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

(An Autonomous Institution affiliated to VTU, Belgaum)

Seventh Semester, B.E. – Electronic and Communication Engineering  
Semester End Examination; Dec. - 2014

### Linux and Embedded Real Time System Programming

Time: 3 hrs

Max. Marks: 100

*Note: Answer any FIVE full questions, selecting atleast TWO full questions from each part.*

#### PART – A

1. a. Explain the Linux Boot Process. 6
- b. Explain the procedure for building the Linux root file system. 8
- c. Differentiate between Local debugging and remote debugging. 6
2. a. Describe different control signals for Linux asynchronous serial communication. 7
- b. List the salient features of a parallel port interface. 5
- c. Explain the development and Importance of Linux device drivers. 8
- 3.a. Explain, salient features of USB interface. 8
- b. Explain the basic steps in developing memory interface to a media engine. 6
- c. List and explain in brief the different RPX – CLLF bus and I/o expansion connector signals. 6
- 4.a. Explain the following with respect to serial communication. 8
- i) SPI interface      ii) I2C interface.
- b. List and explain in brief the various Linux timings sources. 5
- c. What is interrupt latency? Explain the steps in measuring the average interrupt latency. 7

#### PART – B

- 5.a. What is task scheduling? Explain the following scheduling algorithms in brief, 10
- i) Round – Robin Algorithm      ii) Shortest job first      iii) Preemptive multi-tasking
- b. Mention the various Real – time operating systems and explain their features in briefly. 10
6. a. List the file manipulation commands of Linux. 6
- b. Write a short note on shell programming. 6
- c. Explain the use of semaphore and mutex with an example. 8
7. a. Explain how an LED can be interfaced to an embedded system. 4
- b. With block diagram, explain the features of “Prayog”. 8
- c. Show the interfacing of stepper motor to Prayog reference board. 8
8. a. With block schematic, explain the functions and applications of FRID system. 10
- b. Mention the applications of DSP. 5
- c. Explain the structure of an RFID tag. 5