muVELAMMAL ENGINEERING COLLEGE
Department of Computer Science and Engineering
19CS103T /Programming for Problem Solving using Python
UNIT 1 – MCQ

1 Mark
1. Python files are saved with the extension as?
a. .python
b. .pe
c. .py
d. .pi

2. IDLE stands for _____
a. Indigenous Development Lab
b. Integrated Development and Learning Environment
c. Integrated Developers Local Environment
d. Indie Developers Environment

3. The function to display a specified message on the screen is ... ?
a. print
b. display
c. run
d. output

4. Which of the following is an assignment operator in Python?
a. ==
b. ===
c. >>>
d. =

5. User input is read as _____
a. Floating Decimal
b. Text String
c. Boolean Value
d. Integer

6. For which type of error does the interpreter halts and reports the error but does not execute the program?
a. Semantic error
b. Syntax error
c. Runtime error

d. All type of errors

7. What will be the output after the following statements?
```
x = 6
y = 3
print(x / y)
```
a. 2.0
b. 2
c. 18
d. 18.0

8. What will be the output after the following statements?
```
x = 8
y = 2
print(x // y)
```
a. 4.0
b. 4
c. 16
d. 16.0

9. What will be the output after the following statements?
```
x = 3
y = 7
print(x == y)
```
a. y = 7 and x = 3
b. True
c. x = 3 and y = 3
d. False

10. What will be the data type of y after the following statements if input entered is 50?
```
x = input('Enter a number: ')
y = int(x)
```

a. Float
b. String
c. List
d. Integer

11. What is the data type of x after the following statement?
```
x = [7, 8, 9, 10]
```
a. List
b. Dictionary
c. Tuple

d. String

12. What is the data type of x after the following statement?
x = ['Today', 'Tomorrow', 'Yesterday']
a. List
b. Dictionary
c. Tuple
d. String

13. What will be the output after the following statements?
x = ['25', 'Today', '53', 'Sunday', '15']
x.sort()
print(x)
a. ['Today', 'Sunday', '15', '25', '53']
b. ['Sunday', 'Today', '15', '25', '53']
c. ['15', '25', '53', 'Sunday', 'Today']
d. ['15', '25', '53', 'Today', 'Sunday']

14. Which of the following function can be used to find the data type of a variable?
a. data()
b. type()
c. true()
d. str()

15. Which of the following has only unique values?
a. List
b. Dictionary
c. Tuple
d. Set

16. What will be the output after the following statements?
x = 15
if x > 10 and x <= 15:
        print('true')
elif x > 15 and x < 25:
        print('not true')
elif x > 25 and x < 35:
        print('false')
else:
        print('not false')
a. true
b. false

c. not true
d. not false

17. What will be the output after the following statements?
x = 'Python'
y = 'MCQ'
print(x + y)
a. Python Python
b. MCQ MCQ
c. Python MCQ
d. PythonMCQ

18. What type of language is Python?
a. High level
b. Low level
c. Top level
d. Bottom level

19. Who is the creator of Python?
a. Bill Gates
b. Guido Van Rossum
c. Jeff Bezos
d. Larry Page

20. Which of the following is used to enclose strings?
a. Single quotes
b. Double quotes
c. Either single quotes or double quotes
d. ! symbol

21. What will be the output after the following statements?
b = 15
c = 20
a = b
b = c
c = a
print(b, c)
a. 20 15
b. 15 20
c. a 20
d. 15 a

22. What is the data type of a after the following statement?

a = (1, 4, 3, 6)
a. List
b. Dictionary
c. Tuple
d. Set

23. Which of the following has the highest precedence in an expression?
a. Parentheses
b. Exponential
c. Division
d. Subtraction

24. Which of the following operations is not possible while manipulating lists?
a. Addition
b. Multiplication
c. Division
d. Deletion

25. What will be the output after the following statements?
x = []
if bool(x):
print('Yes')
else:
print('No')
a. No
b. Yes
c. None
d. 0

26. What is the output of this code
>>>print("print '''print hello'''")
   a. print '''print hello'''
   b. Error
   c. print print hello
   d. print "print print hello"

27. Which of the following results in False
   a. >>>9=9 or 1==1
   b. >>>3==5 or 0b110!=7
   c. >>>7!=1 or 0b101==5
   d. >>>4 < 1 or 1 > 6

28.What is the output?

