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18EC731

## Seventh Semester B.E. Degree Examination, July/August 2022

### Real Time Systems

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

#### Module-1

- 1 a. Explain the historical background of Real-time system with block diagram. (10 Marks)
- b. Draw and explain Direct Digital Control with its advantages. (10 Marks)

**OR**

- 2 a. Explain the three types of programs used in Real Time System. (06 Marks)
- b. Explain the following terms used in process control applications:
  - (i) Batch
  - (ii) Continuous
  - (iii) Laboratory system. (06 Marks)
- c. Illustrate the working of dual computer scheme with its advantages and disadvantages. (08 Marks)

#### Module-2

- 3 a. Explain SISD, MISD, SIMD computer system architectures of parallel systems. (06 Marks)
- b. Discuss the uses of interrupts for real time computer system. (06 Marks)
- c. Explain different Local Area Network topologies. (08 Marks)

**OR**

- 4 a. Explain the 4 categories of process related interfaces. (08 Marks)
- b. Explain ISO-OSI seven layer model for data transmission. (08 Marks)
- c. Discuss the use of specialized processor in Real time system. (04 Marks)

#### Module-3

- 5 a. List and explain the various requirements in programming languages in Real time application. (12 Marks)
- b. With flow diagram, explain the structured program constructs. (08 Marks)

**OR**

- 6 a. Explain, how the compilation of programs are carried out in the Real time systems. (06 Marks)
- b. Discuss the use of coroutines with examples. (06 Marks)
- c. Write a note on overview of Real-time languages. (08 Marks)

#### Module-4

- 7 a. With block diagram, describe the multitasking and multiuser operating system. (08 Marks)
- b. Discuss the three broad levels of priority structures. (06 Marks)
- c. Describe the two methods can be used to overcome the code sharing problem. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

**OR**

- 8 a. Explain cyclic and pre-emptive scheduling strategies. (06 Marks)  
b. Illustrate with a typical task state diagram the various states of tasks in operating system. (08 Marks)  
c. Describe the non-partitioned and partitioned memory management scheme. (06 Marks)

**Module-5**

- 9 a. Explain the planning phase and development phase to the design of Real time computer. (08 Marks)  
b. Describe the single program approach with appropriate flow chart. (06 Marks)  
c. Explain the following terms :  
(i) Abstract model.  
(ii) Implementation model.  
(iii) Implementation. (06 Marks)

**OR**

- 10 a. Describe the hardware and software preliminary design details of Real-time system. (08 Marks)  
b. Describe the foreground/background approach with appropriate flowchart. (06 Marks)  
c. Explain the Yourdon methodology. (06 Marks)

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