

B.Tech DEGREE EXAMINATION, NOVEMBER 2023

Seventh Semester

18EEEC402T - REAL TIME OPERATING SYSTEMS*(For the candidates admitted during the academic year 2020 - 2021 & 2021 - 2022)***Note:**

- i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
- ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours**Max. Marks: 100****PART - A (20 × 1 = 20 Marks)**

Answer all Questions

	Marks	BL	CO
1. Which of the following is a single-user operating system? (A) Windows (B) MAC (C) MS-DOS (D) VxWORKS	1	2	1
2. Which of the following is not application software? (A) Windows 7 (B) WordPad (C) Photoshop (D) MS-excel	1	2	1
3. In Unix, Which system call creates the new process? (A) fork (B) create (C) new (D) open	1	2	1
4. Which system call can be used by a parent process to determine the termination of child process? (A) wait (B) exit (C) fork (D) get	1	2	1
5. When does page fault occur? (A) The page is present in memory. (B) The deadlock occurs. (C) The page does not present in memory. (D) The buffering occurs.	1	2	2
6. The _____ swaps processes in and out of the memory. (A) Memory manager (B) CPU (C) CPU manager (D) User	1	2	2
7. The address generated by the CPU is referred to as _____. (A) Physical address (B) Logical address (C) Virtual Address (D) Permanent Address	1	2	2
8. The run time mapping from virtual to physical addresses is done by a hardware device called the _____. (A) Virtual to physical mapper (B) Memory management unit (C) Memory mapping unit (D) Address mapping unit	1	2	2
9. Hard real time operating system has _____ jitter than a soft real time operating system. (A) less (B) more (C) equal (D) Can't Predict	1	2	3
10. The amount of memory in a real time system is generally _____. (A) less compared to PCs (B) high compared to PCs (C) same as in PCs (D) they do not have any memory	1	2	3

11. What is the priority of a real time task?	1	2	3
(A) must degrade over time			
(B) must not degrade over time			
(C) may degrade over time			
(D) remains unaffected			
12. Which of the following is not an Firebase Advantages?	1	2	3
(A) No need for complicated configuration.			
(B) The data is real-time			
(C) Firebase offers simple control dashboard			
(D) Firebase free plan is limited to 50 Connections			
13. A process P1 has a period of 50 and a CPU burst of $t_1 = 25$, P2 has a period of 80 and a CPU burst of 35. The total CPU utilization is _____	1	2	4
(A) 0.90			
(B) 0.74			
(C) 0.94			
(D) 0.80			
14. T shares of time are allocated among all processes out of N shares in _____ scheduling algorithm.	1	2	4
(A) rate monotonic			
(B) proportional share			
(C) earliest deadline first			
(D) earliest arrival first			
15. To schedule the processes, they are considered _____	1	2	4
(A) infinitely long			
(B) periodic			
(C) heavy weight			
(D) light weight			
16. The _____ scheduling algorithm schedules periodic tasks using a static priority policy with preemption.	1	2	4
(A) earliest deadline first			
(B) rate monotonic			
(C) first cum first served			
(D) priority			
17. What are the common security threats?	1	2	5
(A) File Shredding			
(B) File sharing and permission			
(C) File corrupting			
(D) File integrity			
18. What does Light Directory Access Protocol (LDAP) doesn't store?	1	2	5
(A) Users			
(B) Address			
(C) Passwords			
(D) Security Keys			
19. VxWorks supports the following target architectures:	1	2	5
(A) ARM			
(B) Intel architecture			
(C) Power architecture			
(D) RISC-V architecture			
20. Which of the following is the least secure method of authentication?	1	2	5
(A) Key card			
(B) fingerprint			
(C) retina pattern			
(D) Password			

PART - B ($5 \times 4 = 20$ Marks)

Answer **any 5** Questions

	Marks	BL	CO
21. Compare the features of Monolithic Kernel and Microkernel.	4	2	1
22. Asses the role of Loader, Compiler and Interpreter in operating system.	4	2	1
23. Summarize the functions of PIPES in operating system.	4	2	2
24. Discuss the concept of Thrashing in operating system.	4	2	2
25. Brief on the operation of EDF scheduling algorithm.	4	2	3
26. Mention the different parameters used to find the performance of the scheduler	4	2	4
27. Briefly explain Security threads in RTOS	4	2	5

PART - C (5 × 12 = 60 Marks)

Answer **all** Questions

		Marks	BL	CO
28.	(a) Explain the various types of operating system and its features. (OR) (b) Assess the operations of Process, state of process and inter process communications in operating system.	12	3	1
29.	(a) Explain the paging and importance in memory management. (OR) (b) Discuss the concept of Segmentation and its significance in memory management.	12	3	2
30.	(a) Discuss the operations of Round Robin scheduling algorithm with suitable example. (OR) (b) Appraise the different types of task scheduling and explain the clock (cyclic) driven scheduling algorithm.	12	3	3
31.	(a) Explain the clock driven scheduling algorithms for scheduling periodic tasks. (OR) (b) Discuss the following in detail (i) Real time applications of Priority Scheduling (ii) Priority Inheritance protocol	12	3	4
32.	(a) Describe in detail about VXWORKS Real time operations system functions, features and applications. (OR) (b) Explain the features of the following RTOS in detail (i) RTLinux (ii) RTAI	12	3	5

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