



US – 407

VI Semester B.Sc. Examination, May 2017
(CBCS) (Fresh) (2016-17 and Onwards)
ELECTRONICS – VIII
Microcontrollers

Time : 3 Hours

Max. Marks : 70

Instructions : Answer **all** questions from Part 'A' **any five** questions from Part 'B' and **any four** questions from Part 'C'.

Note : It is required to answer **all** the questions of Part 'A' in **any one** page. Answering the **same** questions in multiple pages will **not** be considered for valuation.

PART – A

Answer **all** questions :

(15×1=15)

1. 1) Which is said to be 'computer on a chip' ?
a) Microprocessors b) Microcontrollers
c) Both d) None of the above
- 2) The 8051 has _____ parallel I/O ports.
a) 2 b) 3 c) 4 d) 5
- 3) The register that provides control and status information about serial port is
a) IP b) IE
c) TCON d) PCON and SCON
- 4) The symbolic code for each instruction in assembly language programming is called as
a) Mnemonic b) Operand c) Comment d) Op-code
- 5) Which operator is used to indicate register indirect addressing ?
a) \$ b) # c) @ d) &
- 6) The content of the register A after the execution of the following code is
MOV A, #85H
SWAP A
a) 85 b) 58 c) 53 d) 35

P.T.O.



- 7) The contents of the accumulator after this operation
MOV A, #2BH
XRL A, #78H
a) 2B H b) 54 H c) 3B H d) 28 H
- 8) After division operation instruction the quotient is stored in _____ register
and the remainder is stored in _____ register.
a) A, B b) B, A c) A, A d) B, B
- 9) The register used for accessing external data memory is
a) DPH b) DPL c) DPTR d) None
- 10) If Timer 0 is to be used as a counter, then the pin at which clock pulse is to be
applied is
a) P3.3 b) P3.4 c) P3.5 d) P3.6
- 11) Magnitude of the unsigned char data type is
a) 0 to 255 b) 0 to 256 c) -128 to 127 d) -127 to 128
- 12) Relative range for a branch instruction is
a) +127d to -128d b) -128d to +128d
c) -128d to -128d d) 127d to 128d
- 13) MOVX instruction is used access
a) External data memory b) Internal data memory
c) External memory d) Internal memory
- 14) The I/O port which does not have a dual-purpose role is
a) Port 0 b) Port 1 c) Port 2 d) Port 3
- 15) The step size for an 8-bit ADC interfaced to a 8051 microcontroller, with a
reference voltage V_{ref} of 4 volt is
a) 15.62 mv b) 250 mv c) 20 mv d) 10 mv

PART - B

Answer **any five** questions :**(5×7=35)**

2. With a neat block diagram, explain the internal architecture of 8051. **7**
3. a) Explain internal RAM organization of an 8051 microcontroller. **(4+3)**
b) Explain the bit format of PSW register.



- 4. a) What are addressing modes ? (1+6)
- b) With an example explain :
 - i) immediate addressing
 - ii) register addressing
 - iii) direct addressing modes of 8051 microcontroller.
- 5. Explain the interrupts of 8051 microcontroller. 7
- 6. a) Correct the syntax of the following instructions. (3+4)
 - i) MOVA, @ R₇
 - ii) MOV R₂, R₃
 - iii) MOV #C, 0A
- b) List any 4 bit level logical instructions of 8051 microcontroller.
- 7. a) Write a note on stack and stack pointer of 8051 microcontroller. (3+4)
- b) Distinguish between ACALL and LCALL instructions in 8051 microcontroller.
- 8. Differentiate between a counter and a timer. Explain the timer modes of operations in 8051. (2+5)
- 9. With necessary diagram, explain the interfacing of 8051 to DAC. 7

PART – C

Answer **any four** questions : (4×5=20)

- 10. Draw the bit structure of TMOD register of 8051 and mention the function of each bit. 5
 - 11. Write a program to add FFh and FEh stored in memory locations 30h and 31h and store the result in the consecutive memory locations. 5
 - 12. Write a program to find the largest of five 8-bit numbers stored in memory locations 50 h and 54 h. Store the result in the memory locations 55 h. 5
 - 13. Write a C-program to toggle the bits of P1 continuously with a 250 ms delay for a processor with crystal frequency 11.0592 MHz. 5
 - 14. Write the bit assignment and specify each bit of SCON register. 5
 - 15. With the necessary diagram, explain the interfacing of LCD to PIC 16F877A. 5
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