St. Mary's School, Dwarka
Holiday Homework
Class: XI
Subject: Computer Science

Objectives:
- To revise concepts.
- To encourage learning through practical experience in Python

Worksheet 1

I   **Write the source code in Python along with the output for the following:**   **3x10=30**

1. To calculate BMI and print the nutritional status as per following table:

Nutritional Status	WHO criteria BMI cut-off
Underweight	<18.5
Normal	18.5-24.9
Overweight	25-29.9
Obese	≥30

2. Write a menu driven program to compute the following as per user's choice:

    a) area of a circle b) area of a triangle(note :use Herons' formula) c) area of a trapezium

3. Write a program that inputs a student's marks in three subjects (out of 100) and print the percentage marks and grades according to the following criterion:

Grade	Marks
Outstanding	Between 91 to 100
A+	Between 81 to 90
A	Between 71 to 80
B	Between 61 to 70
C	Below 60

4. To display even and odd from the list of 10 numbers.

5. To find the largest among three integers.

6. To find the lowest among three integers.

7. To print the roots of a quadratic equation $ax^2 + bx + c = 0$ (where $a \neq 0$).

8. To print first n Natural numbers and their sum.

9. To calculate the factorial of an integer using while loop.

10. Program to check whether the given number is palindrome or not.

Worksheet 2

I   **Write the source code along with the output for the following:**   **3x10=30**

11.   To print the tables of 12 to 30.

12.   To print the Fibonacci series. i.e. 0 1 1 2 3 5 8 …till n numbers

13.   Write a program to print following pattern on the screen

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14.   Program to add the odd numbers up to(and including) a given value N

and print the result.

15.   Compute the greatest common divisor and the least common multiple of

two integers.

16.   Display the sum of natural numbers between 1 to 7. Print the sum progressively i.e. after adding each natural number, print sum so far.

17.   Test if a number is equal to the sum of the cubes of its digits (Armstrong number).

18.   Write a program to obtain x, y, z from the user and calculate $4x^4+3y^3+9z+6\pi$.

19.   Write a program to find sum of series:

 $s=1+x+x^2+x^3+x^4…+x^n$

20.   Write a program to input a number and print its square if it is odd, otherwise print its square root.

Worksheet 3

Answer the following:

1   The variable definition of X is creating problem   X = 0281.Why.   1

2   What would the following code do: 1

       X= Y= 7?

3   Draw decision tree for grade calculation as per :   2

       Marks   >90   80-90   70-80   60-70   50-60   40-50   <40

       Grade   A1   A2   B1   B2   C1   C2   F

4   What is the difference between else clause of if-else and else clause of Python loop? Give programming examples to elaborate.   2

5   Ask the user to enter a temperature in Celsius. Write a program in Python which should print a message based on the temperature: 3

   (i)   if the temperature is less than -273.15 print   that the temperature is invalid because it is below absolute zero :

   (ii)   if is exactly -273.15 ,print that the temperature is absolute 0 .

   (ii)   if the temperature is between -273.15 and 0 ,print that the temperature is below freezing .

   (iv)   if it is 0 ,print that the temperature is at the freezing point .

   (v)   if it is between 0 and 100 , print that the temperature is in the normal range .

   (vi)   if it is 100 ,print that the temperature is at the boiling point .

   (vii) if it above 100 , print that the temperature is above the boiling point .

6   Two objects (say a and b) when compared using ==, return True. But Python gives False when compared using is operator. Why (i.e, a == b is True but why is a is b False?)   2

7   Differentiate between (555/222) ** 2 and (555.0/222) **2.   2

8   Given three Boolean variables a, b, c as   : a= False , b = True , c = False. Evaluate the following Boolean expressions: 3

   (a) b and c

   (b) b or c

   (c) not a and b

   (d) (a and b)or not c

   (e) not b and not (a or c)

   (f) not ((not b or not a)and c)or a

9   Explain the range function in context with for loop.   3

10   What is the difference between pass, continue and break statements?   2

Project:

Case Study on Cyber Security:

A 9-person crime, was registered under Sections 65, 66, 66A, C and D of the Information Technology Act, along with Sections 419 and 420 of the Indian Penal Code. Under the complaint of this cyber fraud case in India, a company representative in the business of trading and distribution of petrochemicals in India and abroad had filed the report against the 9 accused of using a similar looking website to carry on the trade.

The accused ran a defamation campaign against the company, causing them crores of rupees of loss from their customers, suppliers and even producers.

Source taken from https://www.cyberralegalservices.com/detail-casestudies.php

1   Advances in technology are the primary driver for economic growth but have also led to a higher incidence of cyber-attacks. Comment

2   What are different types of cybercrimes?

3   How can someone steal online identity?

4   Why it is advisable to check the security of the website before you enter personal and credit card information while shopping?

5   What are the usage rules while using social media?

6   What is "pretexting"?