27906

2017 Nov A

Subject: MES (CBSGS)

Semester: VI

Marks: 80

Solution

Q.1 Answer the following: [20]

a. Drawing PSW register format – **02 marks**

PSW register format explanation – **03 marks.**

b. Definition of embedded system– **01 marks**

Two applications of embedded system– 2 X 02 = **04 marks**.

c. Explanation of 8051 stack– **02 marks**

Explanation of 8051 stack instructions– **03 marks.**

d. Flowchart for scanning and identifying the key in a 4X4 matrix keyboard by the 8051 microcontroller– **05 marks.**

Q.2 a. Diagram showing the 8051 connection to DAC0808– **05 marks**

Program to generate a square waveform at the output of the DAC– **05 marks.**

b. Diagrams for I2C, SPI and USB bus protocols – **05 marks**

Explanation for the I2C, SPI and USB bus protocols– **05 marks**.

Q.3 a. Interrupt definition– **02 marks**

Explaining the six interrupts of 8051 microcontroller– **08 marks.**

b. Drawing the architecture of 8051 microcontroller– **04 marks**

Explaining the architecture of 8051 microcontroller – **06 marks.**

Q.4 a. Drawing TMOD register format– **01 marks**

Explaining the TMOD register format– **02 marks**.

Explaining various timer modes of 8051 microcontroller– **07 marks.**

b. Writing the program to continuously transfer "ENGG" serially at 9600 baud, 8-bit data, and 1 stop bit– **10 marks to be distributed to different parts of the program.**

Q.5 a. Explanation for the concept of RTOS– **05 marks**

Explanation for interrupt latency and response time– **05 marks**.

b. Writing "C" program to get bit P1.1 and send it to P2.2 after inverting it– **05 marks.**

c. Diagram for demultiplexing of address and data lines of 8051 microcontroller – **03 marks.**

Explanation for the diagram– **02 marks.**

Q.6 Write short notes on the following: (**Any Four**) [20]

a. Scheduler and its types explanation – **05 marks**

b. SCON SFR– **2.5 marks**. TCON SFR– **2.5 marks.**

c. Diagram for interfacing 7-segment LED display with 8051 microcontroller– **3 marks**

Explaining the diagram– **2 marks**

d. Power saving mode of 8051– **2.5 marks**

Power down mode of 8051 – **2.5 marks.**

e. Embedded system design constraints explanation– **5 marks**.

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