



**P.E.S. College of Engineering, Mandya - 571 401**  
*(An Autonomous Institution affiliated to VTU, Belagavi)*  
**Eighth Semester, B.E. - Electronics and Communication Engineering**  
**Semester End Examination; May / June - 2019**  
**Embedded Systems**

Time: 3 hrs

Max. Marks: 100

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

ii) Missing data, if any, may be suitably assumed.

**UNIT - I**

- 1 a. Define Embedded system and explain how embedded systems are differing with general purpose computing system? 8
- b. Mention the criteria used for the embedded system classification. Explain with respect to complexity and performance. 6
- c. List the major applications of embedded system. 6
- 2 a. Discuss the general purpose and domain specific processors. 8
- b. Differentiate between RISC and CSIC professors with example. 6
- c. What are the Programmable Logic Devices? Mention the advantages of them. 6

**UNIT - II**

- 3 a. Discuss the characteristics of an embedded system. 8
- b. Explain the quality attributes of embedded system. 5
- c. Discuss functional block diagram of washing machine. 7
- 4 a. Discuss the fundamental issues in hardware software co-design. 6
- b. With the help of neat figure, explain the working of automotive seat belt warning system and timer by using finite state machine diagram. 8
- c. Discuss the finite state machine model for the coin operated telephone system. 6

**UNIT - III**

- 5 a. Illustrate how assembly language is converted to machine language? With a neat figure. 7
- b. Explain the operating system architecture and microkernel model. 6
- c. List and explain the basic functions of real time kernel system. 7
- 6 a. Discuss the structure of a process and process with multi threads. 8
- b. Differentiate between threads and process with suitable examples. 6
- c. Explain the types of multitasking. 6

**UNIT - IV**

- 7 a. Discuss an overview of IDE for embedded system for development. 6
- b. Define simulator and explain the advantages of simulator based debugging. 8
- c. Explain the various hardware debugging tools used in embedded system. 6

- 8 a. Explain the process of target hardware debugging. 6
- b. Explain JTAG based boundary scanning for hardware testing. 7
- c. Explain the types of file generated on cross compilation. 7

**UNIT - V**

- 9 a. Discuss in brief the objectives of embedded product development life cycle. 7
- b. Explain the various activities involved in conceptualization phase. 7
- c. Discuss the linear (waterfall) embedded product development life cycle. 6
- 10 a. Explain system on chip and multicore processors. 6
- b. Explain java based embedded application development. 8
- c. Discuss the concept of bottlenecks. 6

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