POKHARA UNIVERSITY

Level: Bachelor | Semester: Spring | Year : 2018
Programme: BE | Full Marks: 100
Course: Real Time System | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What is the difference between Real Time and Embedded System? 4+4
   b) What are the real time system design issues? Highlight the common misconception from historical aspects along with the modern beliefs and achievements regarding real time systems. 3+4
   c) State whether you consider the following statements to be TRUE or FALSE. Justify your answer in Each Case. 5
      i) A hard real time Application is made up of only hard real time tasks.
      ii) Every safety-critical system has a fail-safe state.
      iii) All hard-real time systems are safety-critical in nature.
      iv) Soft real time systems are those which do not have any time bounds associated with them.
2. a) What is real time Extensions of UML? Explain the different types of Real time design techniques. 5
   b) What are the problems with structured analysis and structured design in real time applications? Explain. 5
3. a) Define Real time Kernel with example. Compare and contrast between Interrupt driven, preemptive-priority and Hybrid System. 2+6
   b) Explain Fixed priority Scheduling and Dynamic Priority scheduling scheme. At what condition scheduling Algorithms becomes optimal. Give your opinion. 7
4. a) Explain Time Relative Buffering, ring Buffers and mailboxes with examples. 7
   b) Define resource contention. Explain the priority ceiling and priority inheritance protocol. 8

5. a) How is performance analysis and optimization of real time systems performed? Explain on the basis of challenges in Analyzing RTS. 8
   b) How can you calculate the Response time for fixed period systems? Explain with suitable example. 7
6. a) What are the main goals of system integration? Explain with a simple integration strategy. 8
   b) Explain the benefits of using Threading in Real time application emphasizing the thread creation and thread priority. 7
7. Write short notes on: **(Any two)** 2×5
   a) Data flow Architecture and wave front processors
   b) Swopping and memory locking
   c) Patching and the probe Effects