

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

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**FIRST SEMESTER M.TECH DEGREE EXAMINATION (Regular), FEBRUARY 2022***(Telecommunication Engineering)***(2021 Scheme)****Course Code: 21TE105-D****Course Name: Embedded Systems for Communication****Max. Marks: 60****Duration: 3 Hours****PART A***(Answer all questions. Each question carries 3 marks)*

1. Illustrate Watch Dog Timer in a microcontroller.
2. What are the requirements of an embedded system?
3. Discuss synchronous, isochronous and asynchronous communication in an embedded system.
4. Illustrate any three program models in embedded system design.
5. List the goals of an OS.
6. Mention kernel services in an operating System
7. What are the basic functions expected from the kernel of an RTOS?
8. Write a short note on RTOS  $\mu$ COS II.

**PART B***(Answer one full question from each module, each question carries 6 marks)***MODULE I**

9. Summarize the architecture of PIC Microcontroller (6)

**OR**

10. a) Justify the need of ADC in a Microcontroller. (3)  
b) Explain how PWM can be used in embedded system design. (3)

**MODULE II**

11. Schedule the various steps involved in the design of an embedded system with an example. (6)

**OR**

12. Illustrate interrupt handling mechanism in an embedded system. (6)

**MODULE III**

13. Illustrate sophisticated interfacing features in device ports. (6)

**OR**

14. Interpret any two serial communication protocols. (6)

**MODULE IV**

15. Using relevant example, interpret *Process*, *Thread* and *Task* in an application. (6)

**OR**

16. Interpret priority inversion and deadlock situation with an example. (6)

**MODULE V**

17. Illustrate cooperative scheduling model and pre-emptive scheduling model. (6)

**OR**

18. Explain how ISRs are executed in RTOS Environment. (6)

**MODULE VI**

19. Discuss the design of an Automatic Chocolate Vending Machine using PIC Microcontroller. (6)

**OR**

20. Discuss RTOS VxWorks and its features in detail. (6)

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