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

(An Autonomous Institution affiliated to VTU, Belagavi)

Seventh Semester, B.E. - Electronics and Communication Engineering

Semester End Examination; Dec - 2017/Jan - 2018

Embedded and Real Time Systems

Time: 3 hrs

Max. Marks: 100

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

UNIT - I

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|------|---|---|
| 1 a. | What is cross-platform development? List the tools required for the cross-platform development. | 8 |
| | b. What is the difference between RISC and CISC processor? | 4 |
| | c. Explain the process of generating executable image for embedded software. | 8 |
| 2 a. | How Code optimization is done during embedded software development? | 8 |
| | b. Write a C program to calculate CRC using CRC-16 algorithms. | 6 |
| | c. Explain the process of creating a MIDlet. | 6 |

UNIT - II

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|------|---|----|
| 3 a. | Discuss the non-functional requirements for the development of embedded system. | 10 |
| | b. With a neat block diagram, explain the configuration management process. | 10 |
| 4 a. | Explain the protocol architecture of IEEE 1394. | 6 |
| | b. What is the need for Communication interfaces? | 6 |
| | c. With a neat diagram, explain protocol architecture and pin connection of Ethernet. | 8 |

UNIT - III

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|------|---|----|
| 5 a. | Explain how a semaphore can be used for inter-task synchronization? | 10 |
| | b. Define a task. What are the different states of a task? With the help of state diagram, explain context switching. | 10 |
| 6 a. | List the various mobile / handheld operating systems and explain their features. | 10 |
| | b. Differentiate off-the-shelf operating system with other operating system. | 10 |

UNIT - IV

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|------|--|----|
| 7 a. | List the features of Linux. | 6 |
| | b. Write a program to convert the text into upper case letters using a message queue as inter process communication. | 10 |
| | c. Explain the function of any four file manipulation commands used in Linux. | 4 |
| 8 a. | Write a program to illustrate the semaphore management function calls in RT Linux. | 10 |
| | b. Explain RT Linux and its modules. | 10 |

Contd...2

UNIT - V

- 9 a. Classify RFID systems based on their capabilities and functionalities. Also mention applications of RFID. 10
- b. Design an RFID system for library automation if :
- i) Each book is attached with an RFID tag 10
 - ii) Each library user is given as RFID tag.
- 10 a. What are the steps involved in design / implementation of DSP-based embedded systems? 10
- b. With a neat diagram, explain how digital signal processing is applied to the Audio Coding? 10

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