>>>'python' * 3.0
a. pythonpythonpython
b. python3.0
c. Error
d. python*3.0

29. Which of the following is an invalid variable?
a. __init__
b. in
c. it
d. on

30. What does ~4 evaluate to?
a. -5
b. -4
c. -3
d. +3.

31. Which of the following is incorrect?
a. x = 0b101
b. x = 0x4f5
c. x = 19023
d. x = 0o3964

32. Which of the following is incorrect?
a. float('inf')
b. float('nan')
c. float('56'+'78')
d. float('12+34')

33. Output for the following operation
 >>> 5+5=10 or 1+1=1
a. True
b. False
c. Error
d. None of the above

34. What would be the output of the following:
 >>>a=[0,1,2]
 >>>b=[a,3,4]
 >>>print (b[1][0])
 a. 1
 b. 3

c. 5
d. Not possible

35. Which is true for the expression x < y <= z

a.is equivalent to x < y and y <= z
b. x and z are not compared between them
c. z is not evaluated at all when x < y is found to be false
d. All of the above

36. What will be the output after the following statements?
x = (10, 20, 30, 40)
x[1] = x[1] + x[2]
print(x[1], x[2])
a. 20, 30
b. 30, 40
c. 40, 20
d. None of the above

37. What will be the output after the following statements?
x = [[2.0, 1.0, 2.0],[4.0, 5.0, 6.0]]
y=x
y[1][2] = y[1][2]+y[0][2]
print(x[1][2],y[1][2])

a. 6.0, 8.0
b. 7.0, 4.0
c. 8.0, 8.0
d. None of the above

38. What will be the output of statement 2**2**2**2
a. 16
b. 256
c. 65536
d. 32768

39. What will be the output of the following code

a = 1
b = ++a
print(a,b,b is a)

a. 1 1 True
b. 1 2 False
c. 2 1 True
d. None of these

40. What will be the output after the following statements?
x = {10:4, 15:8, 21:16, 23:32}
y = 15 in x
print(x[21],y)
a. 21 x[0]
b. [16] False
c. 16 True
d. 21 False

41. What will be the output of the following Python code snippet?
d1 = {"john":40, "peter":45}
d2 = {"john":40, "peter":45}
print(d1 == d2)
print(d1 is d2)

a. True True
b. False False
c. None
d. True False

42. Python Script:
 a = 6
 ++ a
 b = 3
 a += b
Value of a, b at the end of the script
a. 10,3
b. 9,3
c. 6,3
d. Error

43. What is printed using the Python script
     x = [0, 1]
     i = 0

```
   i, x[i] = x[1]  ,2
   print(x)
```
a. [0 , 2]
b. [2, 1]
c. [0 , 1]
d. [1, 2]

44. Determine the output for the python script
```
   x=[1,2,3]
   y=[1,22]
   w={1,3,2}
   z={1,2,3}
   print(x>y, w==z)
```

   a. False False
   b. False True
   c. True False
   d. True True

ANSWERS:

1	c	6	b	11	a	16	a	21	a
2	b	7	a	12	a	17	d	22	c
3	a	8	b	13	c	18	a	23	a
4	d	9	d	14	b	19	b	24	c
5	b	10	d	15	d	20	c	25	A

26	a	31	d	36	d	41	d		
27	d	32	d	37	c	42	b		
28	c	33	c	38	c	43	a		
29	b	34	d	39	a	44	b		
30	a	35	d	40	c				

PART - B

1. Define python

Python is a High-Level , Interpreted, Interactive, Object Oriented ,
dynamic and scripting language which can be used for a wide variety of
text processing, system administration and internet-related tasks.

2. Give the features of python.

- Easy to Use
- Expressive Language
- Interpreted Language
- Cross-platform language
- Free and Open Source
- Object-Oriented language
- Extensible libraries

3. What is python interpreter?

Python interpreter translates python code to byte code and executed by python virtual machine which executes the byte codes.

Python Interpreter uses 2 modes of execution.

1) Interactive mode
2) Script mode

4. What is the difference between intermediate mode and script mode?

Interactive Mode: It is command line shell that gives immediate feedback for each statement while running previously fed statements in active memory.

$>>>$ prompt indicates interactive mode

Script mode: In script mode, python program is created in a file and then interpreter executes the file. Python scripts have the extension **.py**

5. What is meant by value in python?

A value is one of the fundamental things—like a letter or a number—that a program manipulates.

6. List the standard data types in python .

Python has five standard data Types

1. numbers- integer, float, complex
2. Strings
3. List
4. Tuples
5. Set
6. Dictionary

7. Differentiate mutable and immutable objects in Python.

Immutable object-In Python, immutable objects are those whose value cannot be changed in place after assignment or initialization. They allocate new memory whenever their value is changed. Examples of immutable data types or objects or variables in Python are numbers (integers, floats), strings and tuples.

Mutable object -In Python, list, dict and set are examples of mutable

data types. Their values can be changed in place after their assignment or creation. When the value of a mutable variable is changed its memory is not reallocated.

8. What are the types of scalar objects in python.

A scalar is a type that can have a single value such as 5, 3.14, or 'Bob'.
The commonly used scalar types in Python are:

1. **Int** - Any integer
2. **Float** - Floating point number (64 bit precision)
3. **Complex** - Numbers with an optional imaginary component.
4. **Bool** - True, False
5. **Str** - A sequence of characters (can contain unicode characters).
6. **NoneType** (`None`) - Python's null or nil equivalent, every instance

9. What is meant by python numbers?

Number data types store numeric values. Number objects are created a value is assigned to them.

