Register No.: .... Name: ....

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SECOND SEMESTER M.TECH DEGREE EXAMINATION (R,S), MAY 2024
VLSI AND EMBEDDED SYSTEMS
(2021 Scheme)

Course Code: **21VE203**

Course Name: **Embedded Operating System and RTOS**

Max. Marks: **60**   **Duration: 3 Hours**

PART A

(Answer all questions. Each question carries 3 marks)

1. What are translators in embedded programming? Give examples.
2. Compare user mode and supervisory mode in an operating system.
3. Write about any six fields in a Task Control Block.
4. Explain about Mutex.
5. Describe about memory leak, stack overflow and virtual memory.
6. Enumerate the three arguments in ioctl function.
7. Describe operating system performance guidelines.
8. List the basic signal calls in VxWorks.

PART B

(Answer one full question from each module, each question carries 6 marks)

MODULE I

9. Classify embedded systems based on performance, functional requirement and size.   (6)

OR

10. Explain about the role of Integrated Development Environment in the Embedded Systems development process.   (6)

MODULE II

11. Draw a general Process State Diagram and explain each state.   (6)

OR

12. Explain the process creation model in which a copy of the parent process is created first.   (6)

MODULE III

13. What are the disadvantages of non-preemptive scheduling methods?   (6)

Explain, how Round Robin Scheduling helps in overcoming these disadvantages.

OR

14. Compare the structure and functionalities of Monolithic kernel and Microkernel. (6)

MODULE IV

15. Enumerate various Semaphore Functions. (6)

OR

16. Illustrate the function of mailbox to send and receive messages among tasks. (6)

MODULE V

17. Describe about device management and device manager functions. (6)

OR

18. With the help of an example, explain how segmentation is done. (6)

MODULE VI

19. Write an example program for task creation in VxWorks. (6)

OR

20. Write a program for VxWorks to write a data to the pipe and reads back the same data. (6)

****