

Scheme – G
Sample Test Paper - I

Course Name : Electronics Engineering Group
Course Code : ET/EN/EX/EJ/IE/IS/IC/DE/EV/MU/IU/ED/EI
Semester : Sixth
Subject Title : Embedded System
Marks : 25

17658

Time: 01 Hour

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q1) Attempt any Three of the following:

(09 Marks)

- a) List the priority of interrupts of 89C51 microcontroller with respect to interrupt vector address.
- b) State any 4 features of IDE and ICE.
- c) State the types of serial communication protocol. Describe any one in brief.
- d) Differentiate between assembly language program with an embedded 'C' with respective parameter:
 - i) Execution time
 - ii) Time for coding
 - iii) Hex file size

Q2) Attempt any Two of the following:

(08 Marks)

- a) State any four 'C' data types with their value range.
- b) Write 89C51 'C' Program to transfer the character "A" serially at 4800 baud rate continuously. Use 8 bit data and 1 stop bit. Assume crystal frequency 11.0592 MHz.
- c) Describe the need of RS-232 and MAX-232 with a suitable diagram.

Q3) Attempt any Two of the following:

(08 Marks)

- a) Draw the internal data memory structure of 89C51 and describe register banks.
- b) Differentiate synchronous with asynchronous communication. (Any 4 points)
- c) Write a 'C' program to create frequency of 2.5KHz on pin P2.7. use Timer 1 mode 2 to create the delay.

Scheme – G
Sample Test Paper - II

Course Name : Electronics Engineering Group
Course Code : ET/EN/EX/EJ/IE/IS/IC/DE/EV/MU/IU/ED/EI
Semester : Sixth
Subject Title : Embedded System
Marks : 25

17658

Time: 01 Hour

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q1) Attempt any Three of the following:

(09 Marks)

- a) Classify an embedded system. Describe any two types.
- b) Differentiate RTOS with desktop operating system (Any four points).
- c) Draw interfacing diagram of LCD with 89C51 and state the functions of following pins of LCD display
 - i) RS
 - ii) VEE
- d) Describe any 6 design metrics of an embedded system

Q2) Attempt any Two of the following:

(08 Marks)

- a) State any four features of Bluetooth Technology.
- b) Write 89C51 'C' Program to rotate stepper motor 90° in clock wise direction. Motor has step angle of 1.8° . Use the stepper motor in full step sequence.
- c) State any 4 key specifications of RTOS.

Q3) Attempt any Two of the following:

(08 Marks)

- a) Write a program in 'C' language for generating triangular waveform using DAC 0808.
- b) Describe round robin scheduling algorithm with suitable diagram.
- c) Draw the labeled interfacing diagram to interface relay with 89C51 micro-controller.

Scheme - G
Sample Question Paper

Course Name : Electronics Engineering Group
Course Code : ET/EN/EX/EJ/IE/IS/IC/DE/EV/MU/IU/ED/EI
Semester : Sixth
Subject Title : Embedded System
Marks : 100

17658

Time: 03 Hours

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q1.A) Attempt any Three.

Marks 12

- a) State the points of difference between Harvard and Von Neumann architecture with a suitable diagram.
- b) List the Software development tools used in an embedded system and state the functions of any two.
- c) State any four features of Bluetooth Technology.
- d) Draw interfacing diagram of 16X2 LCD Display with 89C51 and state the function of:
 - i) RS
 - ii) VEE
 - iii) R/W

Q1.B) Attempt any One.

Marks 06

- a) Describe any 6 design metrics of an embedded system. List any 6 applications of an embedded system.
- b) List scheduling algorithms of RTOS. Describe concept of Pre-emptive multitasking scheduling algorithm of RTOS with suitable diagram.

Q2. Attempt any Four.

