



C09-EE-405

3477

BOARD DIPLOMA EXAMINATION, (C-09)
OCT/NOV—2014
DEEE—FOURTH SEMESTER EXAMINATION

DIGITAL ELECTRONICS AND MICROCONTROLLERS

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. What is analog signal? State the need for D/A converter.
2. Draw the block diagram of full adder using two half adders and an OR gate. Write the Boolean expressions for sum and carry.
3. What is counter? Define modulus of a counter.
4. What is shift register? List the different types of shift register.
5. What is the difference between a counter and a timer?
6. What are the functions of the following 8051 pins?
 - (a) ALE
 - (b) \overline{EA}
 - (c) \overline{PSEN}

7. * Define fetch cycle and execute cycle.
8. List all types of rotate instruction of 8051.
9. List any six conditional jump instructions of 8051 microcontroller.
10. Draw a flowchart to multiply two numbers 56 H and 33 H.

PART—B

10×5=50

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

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

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

11. (a) Draw the symbols and explain the operations of the following with their truth tables :
 - (i) AND gate
 - (ii) NOR gate
 - (iii) NOT gate(b) State and explain De Morgan's theorems.
12. (a) Convert 1101111.11_2 into octal and hexadecimal number systems.
(b) Subtract 1101.01_2 from 10011_2 using 2's complement method.
13. (a) Distinguish between ROM and RAM.
(b) Draw the circuit and explain the working of dynamic memory.
14. Draw the circuit and explain the operation of master slave *J-K* flip-flop.
15. Explain the internal organization of internal RAM of 8051 micro-controller.
16. Draw and explain the bitwise description of IE and IP registers.

- 17.* Explain different addressing modes of 8051 and give two examples of each.
18. (a) Write an assembly language program to add two 8-bit numbers stored in the internal RAM locations 60 H and 61 H and store the sum at 62 H and 63 H.
- (b) Write an assembly language program along with comments to add two 16-bit numbers 4536 H and 5468 H and store the sum in R5 and R4. (R4 should have the lower byte).
