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

## Worksheet 1

Q1 Answer the following: $1 \times 7=7$
i. Which of these about a dictionary is false?
a) The values of a dictionary can be accessed using keys
b) The keys of a dictionary can be accessed using values
c) Dictionaries aren't ordered
d) Dictionaries are mutable
ii. Which of the following is not a declaration of the dictionary?
a) $\{1$ : ' A ', 2 : ' B ' $\}$
b) $\operatorname{dict}\left(\left[[1, " \mathrm{~A} "],\left[2,{ }^{\prime} \mathrm{B}{ }^{\prime}\right]\right]\right)$
c) $\left\{1,{ }^{\prime} \mathrm{A}^{\prime \prime}, 2 " \mathrm{~B} "\right\}$
d) $\}$

What will be the output?
iii. $\quad a=\{1: " A ", 2: " B ", 3: " C "\}$
for $\mathrm{i}, \mathrm{j}$ in a.items():
print(i,j,end=" ")
a) 1 A 2 B 3 C
b) 123
c) ABC
d) 1:"A" $2:$ "B" $3: " \mathrm{C}$ "
iv. $\quad a=\{1: " A ", 2: " B ", 3: " C "\}$
print(a.get(1,4))
a) 1
b) A
c) 4
d) Invalid syntax for get method
v. $\quad a=\{1: " A ", 2: " B ", 3: " C "\}$
print(a.get(5,4))
a) Error, invalid syntax
b) A
c) 5
d) 4
vi. Which of the following isn't true about dictionary keys?
a) More than one key isn't allowed
b) Keys must be immutable
c) Keys must be integers
d) When duplicate keys encountered, the last assignment wins
vii. $a=\{1: 5,2: 3,3: 4\}$
a.pop(3)
print(a)
a) $\quad\{1: 5\}$
b) $\quad\{1: 5,2: 3\}$
c) Error, syntax error for pop() method
d) $\quad\{1: 5,3: 4\}$

Q2 Write programs in Python for the following:
a) to find greatest common divisor (GCD) or highest common factor (HCF) of given two numbers.
b) Factorial of any number non integer $x$
c) Calculate the sum of digits of a number given by user. E.g.-

Input:123 Output: 6
Input: 12345 Output: 15
d) Suppose, you have to take a number from the user and consider the following cases and display the output as required.

1. If the number is between 1 to $10-$ print "too low"
2. If the number is between 11 to 20 - print "medium"
3. If the number is between 21 to 30 - print "large"
4. If the number is greater than 30 - print "too large"

Q3 What are the arithmetic operators that Python support?

Q4 Write the command to create a table called CUSTOMERS with the columns specified below:

| Field | Type | Null | Key | Default | Extra |
| :--- | :--- | :--- | :--- | :--- | :--- |
| ID | Int(11) | NO | PRI |  |  |
| NAME | Varchar(20) | NO |  |  |  |
| AGE | Int(11) | NO |  |  |  |
| ADDRESS | Char(25) | YES |  | NULL |  |
| SALARY | Decimal(18,2) | YES |  | NULL |  |

Write a short note on random module along with its related functions in Python. 2
Q6 Mention the mistake in the following SQL Query:
a. SELECT subject_code, AVG (marks)

FROM students
WHERE AVG(marks) > 75
GROUP BY subject_code;
b. SELECT subject_code, count(name)

FROM students;
Q7 How do you execute a Python Script?
Q8 Determine the binary values of the variables for which the following standard POS expression is equal to 0 .
Q9 The expression $\mathrm{W}(\mathrm{X}+\mathrm{YZ})$ can be converted to SOP form by applying which law? Derive that law using truth table.

Q10 Write the purpose of the following clause:
a. Where Clause
b. Distinct Clause
c. Having Clause

## Worksheet 2

Q1 Write programs in Python to do the following: $2 \times 5=10$
a) find the sum of digits in a number
b) find the smallest divisor of an integer.
c) print all numbers in a range divisible by a given number.
d) form a string where the first character and the last character have been exchanged.
e) count the number of lowercase characters and uppercase characters in a string.

Q2 What will be the output for the following program code? $1 \times 4=4$
i) $m=[[x, x+1, x+2]$ for $x$ in range $(0,3)]$
ii) How many elements are in $m$ ?

$$
\mathrm{m}=[[\mathrm{x}, \mathrm{y}] \text { for } \mathrm{x} \text { in range }(0,4) \text { for } \mathrm{y} \text { in range }(0,4)]
$$

iii) What will be the output?
values $=[[3,4,5,1],[33,6,1,2]]$
$\mathrm{v}=$ values[0][0]
for row in range( 0 , len(values)):
for column in range( 0 , len(values[row])):
if v < values[row][column]:
$\mathrm{v}=$ values[row][column]
print(v)
iv) What is the output of the following?
print("abc DEF".capitalize())
Q3 Write the any two differences between list and tuples. 2
Q4 Why are NAND and NOR gates called Universal gates? Give an example to elaborate 2
Q5 What are negative indexes and why are they used? 2
Q6 What is the process of compilation and linking in python? 2
Q7 Simplify the following Boolean expressions: $2 \times 4=8$
a) $\mathrm{ABC}+\mathrm{A}^{\prime} \mathrm{B}^{\prime} \mathrm{C}+\mathrm{A}^{\prime} \mathrm{BC}+\mathrm{A}^{\prime} \mathrm{B}^{\prime} \mathrm{C}$
b) $\mathrm{C}+\mathrm{BC}$
c) $(\mathrm{A}+\mathrm{C})(\mathrm{AD}+\mathrm{AD})+\mathrm{AC}+\mathrm{C}$ :
d) $\mathrm{A}(\mathrm{A}+\mathrm{B})+(\mathrm{B}+\mathrm{AA})(\mathrm{A}+\mathrm{B})$ :

