

**M.Sc. Fourth Semester Degree Examination****COMPUTER SCIENCE — Paper – 4.3 (e)****Embedded Systems (Elective – I)****(Old Syllabus w.e.f. 2004-05)**

Time : 3 Hours]

[Max. Marks : 80

Instructions : 1) Answer any **five** questions.2) All questions carry **equal** marks.

1. (a) What is an embedded system? Explain with illustrative examples.
(b) What are the challenges one has to face during development of an embedded system software? Explain.
2. (a) Explain the terms :
 - (i) tri-stating
 - (ii) floating signal
 - (iii) signal loading
 - (iv) timing diagram(b) What are RAM and ROM? Compare their characteristics.
3. (a) What is DMA? Explain with a neat block diagram.
(b) What is UART? Explain a system with UART and RS-232.
4. (a) What is an interrupt routine? Explain context saving and restoring?
(b) State shared data problem. Discuss the methods to solve this problem.
5. (a) Explain function – queue-scheduling architecture.
(b) What is RTOS? Discuss semaphores as tools to protect shared data.
6. (a) What are the different methods of inter task communication? Explain them briefly.
(b) What are timer functions? Discuss event management.

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7. (a) Distinguish between hard real-time system and soft real-time system.
- (b) What are the embedded software development tools? Explain them briefly.
8. Write notes on any **two** of the following :
- (a) Bus handshaking
- (b) Round-Robin with interrupts
- (c) Reentrancy
- (d) Priority inversion and deadly embrace.
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