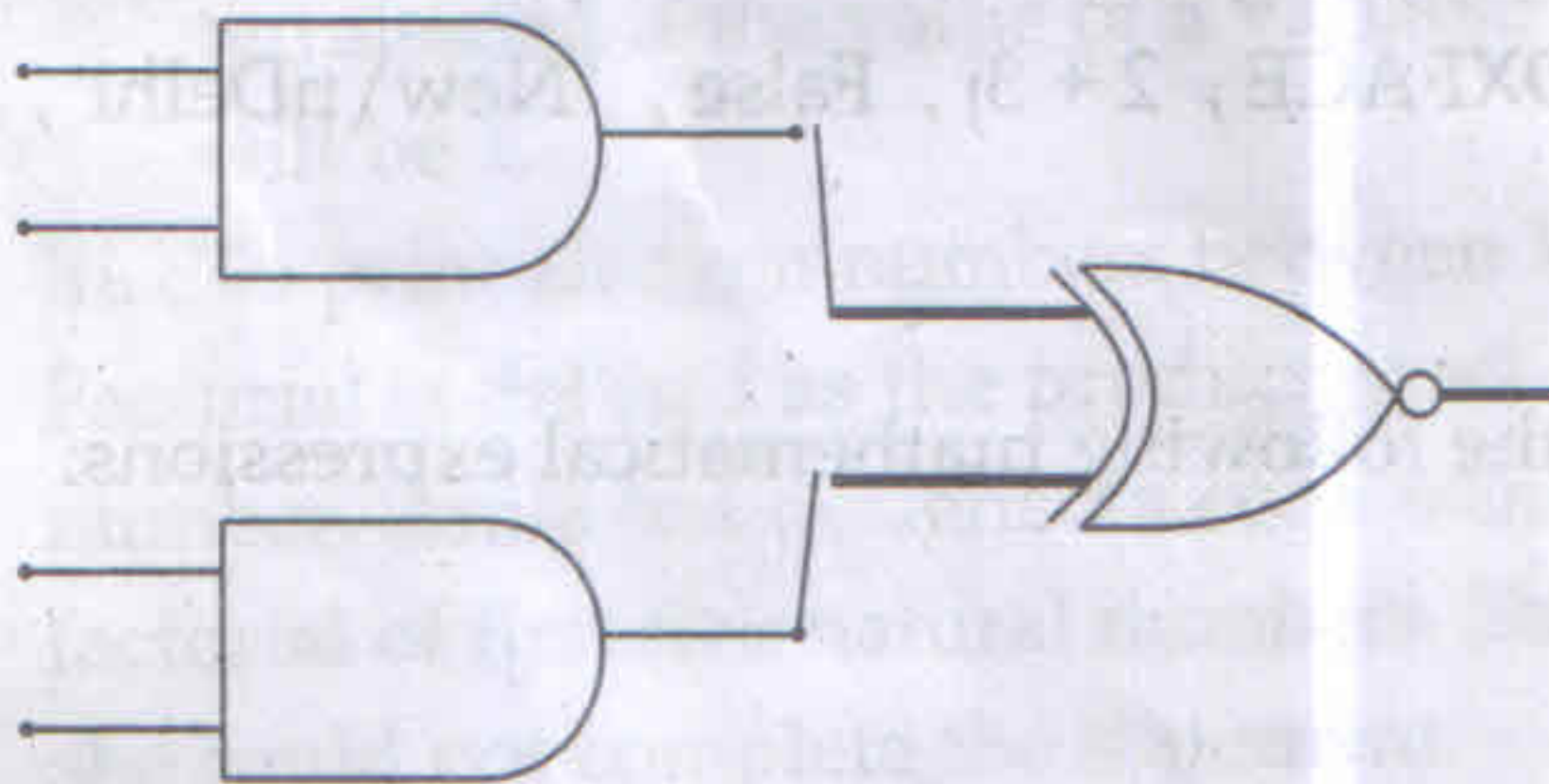


- General Instructions**
- ALL questions are compulsory.
 - Programming Language Python.

