C16-**EE-505**

6637

BOARD DIPLOMA EXAMINATION

SEPTEMBER/OCTOBER-2020

DEEE – FIFTH SEMESTER

DIGITAL ELECTRONICS & MICROCONTROLLERS

Time: 3 hours | Max. Marks: 80

PART – A **3 X 10 = 30**

Instructions: *1. Answer **all** questions.*
*2. Each question carries **Three** Marks.*
3. Answer should be brief and straight to the point and should not exceed five simple sentences.

1. Perform the following subtraction using 2's complement method.

   a) $(1101)_2 - (0110)_2$ b) $(1010)_2 - (1000)_2$

2. Draw the symbols of basic gates and write their truth table.

3. Construct full adder circuit using two half adders and an OR gate.

4. Compare Serial adder and parallel adder.

5. State the need of preset and clear inputs of Flip- Flops.

6. State the need of a register. Write types of registers.

7. List any three commonly used commercial Microcontroller device families.

8. Draw the pin diagram of 8051 Microcontroller.

9. List any three logic instructions of 8051 Microcontroller.

10. Mention different addressing modes of 8051 Microcontroller.

[Cont..,

PART – B 5 X 10 = 50

***Instructions**:* 1. *Answer any **Five** questions*
2. *Each question carries **TEN** Marks.*
3. *Answer should be comprehensive and criteria for valuation is the content but not the length of the answer.*

11. Draw and explain TTL NAND gate with totem pole output. 10M

12. Draw and explain a 4-bit parallel adder using full-adders. 10M

13. a) Explain the working of serial adder with block diagram. 5M

    b) Explain 3 x 8 Decoder along with its truth table. 5M

14. Draw the explain 4-bit synchronous Counter. 10M

15. a) Draw and explain 4-bit shift left register. 6M

    b) Classify various types of memories. 4M

16. Draw the block diagram of 8051 Microcontroller and explain the functions of each block. 10M

17. Mention the major groups in the instruction set of 8051 Microcontroller and explain each group with examples. 10M

18. a) Write a program to add two 8-bit numbers. 5M

    b) Write a program to multiply two 8-bit numbers. 5M

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BOARD DIPLOMA EXAMINATION, (C–16)

NOVEMBER—2020

DEEE—FIFTH SEMESTER EXAMINATION

DIGITAL ELECTRONICS AND MICRO CONTROLLERS

Time : 3 hours] [*Total Marks* : 80

PART—A 3×10=30

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

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Convert binary number 1011101.10101 into octal and hexadecimal numbers.

2. Write the classifications of digital logic families.

3. Compare the performance of serial and parallel adders.

4. Draw a half-adder using NAND gates only.

5. Distinguish between synchronous and asynchronous counters.

6. Compare static and dynamic RAMs.

7. List any six registers in 8051 microcontroller.

8. Define Program Status Word in 8051.

9. List various addressing modes of 8051.

10. Define the terms opcode ad operand of an instruction.

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criteria for valuation are the content but not the length of the answer.

11. Explain the following characteristics of digital ICs :

(a) Logic levels

(b) Propagation delay

(c) Noise margin

(d) Fan-in

(e) Fan-out

12. Draw and explain BCD of decimal decoder.

13. Draw and explain the operation of 4 × 1 multiplexer.

14. Draw and explain clocked SR flip-flop with present and clear inputs.

15. Explain the working of basic dynamic MOS RAM cell with diagram.

16. Draw the pin diagram of 8051 Microcontroller and specify the purpose of each pin.

17. Explain any five branch group instructions of 8051 microcontroller with one example each.

18. Write an assembly language program to find biggest data value in a data array.

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