(Model Paper) **C –23, EC -402**

State Board of Technical Education and Training, A. P

Diploma in Electronics and Communication Engineering (DECE)

IV Semester

Subject Name: Microcontrollers and Interfacing

Sub Code: EC - 402

Time: 90 minutes **Unit Test I** **Max.Marks:40**

Part-A **16Marks**

Instructions: (1) Answer **all** questions.

(2) First question carries **four** marks, each question of remaining carries **three** marks

1. Write the importance of following registers in one sentence
   a) Stack pointer (CO1)
   b) Program counter (CO1)
   c) Accumulator (CO1)
   d) PSW (CO1)
2. List any three featured of microcontrollers (CO1)
3. Distinguish between machine cycle and T-state (CO2)
4. List any three data transfer instructions of 8051 microcontroller. (CO2)
5. Explain the status of flag register after executing the following two instructions. (CO2)

   MOV A, #42H

   ADD A, #44H

Part-B **3×8=24**

Instructions: (1) Answer **all** questions.

(2) Each question carries **eight** marks

(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

6. (a) Draw the functional block diagram of 8051 microcontroller and explain about each block (CO1)

   or

   (b) Draw the PIN diagram of 8051 microcontroller and explain the function of each PIN (CO1)

7. (a) Explain the internal memory organization of 8051 with suitable diagram (CO1)

   or

   (b) Explain the SFRs associated with timer/counters of 8051 microcontroller. (CO1)

8. (a)Explain the operation carried out on execution of the following instructions. (CO2)
   (i) MUL AB (ii) DIV AB (iii) DA A (iv) ADDC A, @R0

   or

   (b) Explain various addressing modes of 8051microcontroller with suitable examples. (CO2)

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(Model Paper) **C –23, EC -402**

State Board of Technical Education and Training, A. P

Diploma in Electronics and Communication Engineering (DECE)

IV Semester

Subject Name: Microcontrollers and Applications

Sub Code: EC - 402

Time: 90 minutes **Unit Test II** **Max.Marks:40**

Part-A **16Marks**

Instructions: (1) Answer **all** questions.
(2) First question carries **four** marks, each question of remaining carries **three** marks

1. Draw symbols used in flow charts to indicate the following
   a) End or Beginning (CO3)
   b) Process (CO3)
   c) Decision (CO3)
   d) Input and Output (CO3)
2. Draw the interfacing diagram of push button switch and LED with 8051. (CO4)
3. List the reasons for the popularity of LCDs (CO4)
4. List the differences between C and Embedded C (CO5)
5. List the reasons for writing programs in Embedded C (CO5)

Part-B **3×8=24**

Instructions: (1) Answer **all** questions.
(2) Each question carries **eight** marks
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

6. (a) Write an assembly language to generate a square wave of 1 KHz from the P1.0 pin of 8051, using Timer-1 mode-1. Assume Clock Frequency of 12 MHz. (CO3)

   (or)

   (b) Write an assembly language to add a series of 10 bytes. The series begins from location 2000H in External RAM. Store the result at locations 3000 and 3001H. (CO3)

7. (a) Explain the Interfacing concepts of push button switches and LEDs with 8051 (CO4)

   (or)

   (b) Explain Interfacing of 16×2 LCD module to 8051 (CO4)

8. (a) Write an 8051 C program to send values 00 – FF to port P1 (CO5)

   (or)

   (b) Write an 8051 C program to toggle bits of P1 ports continuously with 250 ms (CO5)

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MODEL PAPER
BOARD DIPLOMA EXAMINATIONS
C-23, EC-402, MICROCONTROLLERS AND APPLICATIONS
IV SEMESTER
SEMESTER END EXAMINATION

TIME:3 HOURS **MAX MARKS:80**

Part-A **10×3=30**

Instructions: (1) Answer **all** questions. (2) Each question carries **three** marks
(3) Answer should be brief and straight to the point and shall not exceed five simple sentences.

1. List any three features of microcontrollers (CO1)
2. List the interrupts of 8051 (CO1)
3. List any three data transfer instructions of 8051 microcontroller. (CO2)
4. Mention the instruction format of 8051 (CO2)
5. Define a subroutine and state its use (CO3)
6. Explain PUSH and POP instructions. (CO3)
7. List the reasons for the popularity of LCDs (CO4)
8. Draw the interfacing diagram of push button switch and LED with 8051. (CO4)
9. List the differences between C and Embedded C (CO5)
10. List the reasons for writing programs in Embedded C (CO5)

Part-B **5×10=50**

Instructions: (1) Answer **any five** questions.
(2) Each question carries **10** marks
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Draw the functional block diagram of 8051 microcontroller and explain about each block (CO1)
12. Explain the internal memory organization of 8051 with suitable diagram (CO1)
13. Explain the operation carried out on execution of the following instructions. (CO2)
    (i) MUL AB (ii) DIV AB (iii) DA A (iv) ADDC A, @R0
14. Explain various addressing modes of 8051microcontroller with suitable examples (CO2)
15. Write an assembly language to generate a square wave of 1 KHz from the P1.0 pin of 8051, using Timer-1 mode-1. Assume Clock Frequency of 12 MHz. (CO3)
16. Write an assembly language to add a series of 10 bytes. The series begins from location 2000H in External RAM. Store the result at locations 3000 and 3001H. (CO3)
17. Explain the Interfacing concepts of push button switches and LEDs with 8051 (CO4)
18. Write an 8051 C program to toggle bits of P1 ports continuously with 250 ms (CO5)

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