



iii) Which of the following Boolean theorems is false ?

- a) $A (B + C) = AB + AC$
- b) $A + BC = (A + B) (A + C)$
- c) $AB + \overline{A} C = (\overline{A} + C) (A + B)$
- d) $AB + \overline{A} C + BC = AB + \overline{A} C$

iv) Two input NAND gate is equivalent to

- a) $(A + B)'$
- b) $AB' + A' B$
- c) $(AB)'$
- d) $(A' + B')'$

v) Binary 1111111 0 is equivalent to hexadecimal

- a) EF
- b) FE
- c) EE
- d) FF .

vi) In C language division by zero is a

- a) Syntactic error
- b) Semantic error
- c) both (a) and (b)
- d) none of these.

vii) 2's complement of 10000010 is

- a) 01111101
- b) 10000011
- c) 01111110
- d) 11111101.

viii) A Do while loop is useful when we want that the statement within a loop must be executed

- a) only once
- b) at least once
- c) more than once
- d) none of these.



ix) The output of the following code

```
For ( i - 1 ; i < = 5 ; i++ )
```

```
{
```

```
If ( i%2 )
```

```
Continue ;
```

```
Printf ("%d", i) ;
```

```
}
```

is

- a) 1 2 3 4 5 b) 1 3 5
c) 2 4 d) None of these.

x) Which of the following is an external command in DOS ?

- a) Edit b) Copy con
c) Ren d) Date.

xi) Size of (5·2) will return

- a) 4 b) 5
c) 5·2 d) 2.

xii) Kernel in Unix is the

- a) utility package part b) core OS part
c) free application part d) none of these.



GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.

3 × 5 = 15

2. Simplify the following Boolean expressions (‘ implies complement) :

$2 \times 2 \frac{1}{2}$

a) $ABC + ABC' + AB'C + A'BC$

b) $(AB + A'B')'$.

3. Design a half adder circuit with required truth tables and circuit diagram.
4. Write a C program to input a number and calculate the sum of individual digits present in that number and also print the number in reverse order.

Example : Input Ø 123

Output Ø Sum of individual digits : 6

Reverse of the number : 321.

5. Explain the difference between programs & processes. What is spooling ?
6. Justify the statement “array is a logical concept actually it is a pointer.” Illustrate your opinion with example.



GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) What is an array ? How to initialize an array ?
- b) What are the limitations of an array ?
- c) What is the scope of a variable ?
- d) Write the address translation function for a two dimensional array.
- e) Write a program which will take elements from an array to a $m \times n$ dimensional matrix. $2 + 2 + 2 + 4 + 5$
8. a) What is the difference between 'automatic' and 'register' storage class ? Discuss when they are used.
- b) What do you mean by universal gate ? Give example. Implement XNOR gate using NAND gate.
- c) What is the difference between interpreter and compiler ? What are local variable and global variable ? Explain with example. $5 + 5 + 5$



9. a) What do you mean by an operating system ? What are the advantages of an UNIX operating system ?
- b) What is virtual memory ? What are its advantages ? Describe its role in computer.
- c) Explain the difference between shell and kernel.

7 + 5 + 3

10. a) Using De-Morgan's law show that

$$(A + B)' * (A' + B')' = 0$$

- b) Using Boolean algebra, prove that

$$(a + b)(b' + c) + b(a' + c') = ab' + ac + b$$

where a, b, c are Boolean variables.

- c) Convert decimal number 76.56 to equivalent binary number (use approximation up to 3 bits after decimal).
- d) 7627 is an octal number. Convert it into hexadecimal number.
- e) Convert the decimal number 8031 to BCD, Gray, Octal, Excess-3 and Hexadecimal code.

5 × 3



11. a) Write a program in C to calculate the value of the series

$$1 + 1/(1 + 2) + 1/(1 + 2 + 3) + \dots + 1/(1 + 2 + 3 + \dots + N)$$

using a function. N is an integer.

b) Define algorithm. Explain with example. Mention the five important properties of an algorithm.

c) Write a menu driven program using function (call by reference) to find the following :

i) Factorial

ii) Odd / Even

iii) Prime.

5 + 5 + 5

