



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Third Semester, M. Tech - Computer Engineering (MCEN)

Semester End Examination; Dec - 2017/Jan - 2018

Embedded Systems and Applications

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

- | | | |
|-------|---|----|
| 1 a. | Explain the Embedded system design process. | 15 |
| b. | Briefly explain CPSR register of ARM processor. | 5 |
| 2 a. | Explain the three power modes and power state machine of SA 1100. | 8 |
| b. | Briefly explain the following instructions of ARM with example : | 12 |
| (i) | RSB | |
| (ii) | LSL | |
| (iii) | RRx | |
| (iv) | TEq | |
| (v) | MVN | |
| (vi) | CS. | |

UNIT - II

- | | | |
|------|---|----|
| 3 a. | Explain Breakpoint and Logic analyzer debugging techniques. | 12 |
| b. | Obtain CDFG and ARM code for the given C code : | |
| if | $(a+b) > 0$ $x = 5;$ | 8 |
| else | $x = 7;$ | |
| 4 a. | Explain any five program optimization techniques. | 15 |
| b. | Explain four-cycle hand shake bus protocol. | 5 |

UNIT - III

- | | | |
|------|---|----|
| 5 a. | Explain the basic functions of Real Time Kernel. | 14 |
| b. | With diagram, explain the structure of a process. | 6 |
| 6 a. | Explain the types of multitasking. | 6 |
| b. | Explain the Dining Philosopher's problem and Deadlocks. | 14 |

UNIT - IV

- | | | |
|------|---|----|
| 7 a. | Explain CSMA/CD algorithm. | 10 |
| b. | Briefly explain the tools used in hardware debugging. | 10 |
| 8 a. | Explain the working of J ² C bus. | 10 |
| b. | Briefly explain the files generated on cross compilation. | 10 |

UNIT - V

- | | | |
|-------|--|----|
| 9 a. | Explain the processor trends in embedded systems. | 10 |
| b. | Explain Java based embedded application system. | 10 |
| 10 a. | Explain .NET based embedded application development. | 10 |
| b. | Briefly explain the following : | 10 |
| (i) | OMA | |
| (ii) | OHA | |
| (iii) | Android | |
| (iv) | Tizen. | |