



CAMBRIAN PUBLIC SCHOOL

KANKE ROAD, RANCHI

ASSIGNMENT Set 1

Subject: Computer Science (083)

Class: XI

Part A: Multiple Choice Questions (15 Marks)

- 1) Which component of the CPU is responsible for performing arithmetic operations and making logical decisions?
 - a) Control Unit (CU)
 - b) Arithmetic Logic Unit (ALU)
 - c) Primary Memory
 - d) Registers
- 2) What is the binary equivalent of the decimal number 2510?
 - a) 110012
 - b) 101012
 - c) 111002
 - d) 100112
- 3) Which logic gate outputs 1 ONLY when all of its inputs are 1?
 - a) OR gate
 - b) NAND gate
 - c) AND gate
 - d) XOR gate
- 4) In Python, which of the following is an invalid variable identifier?
 - a) _total_sum
 - b) 2nd_value
 - c) var_2
 - d) MyClass
- 5) What will be the output of the Python expression $19 // 4$ and $19 \% 4$?
 - a) 4.75 and 3
 - b) 4 and 3
 - c) 4 and 0.75
 - d) 3 and 4
- 6) Which type of memory is volatile and loses its contents when power is turned off?
 - a) ROM
 - b) Hard Disk Drive
 - c) RAM
 - d) Flash Memory
- 7) The octal number 378 is equal to which decimal value?
 - a) 29
 - b) 31
 - c) 27
 - d) 35
- 8) Which logical operator in Python reverses the truth value of its operand?
 - a) and
 - b) or
 - c) not
 - d) !=
- 9) What is the default step value in the range (start, stop, step) function in Python?
 - a) 0
 - b) 1
 - c) -1
 - d) None
- 10) In a 2-input XOR gate, what is the output when both inputs are 1?
 - a) 0
 - b) 1
 - c) Undefined
 - d) High Impedance
- 11) Which software is responsible for converting high-level language program code into machine code line-by-line?
 - a) Compiler
 - b) Interpreter
 - c) Assembler
 - d) Linker

- Part B: Short Answer Questions (10 Questions x 2 Marks = 20 Marks)**

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```
continue
print(count, end=" ")
count += 1
```

- 25) **[Looping]** Write a Python program using a for loop to compute the factorial of a user-input positive integer N.

Part C: Case-Based Questions (5 Questions × 4 Marks = 20 Marks)

26) Case Study 1: System Memory & Storage Dynamics

A computer system is being configured for data processing tasks. The CPU speed is 3.2 GHz, RAM installed is 16 GB, Cache Memory is 8 MB, and secondary storage consists of a 1 TB SSD.

- Arrange RAM, Cache, and SSD in ascending order of access speed (slowest to fastest).
- Why is RAM preferred for running active applications rather than executing them directly from secondary storage?
- What happens to data stored in RAM when power failure occurs unexpectedly?
- State the primary role of the Control Unit (CU) during program execution.

27) Case Study 2: Digital Data Representation & Codes

A student is analyzing numerical conversions and character encoding schemes used in computers.

- Convert decimal number 8510 into its Binary equivalent.
- Perform binary addition: 10112+11012.
- Differentiate briefly between ASCII and UNICODE character encoding standards.
- Convert hexadecimal 2A16 into decimal.

28) Case Study 3: Variable Assignment & Dynamic Typing

Consider the Python script executed in an interactive environment:

Python

```
a = 10
b = a
a = a + 5
c = "100"
d = int(c) + a
```

- What are the values stored in a, b, and d after executing all lines?
- Explain Python's feature of **Dynamic Typing** using variable c and d.
- What happens if you try to execute `print(c + a)` directly? State the exact error type raised.
- Which built-in function is used to verify the unique memory identity of variable a?

29) Case Study 4: Decision Making in Grading Systems

An educational institution wants a Python program to evaluate student performance based on total marks obtained (out of 100):

Marks ≥ 90 : Grade A

Marks ≥ 75 and < 90 : Grade B

Marks ≥ 50 and < 75 : Grade C

Marks < 50 : Grade F

- Write the complete Python program using if-elif-else structure to take marks input from user and print the grade.

b) Ensure the program validates input and displays "Invalid Marks" if input is less than 0 or greater than 100.

30) Case Study 5: Pattern Generation & Loop Control

A software utility requires generating formatted numerical tables and series using Python loops.

a) Write a Python program using nested loops to output the following pattern:

Plaintext

1

1 2

1 2 3

1 2 3 4

b) Trace the total number of times the inner loop body executes for N=4 rows in the above pattern.