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## 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; Aug. / Sep. - 2020**

### Embedded Systems

Time: 3 hrs

Max. Marks: 100

**Note:** i) Answer **TWO** full questions, selecting **ONE** full question from **UNIT - I** and **UNIT - II**.

ii) Answer any **THREE** full questions, choosing from **UNIT - III**, **UNIT - IV** and **UNIT - V**.

#### UNIT - I

- 1 a. Mention the criteria used for the embedded system classification in terms of complexity and performance. 8
- b. Define embedded system and explain how embedded systems differ from general purpose computing system? 8
- c. List the major applications of embedded system. 4

**OR**

- 2 a. What are programmable Logic devices? Mention its advantages. 7
- b. Differentiate RISC and CISC processors. 7
- c. Differentiate Harvard and Von-Neumann architecture with example. 6

#### UNIT - II

- 3 a. Explain the characteristics of an embedded system. 8
- b. Explain the operational quality attributes of an embedded system. 6
- c. Explain the embedded system in automotive domain. 6

**OR**

- 4 a. Discuss the fundamental issues in Hardware Software co-design. 10
- b. Discuss the finite state machine model for coin operated telephone system. 10

#### UNIT - III

- 5 a. List and explain the basic functions of realtime Kernel. 12
- b. Discuss with a neat block diagram how assembly language is converted to machine language and mention (List) its advantages and disadvantages. 8
- 6 a. Explain the concepts of remote procedure call for IPC. 10
- b. Discuss the structure of process and process with multi-threads. 6
- c. Differentiate threads and process. 4

#### UNIT - IV

- 7 a. Discuss an overview of IDE for embedded system development. 8
- b. Explain the various hardware debugging tools used in embedded system. 8
- c. Define simulator and list the advantages of simulator based debugging. 4

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

**UNIT - V**

- 9 a. Discuss the various activities involved in design phase. 8
- b. Discuss the various activities involved in analysis phase. 7
- c. Discuss the objectives of embedded product development life cycle. 5
- 10a. Explain System On Chip (SOC) and Multicore processors. 8
- b. Discuss the concepts of bottlenecks. 5
- c. Explain the .NET based embedded application development. 7

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