10CS72

Seventh Semester B.E. Degree Examination, Jan./Feb. 2023
Embedded Computing Systems

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting at least TWO full questions from each part.*

PART – A

1   a. What is an embedded computer system give one example and a neat diagram. **(08 Marks)**
    b. Explain the various characteristic of embedded computing application. **(12 Marks)**

2   a. List out ARM data instructions, ARM comparison instruction, ARM move instructions, ARM load store instructions and pseudo-operations. **(16 Marks)**
    b. Draw the diagrams of Von Neumann architecture computer and a Harvard architecture. **(04 Marks)**

3   a. Explain in detail with a neat diagram about direct memory access. **(10 Marks)**
    b. Explain about system requirements and specifications of alarm clock with a neat diagram. **(10 Marks)**

4   a. Explain loop optimization and cache optimization. **(10 Marks)**
    b. Explain program validation and testing. **(10 Marks)**

PART – B

5   a. What is Kernel? What are the different functions handled by a general purpose kernel? **(06 Marks)**
    b. What is monolithic and micro kernel? Which one is widely used in the real time operating system? **(06 Marks)**
    c. Explain briefly about General Purpose Operating System (GPOS) and Real Time Operating System (RTOS). **(08 Marks)**

6   Provide examples of:
    a. Blocking interprocess communication **(06 Marks)**
    b. Non-blocking interprocess communication **(06 Marks)**
    c. Telephone answering machine. **(08 Marks)**

7   a. Explain in detail about seven layer OSI model of computer network. **(08 Marks)**
    b. Explain in detail about I2C Bus, CAN Bus SHARC. **(12 Marks)**

8   a. Explain the various elements of an embedded system development environment. **(05 Marks)**
    b. Explain the role of Integrated Development Environment (IDE) for embedded software development. **(05 Marks)**
    c. What is monitor program? Explain its role in embedded firmware debugging. **(05 Marks)**
    d. Explain On Chip Debugging (OCD). **(05 Marks)**

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