

6637
BOARD DIPLOMA EXAMINATION
JUNE - 2019
DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING
DIGITAL ELECTRONICS & MICRO CONTROLLERS
FIFTH SEMESTER EXAMINATION

Time: 3 Hours

Total Marks: 80

PART - A (3m x 10 = 30m)

Note 1: Answer all questions and each question carries 3 marks

2: Answers should be brief and straight to the point and shall not exceed 5 simple sentences

1. What is a Gray code? Give an example
2. List any six characteristics of digital ICs
3. Draw the circuit of 2's complement parallel adder/subtractor
4. Draw the logic circuit of BCD to decimal decoder
5. Define modulus of a counter. How many JK flip flops are required to make the following counters?
 (a) Mod-3 (b) Mod-6
6. Draw the circuit of clocked RS flip flop using NAND gates with preset and clear inputs
7. List any three features of 8051 Microcontroller
8. List the timers of the 8051 and their associated SFRs
9. Write the number of bytes each of the following instructions take.
 (a) MOV A,B (b) ADDC A, #30H (c) LJMP 16 bit
 * addr
10. State the function of DIV AB instruction

PART - B (10m x 5 = 50m)

Note 1: Answer any five questions and each carries 10 marks

2: The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer

11. (a) Draw the symbols and explain the operation of the following with their truth tables i) EX-OR gate ii) NOR gate
 (b) State De-Morgan's theorems.
12. (a) Show that two half adders and an OR gate constitute a full adder
 (b) Realize half adder using NOR gates only

13. Draw the logic circuit and explain the operation of 3X8 decoder
14. Draw the circuit of level clocked JK flip flop using SR flip flop and explain with its truth table
15. Draw the circuit diagram and explain the working of 4 bit bi-directional shift register
16. a) Draw and explain the bit wise description of TMOD register
b) Draw and explain the bit wise description of SCON register
17. a) Write an assembly language program to add two 8 bit numbers stored in the internal RAM locations 60H and 61H and store the sum in 62H and 63H iRAM locations
b) Write an assembly language program along with comments to add two 16-bit numbers 4536H and 5468H and store the sum in R5 and R4. (R4 should have the lower byte)
18. (a) Explain how information is exchanged between the program counter and stack when a subroutine is called
(b) Explain ACALL and LCALL instructions

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