KUMARAGURU
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Register Number:……….……

M.E. DEGREE EXAMINATIONS: APRIL / MAY 2023

(Regulation 2018)

Second Semester

EMBEDDED SYSTEMS TECHNOLOGIES

P18EST2001: Real Time Operating Systems

COURSE OUTCOMES

CO1: Familiarize with key Real-Time Operating System terms and concepts.

CO2: Comprehend and use tools to build an embedded real-time system.

CO3: Design and implement a simple embedded system.

CO4: Understand the concepts of various RTOS for Embedded system.

CO5: Apply RTOS concepts to design for real time application.

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 1 = 10 Marks)

1. Which one is coming under System calls categories?   CO1   [K_2]

   a) Interface   b) File management

   c) Device management   d) Information Maintenance

2. Micro kernel four minimal services are   1.Inter process communication   CO1   [K_3]
    2.Process management 3.Some memory management 4.Low level input/output
    Find the correct sequence?
   a) 1-3-2-4   b) 1-2-3-4

   c) 1-2-4-3   d) 2-3-4-1

3. _____interactions are in the form of transactions in which the client makes   CO2   [K_3]
    a database request and receives a database response
   a) Client/server   b) Server

   c) Client   d) HMI

4. Matching type item with multiple choice code   CO2   [K_3]

List I	List II
A. Reliability	1. power added in small increments
B. Incremental Growth	2.one machine crash the whole can survive
C. Speed	3. Involve Spatially separated machines
D. Inherent Distribution	4. more total computing Power

a) A-4 , B-3, C-2, D-1   b) A-2 , B-1, C-4, D-3

c) A-2 , B-4, C-1, D-3   d) A-3 , B-1, C-2, D-4

5. The advantage of Distributed system is ___.   CO3 [K₂]

   a) Not a Network saturation   b) Software issue

   c) Security issue   d) No Hardware issue

6. Systems whose correctness depends on their temporal aspects as well as their functional aspects known as_____.   CO3 [K₄]
   a) Real-Time Scheduling   b) Key priority

   c) Performance measure   d) Real time system

7. Assertion (A): Several tasks are executed one after another, usually with each task being assigned a fixed time slice.   CO4 [K₁]
Reason (R): Following each time-slice interrupt, the context of the current task must be saved, and the context of the next task must be restored in round robin systems
   a) A is true but R is false   b) Both A and R are Individually true but R is not the correct explanation of A
   c) Both A and R are Individually true and R is the correct explanation of A   d) A is false but R is true

8. _____ is the smallest part of an operating system that provides for task scheduling, dispatching, and intertask communication   CO4 [K₃]
   a) Operating System   b) Kernal

   c) Executive   d) Micro

9. Each process takes its checkpoints independently   CO5 [K₃]
     i) By Checkpoint based Recovery
     ii) By Coordinated checkpointing
     iii) By Un-Coordinated checkpointing
     iv) By Induced-checkpointing
   a) ii only correct   b) iii and i correct

   c) iv and i only correct   d) All are correct

10. QNx RTOS have _____ priority levels   CO5 [K₃]

   a) 256   b) 64

   c) 32   d) 16

PART B (10 x 2 = 20 Marks)

11. What is meant by Rendezvous?   CO1 [K₂]

12. When the race condition will occur in RTOS?   CO1 [K₂]

13. Write the function of client side stub.   CO2 [K₃]

14. Define Marshalling.   CO2 [K₃]

15. When will the hard deadline occur?   CO3 [K₂]

16. List out the issues in Real-time System Design.	CO3	[K$_4$]
17. What are the Strategies Employed in the Design of Real-Time Kernels?	CO4	[K$_2$]
18. What are advantage in interrupt-Driven Systems?	CO4	[K$_3$]
19. Write the Rollback Propagation Algorithm.	CO5	[K$_2$]
20. Define-Voice Oveu IP.	CO5	[K$_3$]

PART C (6 x 5 = 30 Marks)

21. Write short notes about NTFS and compare it with FAT 16/32.	CO1	[K$_2$]
22. Describe a short note about implementation of process in RTOS.	CO2	[K$_2$]
23. Describe about client server model.	CO3	[K$_3$]
24. Illustrate how to recover RTOS from the failure?	CO4	[K$_2$]
25. How bloom and aliasing used in RTOS based image processing. Describe it.	CO5	[K$_3$]
26. Draw the flow diagram for Voice Oveu IP and describe it.	CO5	[K$_3$]

Answer any FOUR Questions
PART D (4 x 10 = 40 Marks)

27. With an suitable example describe the communication between process.	CO1	[K$_2$]
28. How to implement the Petri net model for complex algebra (a-b)(a-b) system. Explain it with firing table.	CO3	[K$_3$]
29. Compare the QNX works is compared with Vx works?	CO4	[K4]
30. Draw the block diagram of generalized real time image processing. Explain it with a suitable example and block diagram.	CO5	[K$_2$]
31. How to implement remote procedure calls at the language level and Operating System Level. .Describe it.	CO2	[K$_2$]

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