**18ECI02**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Supplementary) DEGREE EXAMINATION** | | | |
| **April,2023** | **Institutional Elective (Common to all branches)** | | |
| **Seventh Semester** | **Embedded Systems** | | |
| **Time:** Three Hours | | **Maximum: 5**0 Marks | |
| *Answer Question No. 1 Compulsorily.* | | | (10X1 = 10 Marks) |
| *Answer* ***ANY ONE*** *question from each Unit.* | | | (4X10=40 Marks) |

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| 1. | a) | Define an Embedded System | CO1 | L2 | 1M |
|  | b) | Write any two application of embedded system. | CO1 | L1 | 1M |
|  | c) | What are the various classifications of embedded systems? | CO2 | L1 | 1M |
|  | d) | Define Data Flow Graph (DFG) model. | CO2 | L2 | 1M |
|  | e) | What is meant by State Machine Model? | CO3 | L3 | 1M |
|  | f) | Define task and Task state | CO3 | L2 | 1M |
|  | g) | Define Message Queue. | CO3 | L2 | 1M |
|  | h) | Differentiate counting semaphore and binary semaphore | CO4 | L2 | 1M |
|  | i) | What are the processes involved in co- design? | CO4 | L1 | 1M |
|  | j) | Expand ASIP. | CO4 | L2 | 1M |
| **Unit -I** | | | | | |
| 2. | a) | Discuss the design challenges of an embedded system? | CO1 | L3 | 5M |
|  | b) | What are Embedded systems? Give the classification of embedded system? | CO1 | L2 | 5M |
|  |  | **(OR)** |  |  |  |
| 3. | a) | Explain various classifications of processors on detail? | CO1 | L1 | 5M |
|  | b) | Discuss sequential logic in detail? | CO1 | L4 | 5M |
|  |  | **Unit -II** |  |  |  |
| 4. | a) | Explain need of communication interfaces with suitable example. | CO2 | L3 | 5M |
|  | b) | Write short notes on(i) IEEE 802.11(ii) Bluetooth | CO2 | L2 | 5M |
|  |  | **(OR)** |  |  |  |
| 5. | a) | Define the following terms: finite-state machines, concurrent processes, real-time systems, and real-time operating system. | CO2 | L2 | 5M |
|  | b) | Write short note on infrared. | CO2 | L2 | 5M |
|  |  | **Unit -III** | |  |  |
| 6. | a) | Explain the architecture of kernel. | CO3 | L2 | 5M |
|  | b) | Give the steps for creating list of tasks and task schedulers. | CO3 | L1 | 5M |
|  |  | **(OR)** |  |  |  |
| 7. | a) | Explain even registers, pipes and signals. | CO3 | L2 | 5M |
|  | b) | Explain i. Mutex. ii. Mail boxes. iii. Message Queues. | CO3 | L1 | 5M |
|  |  | **Unit -IV** |  |  |  |
| 8. | a) | Differentiate Embedded OS and TROS. | CO4 | L2 | 4M |
|  | b) | What is computational model? Explain its role in hardware software co design. | CO4 | L3 | 6M |
|  |  | **(OR)** |  |  |  |
| 9. | a) | Differentiate between logic and RT synthesis. | CO4 | L2 | 5M |
|  | b) | Explain hardware software co-design. | CO4 | L1 | 5M |

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