- Q.1-
- Name different types of primary memory. [1]
 - Name the two categories of system software. [2]
 - Differentiate between primary and secondary memory. [3]
 - Explain Mobile System Organization. [4]
- Q.2-
- State De Morgan's theorem. [1]
 - Obtain the Boolean expression for the logic circuit shown below : [2]



- Draw logic circuit for following Boolean expression : [3]
 - $(A.\bar{B}) + (C.\bar{D}) + (B.\bar{D})$
 - $(A.B) . (BC + \bar{D})$
 - Do following conversions (show working also):- [4 × 1]
 - $(52)_{10} = (?)_2$
 - $(911)_{10} = (?)_8$
 - $(101010.011)_2 = (?)_{10}$
 - $(ACE)_{16} = (?)_2$
- Q.3-
- What does ASCII and ISCII stand for? [1]
 - Explain AND and OR logic gates with their symbol and truth table. [2]
 - Match the pairs:- [3]

Flow Chart Symbol	Functions
	Connector
	Process Step
	Decision Making
	Start/Stop
	Input/Output
	Flow of Control

- d. Write an algorithm that performs the following:- [4]
 Ask a user to enter a number.
 If the number is between 5 and 15, write the word GREEN.
 If the number is between -15 and 25, write the word BLUE.
 If the number is between 25 and 35, write the word ORANGE.
 If it is any other number, write that ALL COLOURS ARE BEAUTIFUL

- Q.4- a. Who developed the Python programming language? [1]
 i. Charles Babbage
 ii. Guido van Rossum
 iii. James Gosling
 iv. None of these
 b. Draw a flowchart to generate first 10 natural numbers. [2]
 c. What are tokens? Explain any two tokens. [3]
 d. i. Identify the data type of following literals: [4]
 0123, "UP32DZ1760", OXFACE, 2 + 3j, False, "New\nDelhi",
 0o426, 23E-5

- Q.5- a. [2]
 b. Write Python expressions for the following mathematical expressions: [2]

i. $x = \frac{-b \pm \sqrt{(b)^2 - 4ac}}{2a}$

ii. $y = e^x - x$

iii. $S = \frac{1}{2}mv^2$

iv. $p = \sin(x - 3) + \log(a^3)$

- c. Identify the valid/invalid -variable names out of the following along with reason for invalid. [3]

i. x

ii. TRUE

iii. Total%

iv. _MyData

v. 24ParkRoad

vi. break

- d. i. Differentiate between mutable and immutable data types along with their examples. [2]

- ii. What do you understand by implicit and explicit data type conversion? [2]

- Q.6- a. Write value for each of the following expressions:- [1]

$12 * (15 + 24) - 10$

$12 + 15 * 24 - 10$

- b. Rewrite the following Python code after removing all syntax error(s) and underline each correction done in the code: [2]

250 = Number

WHILE Number 1000:

if Number > 750 : print(Number)

Number = Number + 100

else :

print(Number * 2)

Number += 50

- c. Write a program to input principal amount, rate of interest, time calculate

and print PRT Simple Interest using formula $SI = \frac{PRT}{100}$ [3]

- d. Write a program to input monthly income of an employee, calculate and print the annual income and tax to be paid, where tax paid is calculated on the basis of the following :

[4]

Annual Income (₹)	Tax rate (%)
> 20,00000	30
>10,00000 and <=20,00000	10
>500000 and <=10,00000	6
<=500000	0

- Q.7-
- a. What is comment and what are different types of comments in Python? [1]
- b. Explain jump statements in python. [2]
- c. Write an appropriate for or while loops for the situations described below: [3]
- To print your name 50 times.
 - To keep repeating printing of your name 100 times, except the loop is terminated if the value of a variable P becomes 50. The initial value of P will be 1.
 - To print all even numbers between 100 and 200.
- d. Factorial is defined as the product of all positive numbers from 1 to given number. Smita has designed a code using nested while loop to generate the factorial of first five natural numbers. She has left some places blank where she could not complete the statement.

The code is illustrated below :

```

a = 1
while a <= 5 :
n = int(input ("Enter a number"))
f = ..... #Statement 1
b = 1
while b <= .....: #Statement 2
    f = .....#Statement 3
    b = b + 1
print (:Factorial Of", n, "=",.....) #Statement 4

```

As a good programmer, help her to fill in the blanks with appropriate variables/expression in :

- Statement 1
- Statement 2
- Statement 3
- Statement 4

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