



GS-381

VI Semester B.Sc. Examination, May/June - 2019

ELECTRONICS-VIII

Microcontrollers

(CBCS) (2016-17) (Onwards) (F+R)

Time : 3 Hours

Max. Marks : 70

Instructions to Candidates :

Answer **all** questions from Part-A, **any five** from Part-B and **any four** from Part-C.

PART - A

Answer **all** the questions.

15x1=15

1. The 8051 is a _____ bit microcontroller.
 (a) 8 bit (b) 16 bit (c) 4 bit (d) 32 bit
2. The flag register in the 8051 is called _____.
 (a) Stack Pointer (b) Program Status Word
 (c) Program Counter (d) Data Pointer
3. Which port line of 8051 microcontroller require external pull up ?
 (a) port 1 (b) port 0 (c) port 2 (d) port 3
4. On power up, 8051 uses RAM location _____ as the first location of the stack.
 (a) 08H (b) 20H
 (c) 07H (d) None of the above
5. In multiplication of two bytes in the 8051, the two numbers must be placed in _____ registers.
 (a) A and B (b) A and R1
 (c) B and R2 (d) All the above
6. Which register is used to transfer the data serially ?
 (a) SBUF (b) SCON (c) PCON (d) SP
7. What is the maximum capacity of off-chip data memory ?
 (a) 32K (b) 16K (c) 64K (d) 4K

P.T.O.



8. Which of the following instruction is wrong ?
- (a) INC DPTR (b) MOVX @ DPTR,A
(c) MOV A,# 00H (d) DEC DPTR
9. With each POP instruction, the stack pointer register is _____.
- (a) decremented by 1 (b) incremented by 2
(c) incremented by 1 (d) decremented by 2
10. Which is the lowest priority interrupt in 8051 ?
- (a) INTO (b) INT1 (c) TI (d) TF1
11. How many bytes are required to store the instruction DJNZ direct, radd ?
- (a) 2 (b) 3 (c) 1 (d) 4
12. MOVX instruction is used to access :
- (a) External Data Memory (b) Internal data Memory
(c) both (a) and (b) (d) None of the above
13. Which pin of the 8051 is assigned to the external hardware interrupt INT1 ?
- (a) P3.1 (b) P3.2 (c) P3.4 (d) P3.3
14. The unsigned int takes a value in the range of :
- (a) 0 to 65535 (b) 0 to 255
(c) -128 to +127 (d) -127 to +128
15. Find the content of P1 after the execution of the following code
P1=0x37 & 0xCA.
- (a) 02H (b) 07H (c) 3AH (d) ACH

**PART - B**Answer **any five** questions :**5x7=35**

1. (a) Compare the microprocessor and the microcontroller. **3+4**
(b) Explain the functional pin diagram of 8051.
2. Explain the internal memory organization of 8051.
3. (a) Mention the addressing modes of 8051. **2+5**
(b) Explain the interrupts of 8051 microcontroller.
4. (a) With a necessary diagram explain : **5+2**
(i) relative range
(ii) short absolute range
(iii) long absolute range
(b) Write the bit pattern of PSW register.
5. (a) Explain the following instructions : **5+2**
(i) SWAP A
(ii) CJNE A, add, radd
(iii) MOVC A, @A+DPTR
(b) Distinguish between LCALL and ACALL instructions.
6. Explain the logical operators used in 8051 C.
7. With a diagram explain the interfacing of seven segment display to 8051 microcontroller.
8. Explain the features of PIC microcontroller.

P.T.O.



PART - C

Answer **any four** questions :

4x5=20

1. Draw the bit structure of TCON register of 8051 and mention the function of each bit.
2. Write an assembly language program to find the largest in an array of N 8 bit numbers.
3. Write an assembly language program to find the sum of N 8 bit numbers stored in consecutive memory locations and store the sum in next memory location.
4. Write an assembly language program to find the 2's compliment of a 16 bit number.
5. What will be the content of R2 after the execution of the following instructions ?

```
MOV A, #56H
```

```
RR A
```

```
XRL A, #98H
```

```
SWAP A
```

```
MOV 01, A
```

```
MOV R2, A
```

6. Write an 8051 C program to toggle the bits of P1 continuously forever with some delay.