**VI Semester B.Sc. Examination, May/June 2018**
**(CBCS) (2016-17 and Onwards) (Fresh + Repeaters)**
**ELECTRONICS – VIII**
**Microcontrollers**

Time : 3 Hours

Max. Marks : 70

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

## PART – A

**Note** : Answer **all** the questions of Part – **A** in **any one** page, answering the same question multiple times will **not** be considered for evaluation.

Answer **all** the sub-divisions.

(15×1=15)

1. 1) The RAM size of 8052 microcontroller is

   a) 128 bytes

   b) 256 bytes

   c) 64 bytes

   d) 4K bytes

2) The 8051 has _____ 16-bit counter/timers.

   a) 1

   b) 4

   c) 3

   d) 2

3) The SP is of _____ wide register. And this may be defined anywhere in the.

   a) 8 byte, on-chip 128 byte RAM

   b) 8 bit, on chip 256 byte RAM

   c) 16 bit, on-chip 128 byte ROM

   d) 8 bit, on chip 128 byte RAM

4) Which of the following instruction is wrong ?

   a) INC DPTR

   b) MOV @DPTR, A

   c) DEC @DPTR

   d) MOV A, @ A + DPTR

**P.T.O.**

5) The flag register in the 8051 is called _____

   a) Program counter        b) Stack pointer

   c) Program Status Word    d) Accumulator

6) The contents of the accumulator after executing the following instructions

   MOV A,#0BH

   ANL A,#2CH

   Will be

   a) 00001000             b) 11010111

   c) 11011010             d) 00101000

7) What is the bit addressing range of addressable individual bits over the on-chip RAM ?

   a) 00H to FFH           b) 20H to 2FH

   c) 00H to 7FH           d) 80H to FFH

8) The 8-bit address bus allows access to an address range of

   a) 0000 to FFFFH       b) 000 to FFFH

   c) 00 to FFH            d) None of the above

9) Magnitude of the unsigned char data type is

   a) 0 to 255             b) 0 to 256

   c) −128 to 127         d) − 127 to 128

10) Which of the following instructions will load the value 35H into the high byte of timer 0 ?

   a) MOV TH0, #35H       b) MOV TH0, 35H

   c) MOV T0, #35H        d) MOV T0, 35H

11) Which of the following instruction perform jump indirect relative to DPTR ?

   a) JMP @ A+DPTR      b) JMP DPTR

   c) JMP A+DPTR        d) SJMP A+DPTR

12) The I/O port that does not have a dual-purpose role is

a) Port 0`                          b) Port 1

c) Port 2                           d) Port 3

13) Which among the below stated registers does not belong to the category of special function registers ?

a) TCON and TMOD              b) TH0 and TL0

c) P0 and P1                      d) SP and PC

14) In 8051 which interrupt has highest priority ?

a) IE 1                             b) TF0

c) IE0                              d) TF 1

15) The total external data memory that can be interfaced to the 8051 is

a) 32 K        b) 64 K        c) 128 K        d) 256 K

PART – B

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

2. With a neat diagram explain briefly the architecture of 8051 microcontroller.

3. Explain how the internal RAM is organized in 8051 microcontroller.

4. With an example, explain :
   i) Register addressing
   ii) Direct addressing and
   iii) Indirect addressing modes of 8051.

5. Explain the operations of the following 8051 instructions :
   i) RLC A
   ii) DA A
   iii) MUL AB
   iv) AJMP addr.

6. What is a timer ? Explain the timer mode operations.

7. Explain the C-data types for 8051 microcontroller.

8. With necessary diagram, explain the method of interfacing steppar motor 8051.

9. Explain the features of PIC microcontrollers.

## PART – C

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

10. Explain the bit structure of IE register and IP registers of 8051.

11. Write a program to sort the given numbers in ascending order.

12. Write a program to find 2's complement of a 16 bit number.

13. Write a program to perform the addition of two 8-bit numbers stored in two memory locations and store the results in next two memory locations.

14. Write an 8051 C program to toggle only one bit P1.5 continuously 5,000 times.

15. With a necessary diagram, explain the interfacing of LCD to PIC 16F877 A.