

Question Bank (I-Scheme)

Name of course: Digital Electronics and Microcontrollers Applications

Unit Test: II

Subject code: 22421 (DEM)

Semester: IV

Program: EE

CHAPTER 3: Basics of Microprocessor and 8051 Microcontroller (08 marks) (CO3)

2 marks

1. List the functions of address and Data Bus.
2. Compare microprocessor with microcontroller on the basis of any four factors.

4 marks

3. Draw the architecture of 8051 and label various blocks.
4. With the help of PCON register, explain Power down mode and Idle mode of 8051.
5. Identify the special function registers(SFR) to do the following:
 - (i) Change the priorities of various interrupts in 8051.
 - (ii) Enabling and disabling of various interrupts in 8051.

Explain bit functions of each bit of these SFRs.

6. Which pins of 8051 are used to perform the following functions:
 - (i) Receive the serial data
 - (ii) Enable of external memory.
 - (iii) Multiplexing and de-multiplexing of address/ data lines.
 - (iv) Applying external interrupts.

CHAPTER 4: 8051 instruction set and programming (12 marks) (CO4)

2 marks

7. Identify the addressing mode of the instruction: MOV A, @R0 and DJNZ Rn, rel
8. Find the number of address lines required for: 1. 2K RAM 2. 16K ROM
9. Illustrate the functions of Editor, Assembler and Compiler.
10. List any four addressing modes of 8051 with one example of each.
11. If initial content of accumulator is 44 H, find out the new content of accumulator after execution of the instruction RR A.

4 marks

12. List the various stages in software development cycle and explain importance of each stage.
13. Explain the meaning of following instructions:
 1. MOV A , FOH

2. ADD A , R₄
 3. SWAP A
 4. CJNE R₁ , #data , rel
14. Execute the following program and specify the contents of Accumulator and status of PSW after execution :
- ```

MOV A, #23H
MOV 0F0H, #02H
MUL AB
END

```
15. Develop an ALP to generate a square wave with ON time of 7 msec and OFF time of 3 msec.
16. Develop an ALP to find the largest number out of ten numbers stored from internal memory location 60H onwards and store the result at 70H memory location.
17. Develop ALP for 8051 to perform addition, anding, multiplication of two data — Data-1 is at memory location 55 H and Data 2 is 20 H. Store result at internal memory locations.
18. List out any four assembler directives and state their functions.

## **CHAPTER 5: 8051 Memory I/O device Interfacing and Applications (12 marks)**

**(CO5)**

**2 marks**

19. Find out number of data lines required to interface 16 LEDs arrange in the 4 x 4 matrix form.

**4 marks**

20. Interface Steeper motor to 8051 and write an ALP to rotate Stepper motor in clockwise direction.
  21. Draw an interfacing diagram of 8 LEDs connected to port 2 of 8051 and write a program to toggle LEDs after 100 msec delay.
  22. Write an ALP to find average of ten, 8 bit numbers stored in internal memory location starting from 40H and store the result in 70 H location. Develop an ALP to turn ON/OFF the relay. Draw suitable interfacing diagram.
  23. Draw the interfacing diagram of Traffic light controller with 8051.
  24. Sketch diagram showing interfacing of single 7-segment common Anode display to 8051. Develop ALP to display number '7; on it. Execute the following program & specify the contents of Accumulator & status of PSW after execution. Also draw the format of PSW
- ```

MoV A, #0FH
MoV B, #03H
Div AB
End

```

25. Sketch diagram showing interfacing of two chips of RAM having size 2k x 8 to 8051 microcontroller. Write its memory map.