

SECTION A

20 marks

1. What is the binary equivalent of the decimal number 368
(A) 101110000 (B) 110110000
(C) 111010000 (D) 111100000
2. The decimal equivalent of hex number 1A53 is
(A) 6793 (B) 6739
(C) 6973 (D) 6379
3. $(734)_8 = ()_{16}$
(A) C 1 D (B) D C 1
(C) 1 C D (D) 1 D C
4. The hexadecimal number 'A0' has the decimal value equivalent to
(A) 80 (B) 256
(C) 100 (D) 160
5. The Gray code for decimal number 6 is equivalent to
(A) 1100 (B) 1001
(C) 0101 (D) 0110
6. The decimal equivalent of Binary number 11010 is (A) 26.
(B) 36. (C) 16. (D) 23.
7. The number 140 in octal is equivalent to
(A) $(96)_{10}$. (B) $(86)_{10}$.
(C) $(90)_{10}$. (D) none of these.
8. Convert decimal 153 to octal. Equivalent in octal will be
(A) $(231)_8$. (B) $(331)_8$.
(C) $(431)_8$. (D) none of these.
9. The decimal equivalent of $(1100)_2$ is
(A) 12 (B) 16
(C) 18 (D) 20

Ans: A

10. The binary equivalent of $(FA)_{16}$ is
(A) 1010 1111 (B) 1111 1010
(C) 10110011 (D) none of these
11. The excess-3 code of decimal 7 is represented by (A)
1100. (B) 1001. (C)
1011. (D) 1010.

12. The result of adding hexadecimal number A6 to 3A is
 (A) DD. (B) E0.
 (C) F0. (D) EF.
13. The decimal equivalent of Binary number 10101 is
 (A) 21 (B) 31
 (C) 26 (D) 2
14. Convert the octal number 7401 to Binary.
15. What is the Gray equivalent of $(25)_{10}$.
16. The hexadecimal number 'A0' has the decimal value equivalent to
 (A) 80 (B) 256
 (C) 100 (D) 160
17. The Gray code for decimal number 6 is equivalent to
 (A) 1100 (B) 1001
 (C) 0101 (D) 0110
18. The excess 3 code of decimal number 26 is
 (A) 0100 1001 (B) 01011001
 (C) 1000 1001 (D) 01001101
19. The excess-3 code of decimal 7 is represented by
 (A) 1100. (B) 1001.
 (C) 1011. (D) 1010.
20. Convert the octal number 7401 to binary

SECTION B: COMBINATIONAL LOGIC...40Marks

1. A combinational circuit has 3 inputs A, B, C and output F. F is true for following input combinations

A is False, B is True A
 is False, C is True A,
 B, C are False
 A, B, C are True

- (i) Write the Truth table for F. Use the convention True=1 and False = 0.
 (ii) Write the simplified expression for F in SOP form.
 (iii) Write the simplified expression for F in POS form.
 i v) Draw logic circuit using minimum number of 2-input NAND gates.

1. What is a half-adder?
 2. Explain a half-adder with the help of truth-table and logic diagram.
 3. Using a suitable logic diagram explain the working of a 1-to-16 de multiplexer.

4. SECTION C: SEQUENTIAL LOGIC.....30Marks

1. A. What is a flip-flop?
 B. What is the difference between a latch and a flip-flop?

C . List out the application of flip-flop.

2. A, what are synchronous counters?

B, design a Mod-5 synchronous counter using J-K Flip-Flops. **(10)**

3. A . What is a shift register?

B . Can a shift register be used as a counter?

C . If yes, explain how?

