

Register No:

Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SIXTH SEMESTER B.TECH DEGREE EXAMINATION(R,S), MAY 2024**Electronics and Communication Engineering****(2020 SCHEME)**

Course Code : **20ECT342**
Course Name : **Embedded Systems**
Max. Marks : **100**

Duration:3 Hours**PART A***(Answer all questions. Each question carries 3 marks)*

1. Create a sample requirements form that can be filled out at the start of the project to begin embedded system design process.
2. List the three key components of an embedded system.
3. Sketch the memory hierarchy and explain three different levels of memory with examples.
4. Analyze the factors that contribute to interrupt latency in embedded systems.
5. Define relational operators in embedded C and their role in comparison operations.
6. Identify the best choice for creating infinite loop. Implement infinite loop using that construct.
7. Illustrate how ARM handles I/O peripherals.
8. All processors have to develop to meet the demand for higher performance. Illustrate the two ways adopted in ARM to increase performance.
9. Explain three functions of control logic in ARM memory system.
10. Sketch a typical hierarchical program structure in ARM using functions.

PART B*(Answer one full question from each module, each question carries 14 marks)***MODULE I**

11. Choose an EDLC model for embedded product development which will provide characteristics such as rich documentation, easy project management, good control over cost and schedule. Draw and explain the diagram for the model and list the drawbacks. 14

OR

12. Construct an UML diagram for illustrating derived classes, considering display as base class, colour display and monochrome display as derived classes. 14

MODULE II

13. Sketch the frame format of I²C data communication protocol and explain the role of different bits. 14

OR

14. Explain the independent slave configuration of SPI. Compare it with daisy chain configuration of SPI. 14

MODULE III

15. Sketch the high level language to machine language conversion process and explain the major steps involved in it. 14

OR

16. Illustrate the role of conditional branching statements in controlling program flow in C programming. How do conditional branches alter the execution path? Provide examples of any two conditional branching instructions and their syntax in embedded C programming. 14

MODULE IV

17. Explain the three handshake signals between the ARM and the coprocessor with diagram. 14

OR

18. Compare and contrast the arithmetic and bitwise logical operations in ARM with help of examples. 14

MODULE V

19. Explain the AMBA architecture with neat diagram. What are the different types of buses used in this architecture? 14

OR

20. Compare the double precision floating-point data type and double extended precision floating-point data type. 14