Marks 16

- a) Draw the internal data memory structure of 89C51 and describe register banks.
- b) Write 89C51 'C' Program to toggle bits of P1 ports continuously with a 250ms delay.
- c) Differentiate between CAN with I²C protocols with respective to
 - i) Data transfer rate
 - ii) Number of fields
 - iii) Addressing bit
 - iv) Application.
- d) Draw labeled interfacing diagram of ADC 0808 with 89C51 microcontroller.
- e) State the methods of Task synchronization. Describe Semaphore with suitable example.
- f) State any 4 specifications of an embedded system with their significance of it.

Q3. Attempt any Four.

Marks 16

- a) Draw the pin out of RS-232 and describe the function of TxD, RxD, DCE, DTE.
- b) Find the contents of port after execution of the following code.
 - i) $P2 = 0x74 \gg 3$
 - ii) $P3 = 0x5D \ll 5$
- c) Describe any 4 specifications of RTOS. Give any 4 examples of RTOS.
- d) Draw the block diagram of an embedded system and describe the hardware units of an embedded system.
- e) Write 89C51 'C' Program to rotate stepper motor 64° in clock wise direction. Motor has step angle of 2° . Use the stepper motor in full step sequence.

Q4.A) Attempt any Three.

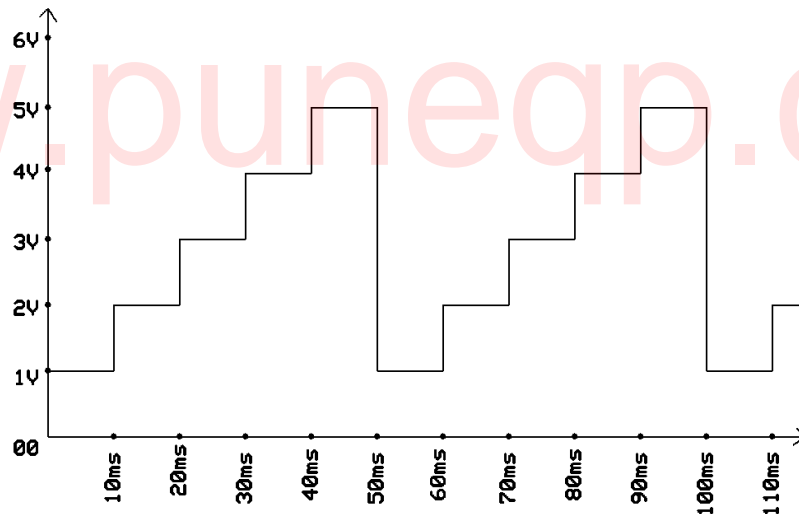
Marks 12

- a) Draw the format of TMOD. Describe the function of each bit.
- b) Differentiate Synchronous with asynchronous communication. (Any four points).
- c) Classify an embedded system. Describe any 2 types.
- d) Differentiate RTOS with desktop operating system (Any four points).

Q4.B) Attempt any One.

Marks 06

- a) Write 89C51 'C' Program to transfer the message "ESY" serially at 9600 baud rate continuously. Use 8 bit data and 1 stop bit.
- b) Write 'C' language program to generate following waveform continuously using DAC0808. The reference voltage for DAC is 5Vdc.



Q5. Attempt any Four.

Marks 16

- a) State any 4 data types with their value range.
- b) Describe the parallel protocols PCI, PCI-X.
- c) Draw labeled circuit diagram to interface 4x4 matrix keyboard with 89C51 microcontroller.
- d) State the meaning of following terms:
 - i) Inter task communication.
 - ii) Dead lock.
- e) Differentiate between assembly language program with an embedded 'C' with respective to
 - i) Execution Time
 - ii) Time for coding

- iii) Hex file size
- iv) Debugging
- f) Draw labeled interfacing diagram to interface DC motor with 89C51 microcontroller.

Q6. Attempt any Four.

Marks 16

- a) Describe program down loading tool ISP / IAP.
- b) State four features of Zigbee.
- c) Draw interfacing diagram of Relay with 89C51.
- d) Draw labeled interfacing diagram to interface LED to P2.0 of 89C51. Write 89C51 'C'. Program to turn on and off LED after some delay.
- e) Write Logical operators in 'C' for AND, OR, EXOR and NOT for 89C51 and state one example of each.

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