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**Question Paper Code: 99453**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

Open elective

Civil Engineering

19UEC953– Embedded System and programming

(Common to CSE, EEE, Mechanical, IT, Chemical, Agriculture and Biomedical Engineering)

(Regulation 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5x 1 = 5 Marks)

1. Which of the following is an example of immediate type addressing mode in ES? CO1- U  
(a) MOV A, #6AH (b) MOV A,04H (c) MOV A,R 4 (d) MOV R3,R2.
2. Integrate the concurrent development of both the hardware and the software using the methodology called----- CO1- U  
(a) Intellectual property (b) Co-Design (c) Prototyping (d) Internet of Things
3. Effective approach for determining the necessary stimuli for both test and troubleshooting is based on ----- CO1- U  
(a) path sensitizing (b) path synthesizing (c) debugging (d) testing
4. The \_\_\_ tracks the number of times a semaphore has been acquired or released by maintaining a token count. CO4- U  
(a) single task operating syst (b) hardware (c) Kernel (d) software
5. Which design can be used to reduce the energy consumption of the embedded system? CO5- U  
(a) simulator (b) Compiler (c) emulator (d) debugger

PART – B (5 x 3= 15 Marks)

6. What is a stack? CO1-U
7. Define spiral model? CO2- U

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|-----|---|--------|
| 8.  | What is a smoke test?   | CO1- U |
| 9.  | What is a real-time operating system?                             | CO4- U |
| 10. | What is the general syntax for declaring a pointer to a function? | CO5- U |

PART – C (5 x 16= 80Marks)

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|-----|--|----------|------|
| 11. | (a) Describe briefly about Register View of a Microprocessor?  | CO1- U   | (16) |
|     | Or   |          |      |
|     | (b) Describe the necessary steps for Execution flow of an embedded program?  | CO1- U   | (16) |
| 12. | (a) Illustrate with diagrams the system design methods using water life cycle model and v- life cycle model?                           | CO1- App | (16) |
|     | Or   |          |      |
|     | (b) Illustrate with diagrams the system design methods using Spiral life-cycle model and Rapid prototyping life-cycle model?           | CO1- App | (16) |
| 13. | (a) Discuss in detail about the strategy for applying module debug and test  | CO1- U   | (16) |
|     | Or   |          |      |
|     | (b) Describe briefly about Path Sensitizing  | CO1- U   | (16) |
| 14. | (a) Identify and explain the core responsibilities of a real-time operating system. Briefly describe the operating system architecture | CO1- U   | (16) |
|     | Or   |          |      |
|     | (b) What is a task control block? What are some of the major components of a task control block?                                       | CO1- U   | (16) |
| 15. | (a) Discuss the advantages and disadvantages of using pass by reference versus pass by value in an embedded C program?                 | CO1- U   | (16) |
|     | Or   |          |      |
|     | (b) What is a symbol table? Identify the information that is stored in the symbol table. What is the purpose of the symbol table?      | CO1- U   | (16) |