time : 3 hours****Max. Marks : 75****Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.****PART – A (25 Marks)**

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|----|---|---|
| 1 | Write the role of CPSR register in ARM process. | 2 |
| 2 | Compare 'traps' and 'supervisor mode' for embedded computing. | 3 |
| 3 | Draw the various stages of pipeline in ARM7 processors. | 3 |
| 4 | Distinguish between CISC and RISC architecture. | 3 |
| 5 | Compare task scheduling and resource monitoring activities in RTOS. | 3 |
| 6 | What is Re-entrancy? What is the role of Re-entrant function? | 2 |
| 7 | What are the applications of Distributed Embedded computing? | 2 |
| 8 | What are the merits and demerits of multiprocessors for embedded systems? | 3 |
| 9 | What is meant by scaffold code? Write its advantages. | 2 |
| 10 | What is the difference between native linker and locator? | 2 |

PART – B (50 Marks)

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|----|---|----|
| 11 | a) Describe the various design challenges of Embedded system. | 4 |
| | b) Explain the detailed requirements, specification and design process of GPS. | 6 |
| 12 | a) Explain the process of Platform-level performance analysis consideration. | 6 |
| | b) What is DMA? How can the concurrency achieved during DMA? | 4 |
| 13 | Consider task 'A' and 'B' are an interrupt sequence routine (ISR) sharing the data variable X. Explain the problem of sharing X and give the appropriate solutions. | 10 |
| 14 | Explain the following scheduling algorithms with example : | |
| | a) Real time round Robin scheduling algorithms. | 3 |
| | b) Rate Monotonic Scheduling (RMS) | 4 |
| | c) Earliest-deadline-first Scheduling (EDF) | 4 |
| 15 | a) What are the hard real-time scheduling considerations? Explain various methods for saving memory in RTOS. | 6 |
| | b) Describe the various methods for Getting Embedded software into the Target System. | 4 |
| 16 | a) Explain the process of testing embedded systems using Laboratory Tools. | 5 |
| | b) Explain the Architecture of distributed Embedded Systems with example. | 5 |

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17 Explain any Two of the following :

- a) Write short notes on SHARC interrupts 5
- b) Explain the relation between various cache levels. 5
- c) Write a program for the following instructions using ARM instruction set 5

```
If(a>c)
{
    Y = a+d;
}
Else
{
    Z = a < 2 ;
    W = c>>2;
    X = W+Z
}
```
