

BCA (Semester – 6th)
MICROCONTROLLERS
Subject Code: BELE0F99
Paper ID: [OE3160106]

Time: 03 Hours**Maximum Marks: 60****Instruction for candidates:**

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A**(2 marks each)**

Q1. Attempt the following:

- a) What is the difference between instructions: **INC 40** and **DEC @R1**?
- b) What is the difference between instructions: **ORL 50h, #50**, and **ORL C, /50H**?
- c) What is the difference among instructions: **LCALL DELAY** and **ACALL DELAY**?
- d) Explain the **MUL AB** and **DIV AB** instructions.
- e) Explain the instruction: **DJNZ R3, NEXT**.
- f) What is polling? How it is different from an interrupt?
- g) Write read-modify-write instructions.
- h) What is the configuration of the PSW register?
- i) What is the difference between the sub-program and interrupt?
- j) Why inside the sub-program number of PUSH and POP instructions are same?

Section – B**(5 marks each)**

- Q2. Write an assembly language program for the 8051 microcontrollers to find 2's complement of 8-bit data available from memory location 60H and store the result at memory location 1170H.
- Q3. Write an assembly language program for the 8051 microcontrollers to check if the data available from the 1000H memory location is divisible by 8. If it is divisible, write "Y"; otherwise, write "N" at memory location 1070H.
- Q4. Unpacked BCD data is stored at memory locations 60h and 61h. Write a program in the assembly of 8051 microcontrollers to convert a packed BCD number into binary.
- Q5. Write an assembly program that continuously gets 8-bit data from the port, P0, and sends it out to port, P1 while simultaneously creating a square wave of 4kHz seconds period on P2.1. Use timer 1.
- Q6. Write an assembly language program for 8051 microcontrollers to receive 8-bit data serially with a baud rate 9600 and save at memory locations starting from 2000H. After a 4 msec send the received data out serially with baud rate 4800.

Section – C**(10 marks each)**

- Q7. Draw the block diagram of 8051-microcontroller and explain its working. What is the structure of PORT 2? How PORT can be avoided from damaging?
- Q8. What are the addressing modes? How many addressing modes are used by 8051-microcontroller? Explain each mode giving at least four instructions of that addressing mode.
- Q9. What is absolute decoding? Draw the schematic diagram to interface the 8kB RAM and 4kB of data ROM with an 8051 micro-controller. What address should be sent out from the microcontroller to get data from the RAM/ROM?