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Class Work: 50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

UNIT I

Introduction: Definition, Issues in Real Time Computing, Structure of a Real Time System. Task Classes and Timing Parameters, Common myths about real time systems, Characteristics and Applications of Real time Systems, Examples of Real time systems.

Performance measures for real time systems: Traditional performance measures, Performability, Cost functions and hard Deadlines

UNIT II

Task Assignment and Scheduling: Introduction, Various types of scheduling algorithms: Cyclic, Deterministic, Capacity based Dynamic Priority, Value Function etc. Scheduling Real time tasks in Multiprocessors, Fault tolerant Scheduling

UNIT III

Real Time Databases: Basic definitions, Real time Vs General Purpose databases,

Main Memory databases, concurrency control issues, databases for hard real time systems

Real Time Communication: Introduction, Basic Concepts, Real time Communication Applications, Real time Communication in LAN, Protocols: Contention based protocols, Token based protocols, Deadlines based protocols, Stop and Go Multihop protocol, The polled bus protocol, Hierarchical round robin protocol.

UNIT IV

Real Time operating System: Introduction, Features of RTOS, Unix and Windows NT as RTOS, Comparison of Unix and Windows NT as RTOS

Real Time Knowledge Based Systems and Programming Languages: Introduction, Why use real time expert systems, Requirements of real time expert system, Real time Expert system applications, Expert system tools, Characteristics of a Real time Language, Case study of ADA as a Real Time Language.

References:

1. Real Time Systems: Liu ; Pearson Education
2. Real Time Systems: C. M. Krishna and Kang G. Shin; McGraw Hill
3. Real Time Systems: Satinder Bal Gupta and Yudhvir Singh; University Science Press