MODEL PAPER – FORMATIVE ASSESSMENT-1
C-23-EE-504
BOARD DIPLOMA EXAMINATION, (C-23)
DEEE – FIFTH SEMESTER EXAMINATION
EE-504 : DIGITAL ELECTRONICS AND MICROCONTROLLERS

Time: 90 Minutes   Total Marks: 40

PART-A   **(1 x 4) + (4 x 3) = 16**

Instructions:

i.   **Answer all five questions.**
ii. **First question carries four marks and remaining each question carries three marks.**
iii. **Answers should be brief and straight to the point and shall not exceed five simple sentences**

1. (a) Binary equivalent of $(12.34)_8$ _____ .
   (b) One's Complement of $(1010)_2$ _____ .

   (c) Minimum number of Half Adders needed to make a Full Adder are four : True / False

   (d) Flip-Flop is used as _____ .   (CO1)

2. State De-Morgan's theorems in Boolean algebra.   (CO1)
3. Realize Half-Adder using NAND gates only.   (CO2)
4. Draw the circuit diagram of 3x8 decoder   (CO2)
5. Draw edge triggered D Flip-Flop and write its truth table.   (CO3)

PART-B   **3 X 8 = 24**

Instructions:

i.   **Answer all three questions.**
ii. **Each question carries eight marks.**
iii. **The answers should be comprehensive and the criteria for valuation are the content but not the length of the answer.**

6. (a) Explain AND, OR, NAND, NOR gates with truth tables.   (CO1)
                                   (OR)
   (b) Explain de-morgan's theorems in Boolean algebra.   (CO1)
                                                                                    (CO1)
7. (a) Explain the working a 4-Bit Parallel Adder comprised of Full-Adders, with legible sketches.
                                                                                    CO2)
                                   (OR)
   (b) Draw and explain one bit digital comparator.   (CO2)

8. (a) Explain the working of asynchronous decade counter with legible sketches.
(CO3)

<center>(OR)</center>

(b) Explain the memory read operation, write operation, access time, memory capacity and word length. (CO3)

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MODEL PAPER – FORMATIVE ASSESSMENT-2
C-23-EE-504
BOARD DIPLOMA EXAMINATION, (C-23)
DEEE – FIFTH SEMESTER EXAMINATION
EE-504 : DIGITAL ELECTRONICS AND MICROCONTROLLERS
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Time: 90 Minutes   Total Marks: 40

<center>**PART-A**   **(1 x 4) + (4 x 3) = 16**</center>

Instructions:

i. **Answer all five questions.**
ii. **First question carries four marks and remaining each question carries three marks.**
iii. **Answers should be brief and straight to the point and shall not exceed five simple sentences**

1. (a) Ports which can be used as address bus in 8051 microcontroller are _____ .
   (b) 8051 microcontroller performs operations on _____ bit data.

   (c) P3.0 and P3.1 in 8051 microcontroller are used for Serial Communication : True / False

   (d) Opcode for the instruction MOV A, R0 In 8051 microcontroller is _____ . (CO4, CO5)

2. State the need of registers in 8051 microcontroller. (CO4)
3. Draw the pin diagram of 8051 microcontroller. (CO4)
4. State the need for an instruction set to work with a microcontroller. (CO5)
5. List the major groups in the instruction set of 8051 microcontroller. (CO5)

<center>**PART-B**   **3 X 8 = 24**</center>

Instructions:

i. **Answer all three questions.**
ii. **Each question carries eight marks.**
iii. **The answers should be comprehensive and the criteria for valuation are the content but not the length of the answer.**

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6. (a) Draw the block diagram of micro controller and explain the function of each block.   (CO4)

(OR)

(b) Explain the register structure of 8051.   (CO4)

7. (a) Explain any four Logical Instructions of 8051 microcontroller with examples.   (CO5)

(OR)

(b) Explain any four Conditional Jump Instructions of 8051 microcontroller with examples. (CO5)

8. (a) Write an assembly language program to sum up of given N numbers.   (CO5)

(OR)

(b) Write an assembly language program to find the product of two eight bit numbers.   (CO5)

MODEL PAPER – SUMMATIVE EXAMINATION
C-23-EE-504
BOARD DIPLOMA EXAMINATION, (C-23)
DEEE – FIFTH SEMESTER EXAMINATION
EE-504 : DIGITAL ELECTRONICS AND MICROCONTROLLERS

Time: 3 hours   **Total marks: 80**

PART-A   **10 X 3 = 30**

Instructions:

i. **Answer all questions.**
ii. **Each question carries three marks.**
iii. **Answers should be brief and straight to the point and shall not exceed five simple sentences**

1. Convert the following into binary: (a) $(67.89)_{10}$ (b) $(1F)_{16}$ (c) $(23.45)_8$.   (CO1)

2. State De-Morgan's theorems in Boolean algebra.   (CO1)

3. Realize Half-Adder using NAND gates only.   (CO2)

4. Draw the Full-adder circuit   (CO2)

5. Draw edge triggered D Flip-Flop and write its truth table.   (CO3)

6. Classify various types of memories based on accessing modes.   (CO3)

7. State the need of registers in 8051 microcontroller.   (CO4)

8. Draw the pin diagram of 8051 microcontroller.   (CO4)

9. State the need for an instruction set to work with a microcontroller.   (CO5)

10. List the major groups in the instruction set of 8051 microcontroller. (CO5)

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PART-B **5 X 10 = 50**

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Instructions:

i. **Answer any five questions.**
ii. **Each question carries Ten marks.**
iii. **The answers should be comprehensive and the criteria for valuation are the content but not the length of the answer.**

11. Explain AND, OR, NAND, NOR gates with truth tables. (CO1)

12. (a) Subtract $(1011)_2$ from $(1100111)_2$ by using 2's compliment

    (b) Add $(1A3B)_{16}$ and $(3C4)_{16}$ (CO1)

13. Explain the working a 4-Bit Parallel Adder comprised of Full-Adders, with legible sketches.(CO2)

14. Realise full adder using two half adders and an OR gate and write truth table. (CO2)

15. Draw and Explain clocked SR flip-flop with preset and clear inputs. (CO3)

16. Explain internal memory and external memory of 8051 microcontroller. (CO4)

17. Explain any four Logical Instructions of 8051 microcontroller with examples. (CO5)

18. Explain any four Conditional Jump Instructions of 8051 microcontroller with examples. (CO5)