Scheme – I

Sample Question Paper

Program Name : **Electronics Engineering Programme Group**
Program Code : **DE/EJ/ET/EN/EX/EQ/IS/IC/IE**
Semester : **Fourth**
Course Title : **Microcontroller and Applications**
Marks : **70**

22426

Time: 3 Hrs.

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.

Q.1) Attempt any FIVE of the following: - 10 Marks (5X2)

(a) Define the term BUS. List out the different types of BUSES.
(b) Find out the number of address lines required to access 8KB of RAM.
(c) List different files required during assembly language program.
(d) Compare Timer and Counter on the basis of Mode of operation.
(e) Classify the following application under Von-Neuman and Harvard architecture.
  i. Digital Signal Processing.
  ii. Audio Processing
(f) Compare Data memory and Program Memory.
(g) Give the different applications of Stepper Motor.

Q.2) Attempt any THREE of the following: - 12 Marks (3X4)

(a) Explain the interfacing diagram of DAC to 8051. Write an ALP to generate triangular waveform using DAC
(b) Compare between Microprocessor and Microcontroller on the basis of:
  i. Instruction Set
  ii. Applications
  iii. Memory Organization.
  iv. I/O compatibility

(c) State the alternative functions of port 3 of 8051.

(d) Sketch interfacing diagram of 4Kbyte EPROM and 4Kbyte of RAM to 8051. Draw the memory map.

Q.3) Attempt any THREE of the following. 12 Marks (3X4)

(a) Sketch the Internal memory organization in 8051 and explain the same.

(b) Develop a program to transfer block of 10 numbers from memory location 7000 to 8000H stored in internal memory.

(c) Explain the following Instructions:

i. MOVX,

ii. CJNE A, add, radd,

iii. ADDC,

iv. JMP@A+DPTR

(d) Explain the interrupt structure of 8051

Q.4) Attempt any THREE of the following. 12 Marks (3X4)

(a) Develop an ALP to read temperature from LM 35 sensor. Draw the interfacing diagram with 8051.

(b) Explain Von-neuman and Harvard Architecture

(c) Interface ADC 0809 with 8051 and write a program to read data from the device and convert to digital data

(d) Draw the interfacing of Stepper motor and write an ALP to rotate in clockwise direction

(e) Develop an ALP to transmit message WELCOME serially at baud rate of 9600, 8 bit data, 1 stop bit. Assume Crystal frequency of 11.0592MHz.

Q.5) Attempt any TWO of the following. 12 Marks (2X6)

(a) Explain the various selection factors of Microcontroller suitable for application.

(b) Develop a program for adding series of numbers stored at 7000H onwards. Store the result in last location

(c) Sketch 8021 interfacing diagram to interface 4 LED's and 4 switches . interface LED to port 0 upper nibble and switches to port 1. Develop an ALP to read status of switches and operate LEDs as per switch status.

Q.6) Attempt any TWO of the following. 12 Marks (2X6)

a) Develop an 8051 based system for traffic light controlling. Draw interfacing diagram and write an ALP for the same.

b) Develop a program to toggle the LED's after every 500msec connected to P1.0 and P1.1 after receiving the external interrupt on INT0.

(c) State and explain the need of the following development tools microcontroller board:

i. Editor.

ii. Assembler

iii. compiler

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Program Name : **Electronics Engineering Programme Group**
Program Code : **DE/EJ/ET/EN/EX/EQ/IS/IC/IE**
Semester : **Fourth**
Course Title : **Microcontroller and Applications**
Marks : **20**

22426

Time: 1 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.

Q.1 Attempt any FOUR. **08 Marks (4X2)**

a) Define RISC and CISC.
b) Specify the size of Internal ROM and RAM in 8051.
c) Define BAUD rate in UART. List the factors affecting Baud rate.
d) List different addressing modes in 8051.
e) State the need of Power saving options in 8051.

Q.2 Attempt any THREE. **12 Marks (3X4)**

(a) Explain 8051 as Boolean Processor.
(b) Explain the various addressing modes with one example in each.
(c) Write single instruction to perform the following operations:
  i. Logical instruction to make accumulator contents FFH
  ii. To set the carry flag bit.
  iii. To change the contents of accumulator from 85H to 58H
  iv. Jump if bit R5.0 is '0'
(d) Write a program to add two BCD numbers which are stored at external memory location 3000H and 3001H. Draw the flowchart for the same.

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Marks : **20**

22426

Time: 1 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.

Q.1 Attempt any FOUR. **08 Marks (4X2)**

(a) Draw the format of TCON.
(b) Explain the effect of Key debounce.
(c) List the applications of Stepper Motor.
(d) Draw the format of IE SFR.
(e) State the features of serial port of 8051

Q.2 Attempt any THREE. **12Marks (3X4)**

(a) Develop an ALP to generate a delay of 500 msec by using timer 1. Assume crystal frequency of 12 MHz.
(b) Interface two common cathode 7 segment display to 8051 and display EC continuously on it.
(c) Develop an ALP to read temperature from LM 35 sensor. Draw the interfacing diagram with 8051.
(d) Develop an ALP to transmit message WELCOME serially at baud rate of 9600, 8 bit data, 1 stop bit. Assume Crystal frequency of 11.0592MHz.