

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B. Tech. Winter 2019 - 20 Examination

Semester: 5**Subject Code: 03107304****Subject Name: Microcontroller and Interfacing****Date: 10/12/2019****Time: 10:30am to 01:00pm****Total Marks: 60****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions**(15)**

1. What is the file extension that is loaded in a microcontroller for executing any instruction.....
2. For a microcontroller with a crystal frequency of 20 MHz, the time taken by one machine cycle is
3. The program counter in the 8051 isbits wide.
4. Theflag is used for BCD arithmetic instruction.
5. The PORTof 8051 needs a pull-up resistor for using it as an input or an output port.
6. When we add two numbers the destination address must always be.....
7. bytes of bit addressable memory is present in 8051 based microcontrollers.
 - a) 16
 - b) 32
8. DJNZ R0, label is byte instructions.
9. Auto reload mode is allowed in mode..... of the timer.
10. What is full form of SFR.....
11. 8051 series microcontroller has how many 16 bit registers?
 - a) Two
 - b) Three
 - c) One
 - d) Zero
12. When 8051 wakes up then 0x00 is loaded to which register?
 - a) DPTR
 - b) SP
 - c) PC
 - d) PSW
13. What is the difference between UART and USART communication?
 - a) They are the names of the same particular thing, just the difference of A and S is there in it.
 - b) One uses asynchronous means of communication and the other uses synchronous means of communication.
 - c) One uses asynchronous means of communication and the other uses asynchronous and synchronous means of communication.
 - d) One uses angular means of the communication and the other uses linear means of communication.
14. Which characteristic/s of accumulator is /are of greater significance in terms of its functionality?
 - a) Ability to store one of the operands before the execution of an instruction
 - b) Ability to store the result after the execution of an instruction
 - c) Both a & b
 - d) None of the above
15. How many registers can be utilized to write the programs by an effective selection of register bank in program status word (PSW)?
 - a) 8
 - b) 16
 - c) 32
 - d) 64

Q.2 Answer the following questions. (Attempt any three)**(15)**

- A) Describe function of following pins of 8051 8-bit microcontroller: 1) TXD, (2) WR, (3) RD, (4) PSEN, and (5) EA.
- B) Write short note on 8051 data type and directives.
- C) Write short note on 8051 memory organization.
- D) List out 8051 Addressing modes and describe any two of them.

Q.3 A) Draw the block diagram of 8051 Microcontroller Architecture and explain each block in detail.**(07)**

- B)
1. Discuss Interrupts priority upon reset. (08)
 2. Explain following registers that are need to be configured to communicate over UART (Timer 1 to generate the required baud rate): TMOD, SCON, TCON, and TH1 & TL1

OR

- B) Write I/O programming in 8051 C for following: (08)
1. LEDs are connected to bits P1 and P2. Write an 8051 C program that shows the count from 0 to FFH (0000 0000 to 1111 1111 in binary) on the LEDs.
 2. Write an 8051 C program to monitor bit P1.5. If it is high, send 55H to P0; otherwise, send AAH to P2.

- Q.4** A) Draw the interfacing of DC motor with 8051 microcontroller. Write a C program to first rotate motor in anti-clock wise direction, stop motor, rotate motor in clockwise direction and finally stop motor. (07)

OR

- A) Interface 16 x 2 LCD to 8051 microcontroller. Explain functionality of each of the pins of 16 x 2 LCD. (07)
- B) Discuss 8051 timer TMOD (timer mode) register in detail. (08)