Python supports four different numerical types

- int (signed integers)
- float (floating point real values)
- complex (complex numbers)

10. What is a variable?

Python variable is also known as an identifier and used to hold value which can be changed during program execution. A variable is created the moment a value is assigned to it

Eg:

```
>>>n = 17
>>>pi = 3.14159
```

11. What are keywords?

Keywords are the reserved words in Python. We cannot use a keyword as variable name, function name or any other identifier. They are used to define the syntax and structure of the Python language In Python, keywords are case sensitive. There are 33 keywords in Python
Eg: False, class, finally, return

11. What are the rules for writing an identifier?

- Identifiers can be a combination of letters in lowercase (a to z) or uppercase (A to Z) or digits (0 to 9) or an underscore (_).
- An identifier cannot start with a digit.
- Keywords cannot be used as identifiers.
- Special symbols like !, @, #, $, % etc. cannot be used
- Identifier can be of any length.

12. What are expressions?

An expression is a combination of values, variables, operators, and calls to functions. If you type an expression at the Python prompt, the interpreter evaluates it and displays the result:

```
>>> 1 + 1
2
```

13. What is a statement?

A statement is an instruction that the Python interpreter can execute. When you type a statement on the command line, Python executes it. Statements don't produce any result. For example, a = 1 is an assignment statement. if statement, for statement, while statement etc. are other kinds of statements

14. What is multiline statement?

In Python, end of a statement is marked by a newline character. But we can make a statement extend over multiple lines with the line continuation character (\). For example:

```
a = 1 + 2 + 3 + \
    4 + 5 + 6 + \
    7 + 8 + 9
```

15. What operators does python support?

- Arithmetic Operators
- Comparison (Relational) Operators
- Assignment Operator
- Logical Operators
- Bitwise Operators
- Membership Operators
- Identity Operator

16. What is operator precedence?

- ➢ Determines which operator needs to be executed first
- ➢ Precedence is necessary to avoid ambiguity in values
- ➢ In the Operator precedence chart
  Operators in row have same precedence and have associativity from Left to Right except for exponentiation, which groups from right to left

Operator	Description
**	Exponentiation
+x, -x, ~x	Positive, negative, bitwise NOT
*, @, /, //, %	Multiplication, matrix multiplication, division, floor division, remainder
+, -	Addition and subtraction
<<, >>	Shifts
&	Bitwise AND
^	Bitwise XOR
|	Bitwise OR
in, not in, is, is not, <, <=, >, >=, !=, ==	Comparisons, including membership tests and identity tests
not x	Boolean NOT
and	Boolean AND
or	Boolean OR
if – else	Conditional expression
lambda	Lambda expression
:=	Assignment expression

17. Brief about multiple assignments in Python.
1. Single values can be assigned to more than one variables simultaneously
     eg. Sum = flag = a = b =0
2. Assign multiple values to multiple variables simultaneously
     eg. Sum , a , b, mesg = 0, 3, 5, "result"

3. Multiple assignment is really just a combination of tuple packing
     and sequence unpacking.

Ex. of Tuple packing
     t = 12345, 54321, 'hello!' values 12345, 54321 and 'hello!' are packed
     together in a tuple
Sequence unpacking requires that there are as many variables on the left side of the equals sign as there are elements in the sequence.
     >>> x, y, z = t

18. What is Python IDE?
  i.   Is a graphical user interface which is completely written in Python.
  ii.   It is bundled with the default implementation of the python language and also comes with optional part of the Python packaging.
  iii. Python IDLE is the standard most popular Python environment
  iv.   PyScripter IDE is also one of the Open source IDE

19. How are comments implemented in python?
Comments are for programmers to better understand a program and ignored by Python Interpreter.
1. Hash (#) symbol is used to start writing a single line comment.
2. To extend comments up to multiple lines.
   i. One way is to use the hash(#) symbol at the beginning of each line.
   ii. Another way of doing this is to use triple single or triple double quotes, either ''' or """. Unless they are not docstrings, they do not generate any extra code.

20. Mention about membership operators in Python.

Python membership operators are used to check the membership of value inside a Python data structure. If the value is present in the data structure, then the resulting value is true otherwise it returns false.

Operator	Description	Example
in	Evaluates to true if it finds a variable in the specified sequence and false otherwise.	x in y, here in results in a 1 if x is a member of sequence y.
not in	Evaluates to true if it does not finds a variable in the specified sequence and false otherwise.	x not in y, here not in results in a 1 if x is not a member of sequence y.

PART C

1. Explain the features of Python.
2. Mention the list of keywords available in Python. Compare it with variable name.
3. Illustrate the function of python interpreter and explain interpreter modes with examples.
4. Explain the various data types in python and illustrate each type with an example.
5. What are the operators in Python and appraise its types and explain with an example program for each type.
6. Summarize the precedence of mathematical operators in python.
7. Explain briefly constant, variables, expression, keywords and statements available in python.
8. What are statements? How are they constructed from variable and expressions in Python?
9. Write a program for temperature conversion using python.