

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Third Semester M.Tech Degree Examination - December 2017
Electronics & Communication Engineering
(Communication Engineering & Signal Processing)
07EC7213 Embedded System Design

Time: 3 Hours

Answer all questions

Max.marks:60

Part 'a' of each question is compulsory
Answer either Part 'b' *or* Part 'c' of each question

1. (a) Explain the components of an embedded system with a block diagram. (5 marks)
- (b) Distinguish between General purpose system & Embedded system. (4 marks)

or

- (c) Explain the inter-process communication & Synchronisation of process in an embedded system. (4 marks)
2. (a) Explain the functions of the following: (i) watchdog timer (ii) Real Time Clock (iii) Device driver (3×2 marks)
- (b) Distinguish between hard real-time and soft real-time systems with examples. (3 marks)

or

- (c) Describe the strategies for synchronization between the tasks and Interrupt Service Routine. (3 marks)
3. (a) Distinguish between Pre-emptive Scheduling and cyclic scheduling. (5 marks)
- (b) Explain the functions of Kernel in Real Time Operating System. (4 marks)

or

- (c) Distinguish between co-operative & round robin scheduling. (4 marks)
4. (a) Explain the addressing modes of PIC18F Micro-controller. (5 marks)

- (b) An LED is connected to each pin of the Port D of PIC18F Micro-controller. Write an assembly language program to turn on each LED from pin D0 to pin D7. (4 marks)

or

- (c) Write an Assembly language program to create a square wave of 50% duty cycle on bit 0 of Port C of PIC18F Micro-controller. (4 marks)
5. (a) Write a C18 program to send values 00-FF to Port B. (8 marks)
- (b) Write short notes on bit addressable I/O programming in PIC18F Micro-controller. (4 marks)

or

- (c) Describe the C -data types for the PIC18F Micro-controller. (4 marks)
6. (a) Write a C18 program to toggle all the bits of PORTB continuously with some delay. Use Timer 0, 16-bit mode, and no pre-scalar options to generate the delay. (8 marks)
- (b) Describe the steps for programming the Compare mode in PIC18F Micro-controller. (4 marks)

or

- (c) Describe the steps for programming the Capture mode in PIC18F Micro-controller. (4 marks)