4E1220

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B. Tech. IV-Sem. (Back) Exam., Oct.-Nov. - 2020

Electronics & Communication Engineering

4EC4 - 05 Microcontrollers

EC, EI

Time: 2 Hours **Maximum Marks: 82**

Min. Passing Marks: 29

Instructions to Candidates:

Attempt all ten questions from Part A, four questions out of seven questions from Part B and two questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 Name three features of the 8051.

Q.2 What is the major difference between the 8051 and 8052 microcontrollers?

Q.3 What is the size of the SP register?

Q.4 How does an instruction differ from a directive?

Q.5 Which program produces the "Obj" file?

Q.6 Why do we need subroutines?

Q.7 When LCALL is executed? How many bytes of the stack are used?

Q.8 Define Cache memory.

Q.9 Which pins are assigned to V_{cc} and GND?

Q.10 What is the error in the following instruction- MOV A, @R2?

PART – B

(Analytical/Problem solving questions) **[4×8=32]**

Attempt any four questions

Q.1 Show how to put value 99H into RAM location F6H of upper RAM in the 8052?

Q.2 Show how would you check whether the P flag is high?

Q.3 Which version of the 8051 does not have on-chip ROM? How many parallel and serial port lines the 8051 has?

Q.4 Examining the stack, show the contents of the registers and SP after execution of the following instructions. All values are in hex.

```
POP 3  ; POP stack into R3
POP 5  ; POP stack into R5
POP 2  ; POP stack into R2
```

Q.5 Discuss the role (need) of timers in microcontrollers.

Q.6 What do you mean by Arithmetic Coprocessors?

Q.7 Multiply 25 by 10 using the technique of repeated addition.

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[2×15=30]**

Attempt any two questions

Q.1 Name and explain the working of all instructions available in 8051 assembly language.

Q.2 Draw and explain block diagram of 8051 microcontroller.

Q.3 Discuss ARM microcontrollers interface designs with suitable diagram.

Q.4 Explain the working of A/D and D/A converters.

Q.5 Define Interrupts. Give the role of interrupts in programming of microcontrollers. Give suitable example in support of your answer.
