

S.Y. B. SC. (COMPUTER SCIENCE) SEM –IV (CBCS - 2016

COURSE) : SUMMER - 2018

SUBJECT : 8051 MICROCONTROLLER

Day : Saturday

Time : 11.00 A.M. TO 02.00 PM

Date : 21-04-2018 S-2018-0823

Max. Marks : 60

N. B. :

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw diagrams **WHEREVER** necessary.

Q.1 Answer **ANY TWO** of the following: (12)

- a) Explain the working of stepper- motor. Draw an interface diagram for interfacing of stepper motor to 8051.
- b) State and explain logical instructions for 8051 microcontroller.
- c) Draw the bit format of TMOD register and explain the function of each bit.

Q.2 Answer **ANY TWO** of the following: (12)

- a) State the alternative function of Port 3.
- b) With necessary diagram explain the interfacing of parallel ADC to 8051.
- c) Explain the following addressing modes with examples:
 - i) Register
 - ii) Direct
 - iii) Immediate

Q.3 Answer **ANY TWO** of the following: (12)

- a) Explain the functional block diagram of 8051 microcontroller.
- b) Assume that after reset the interrupt the interrupt priority is set by instruction MOV IP, 0DH. Find the sequence in which interrupts are serviced.
- c) Explain 8051 serial port programming.

Q.4 Answer **ANY THREE** of the following: (12)

- a) Explain the internal memory organization of 8051.
- b) With necessary format explain the bit assignment for interrupt from Interrupt Enable(IE) register.
- c) Explain the following parameters for DAC:
 - i) Resolution
 - ii) Accuracy
 - iii) Linearity
 - iv) Monotonicity
- d)
 - i) State the role of counters/timers for 8051.
 - ii) Find the timers clock frequency and its period for 8051 based system with crystal frequency of 12 MHz.

Q.5 Answer **ANY FOUR** of the following: (12)

- a) State the functions of the following pins of 8051:
 - i) XTAL 1 and XTAL 2
 - ii) ALE
 - iii) \overline{EA}
- b) Write a program to add 5 numbers stored in RAM starting from address 40H.
- c) Explain the following instructions:
 - i) MOV A, #data
 - ii) PUSH direct
 - iii) ADD A, R₅
- d) Explain any three assembler directives.
- e) Indicate mode and timer selected for each of the following:
 - i) MOV TMOD, #01H
 - ii) MOV TMOD, #20H
 - iii) MOV TMOD, #12H
- f)
 - i) In which register is the remainder held and in which the quotient, after the execution of the instruction DIV AB.
 - ii) Name the ports used in 8051 microcontroller.

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