(3 Hours) [Total Marks: 100]

N. B.: (1) Question **No. 1** is **compulsory**.
    (2) Attempt **any four** from Question Nos. **2 to 7**.
    (3) **Make** suitable **assumptions** wherever necessary and **state** the **assumptions** made.
    (4) **Answers** to the **same question** must be written **together**.
    (5) **Numbers** to the **right indicate marks**.
    (6) **Draw** neat **labeled diagrams** wherever **necessary**.

Q. 1	a	Explain the importance of device drivers.	**5**
	b	Write short note on Watch dog Timers.	**5**
	c	Explain the role of locator in designing embedded system.	**5**
	d	"C has become the Language of embedded programmers". Justify. What are the advantages of writing embedded programs in assembly language?	**5**
Q. 2	a	Write the different actions performed by a typical startup code and explain it in brief.	**8**
	b	Discuss the role played by embedded system in a Digital Watch. What are the watch designer's goals?	**8**
	c	Write note on Data Bus Testing.	**4**
Q. 3	a	Distinguish between the following i) SRAM and DRAM ii) PROM and EPROM	**8**
	b	What is scheduling? Explain any two scheduling algorithms in detail.	**8**
	c	Enumerate the benefits of good device driver design.	**4**
Q. 4	a	What do you understand by the term Direct Memory Access (DMA)? Explain the working of DMA with an example.	**8**
	b	What is CRC? Explain the CRC checksum algorithm with an example.	**8**
	c	Write short note on : Application Programming Interface.	**4**
Q. 5	a	Write note on history and future of embedded system.	**8**
	b	Explain the stages involved in the embedded software development process in brief with proper diagram.	**8**
	c	What is the importance of an infinite loop in embedded system programs?	**4**
Q. 6	a	Explain the characteristics of Real Time operating System. What are the advantages of commercial operating system?	**8**
	b	Draw a diagram of a generic embedded system and explain all the blocks present therein.	**8**
	c	What do you understand by the term "Checksum"?	**4**
Q. 7	a	Explain the term "Task"? What are the different task states? Explain the role played by the operating system in handling these tasks.	**8**
	b	What is Memory Map? Why is memory map necessary in the design of embedded systems?	**8**
	c	Explain the working of remote debugger with an example.	**4**

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