

Q. P. Code: 11259

(Time: 2 $\frac{1}{2}$ hours)

[Marks: 60]

Please check whether you have got the right question paper.

- N. B.: (1) **All** questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculator is **allowed**.

Q1 Attempt any two questions

12

- What is Real Time System? Discuss its various characteristics in detail.
- Explain the Device Driver Framework for Simple Little Operating System.
- Elaborate different fault-Tolerance techniques for RTES.
- Explain direct-mapped cache with advantages and disadvantages.

Q2 Attempt any two questions

12

- Explain Exception Priority Handling in ARM processor.
- Explain the code structure/file structure of Sandstone.
- Explain the concept of Fast Context Switch Extension (FCSE). How it uses page tables and domains?
- Explain the working of virtual memory system.

Q3 Attempt any two questions

12

- Explain Deadline Monotonic Algorithm DMA.
- Explain Earliest Deadline First (EDF) Scheduling.
- Check Whether the following three real-time periodic tasks are schedulable under RMA on a uniprocessor :
 $T_1=(e_1=20 \text{ ms}, p_1=100\text{ms})$, $T_2=(e_2=30 \text{ ms}, p_2=150\text{ms})$, $T_3=(e_3=90 \text{ ms}, p_3= 400\text{ms})$.
Assume that context switching overhead does not exceed 1 ms and is to be taken into account in schedulability computations.
- Explain Highest Locker Protocol (HLP) for resource sharing handling.

Q4 Attempt any two questions

- Explain Soft/Hard Real-Time Communication in a LAN.
- Explain about the RETHER Bounded Access Protocol.
- Explain about Integrated Services and Differentiated Services.
- Explain QoS and Traffic Categorization for real time communication.

Q5 Attempt any two questions

12

- Explain how a real time database is different from a traditional database.
- Explain the characteristics of temporal data.
- Discuss Concurrency control in real time databases in detail.
- Explain Two Phase Locking Protocol (2PL) for concurrency control in real time database.