Q8 Convert the following numbers: $1 \times 3=3$
a) $\quad(101101111)_{2}=()_{16}$
b) $\quad(458)_{8}=()_{10}$
c) $\quad(101)_{16}=()_{8}$

Q9 Write the difference between linker and loader parts of a compiler. 3
Q10 Write the working of bubble sorting and insertion sorting in detail. 3

## Worksheet 3

Q1 What are the key features of Python?

Q2 Looking at the below code, write down the final values of A0, A1, ..An. 1x7=7
A0 = dict(zip(('a','b','c','d','e'),(1,2,3,4,5)))
$\mathrm{A} 1=\operatorname{range}(10) \mathrm{A} 2=\operatorname{sorted}([\mathrm{i}$ for i in A 1 if i in A 0$])$
$\mathrm{A} 3=\operatorname{sorted}([\mathrm{A} 0[\mathrm{~s}]$ for s in A 0$])$
$\mathrm{A} 4=[\mathrm{i}$ for i in A1 if i in A3]
$\mathrm{A} 5=\{\mathrm{i}: \mathrm{i} * \mathrm{i}$ for i in A 1$\}$
$\mathrm{A} 6=[[\mathrm{i}, \mathrm{i} * \mathrm{i}]$ for i in A 1$]$
print(A0,A1,A2,A3,A4,A5,A6)
Q3 a) Convert the binary number 1101101111110101 to hex.
b) Convert the hex number ABC 7 to binary.
c) In hex, $2 \mathrm{BFC}+54 \mathrm{~A} 7$
d) In hex, AC74-B3F
e) If a number has $k$ digits in hex, how many digits (bits) does it have in binary?

Q4 Verify the following using Boolean Laws
$\mathrm{A}+\mathrm{C}=\mathrm{A}+\mathrm{A}^{\prime} . \mathrm{C}+\mathrm{B} . \mathrm{C}$


Q6 Consider the following tables:
$1 \times 12=12$

## Table: ITEMS

| CODE | INAME | QTY | PRICE | COMPANY | TCODE |
| :--- | :--- | :---: | :---: | :--- | :--- |
| 1001 | DIGITAL <br> PAD 12i | 120 | 11000 | XENITA | T01 |
| 1002 | LED <br> SCREEN 40 | 70 | 38000 | SANTORA | T02 |
| 1004 | CAR GPS <br> SYSTEM | 50 | 21500 | GEOKNOW | T01 |
| 1003 | DIGITAL <br> CAMERA <br> 12X | 160 | 8000 | DIGICLICK | T02 |
| 1005 | PEN DRIVE <br> 16 GB | 600 | 1200 | STORE- <br> HOME | T03 |

Table: TRADERS

| TCODE | TNAME | CITY |
| :--- | :--- | :--- |
| T01 | ELECTRONIC SALES | MUMBAI |
| T03 | BUSY STORE CORP | DELHI |
| T02 | DISP HOUSE INC | CHENNAI |

(a) Write the commands in SQL to create the above tables and insert the records as given:

Write the SELECT statement for the following queries:
(b) To display the details of all the items in ascending order of product names (i.e. INAME).
(c) To display item name and price of all those items, whose price is in the range of 10000 and 22000 (both value inclusive).
(d) To display the number of products, which are supplied supplier, i.e., the expected output should be:T01 2 T02 2 T03 1
(e) To display the price, item name and quantity (i.e., qty) of those products which have quantity more than 150 .
(f) To display the names of those traders, who are either from DELHI or from MUMBAI.
(g) To display the name of the companies and the name of the items in descending order of company names.

TRADERS above.
(1) SELECT MAX(PRICE), MIN(PRICE) FROM ITEMS;
(2) SELECT PRICE*QTY AMOUNT FROM ITEMS WHERE PID=1004;
(3) SELECT DISTINCT TCODE FROM ITEMS;
(4) SELECT INAME, TNAME FROM ITEMS I, TRADERS T WHERE I.TCODE=T.TCODE AND QTY<100;

Q7 Write a short note on any five built in exceptions in Python. 2
Q8 How can you say that a tuple is an ordered list of objects? 2
Q 9 Write the purpose of following dictionary functions: values( ), update() 2
Q10 Write a Python program to match key values in two dictionaries. 2
$\mathrm{x}=\{$ 'key1': 1, 'key2': 3, 'key3': 2$\}$
$y=\{$ 'key1': 1, 'key2': 2$\}$

