

| | | | | | | | | | | | | | | | |
|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reg. No. | 2 | A | 2 | 0 | 1 | 1 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 5 | 1 |
|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

B.Tech. DEGREE EXAMINATION, DECEMBER 2022
Fifth Semester

18ECE201J – PYTHON AND SCIENTIFIC PYTHON

(For the candidates admitted from the academic year 2020-2021 to 2021-2022)

Note:

- (i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
- (ii) **Part - B** should be answered in answer booklet.

Time: 2½ Hours

Max. Marks: 75

PART – A (25 × 1 = 25 Marks)

Answer **ALL** Questions

- | | Marks | BL | CO | PO |
|--|-------|----|----|----|
| 1. Following construct is used to utilize a loop to run over two lists (A) Range (B) Zip (C) Append (D) Join | 1 | 1 | 1 | 3 |
| 2. Python uses a compact construct for generating lists from a 'for' loop (A) Composition (B) Concatenate (C) Comprehension (D) Dictionary | 1 | 1 | 1 | 5 |
| 3. To print an integer with a field of width of 6 characters is achieved by (A) % 6f (B) %6i (C) %6d (D) % g | 1 | 1 | 1 | 5 |
| 4. What will be the output of following expression if it is executed in python interactive mode? 16%3 (A) 5 (B) 1 (C) 0 (D) 7 | 1 | 2 | 1 | 2 |
| 5. A variable defined outside a function is referred to as (A) Local variable (B) Only variable (C) Global variable (D) Outside variable | 1 | 1 | 1 | 2 |
| 6. In the following code snippet $X_2 = \text{linespace}(0,5,7)$, the number 7 represents (A) Maximum value (B) Data type in number (C) Number of divisions (D) Line colour | 1 | 1 | 2 | 1 |
| 7. Choose the valid plotting library in python (A) Humpy (B) Grace (C) Open VFX (D) Gunplot | 1 | 1 | 2 | 1 |
| 8. Following problem cannot be solved using difference equation (A) Growth of population (B) Factorial (C) Area of a circle (D) Payback of loan | 1 | 1 | 2 | 1 |

9. What will be the output of round (4.576)? 1 2 2 1
 (A) 4.5 (B) 4
 (C) 5 (D) 4.6
10. The significance of the parameter 'bo' in the command plot (t, y1, 'bo') is 1 2 2 5
 (A) Redline (B) Black dot
 (C) Brown stripe (D) Blue line
11. Find the result of following code snippet 1 2 3 5
`S= 'Delhi is Hot'`
`S.lower ()`
 (A) Delhi is Hot (B) DELHI IS HOT
 (C) delhi is hot (D) Delhi is hot
12. Dictionary holds a pair. They are 1 1 3 5
 (A) Index and key (B) Key and value
 (C) Key and lock (D) Range and index
13. For reading data from web page the following module is used 1 1 3 5
 (A) sys (B) math
 (C) urllib (D) weblib
14. What does random.shuffle (x) do when X= [1,2,3,4,9]? 1 2 3 5
 (A) Error (B) Do nothing
 (C) Shuffle the elements of the list (D) Place the elements in order in place
15. What will be output of the following python code snippet? 1 2 3 5
`>>> d = { "john" : 30, "peter" : 60}`
`>>> d["john"]`
 (A) 30 (B) 60
 (C) "john" (D) "peter"
16. Choose the non valid application of random walk 1 1 4 1
 (A) Population genetics (B) Quantum mechanics
 (C) Trajectory estimation of a ball (D) Molecular motion
17. Choose the correct statement that generates integer random number between 9 to 11. 1 1 4 5
 (A) random.rand(9,11) (B) random.randint (9,11)
 (C) Rand.randfloat(9,12) (D) Random. Randstr(9,12)
18. A third party library that is used to work with random numbers is 1 1 4 5
 (A) math (B) numpy
 (C) rand (D) sys
19. The readlines() method returns 1 2 4 5
 (A) str (B) A list of lines
 (C) A list of single characters (D) A list of integers

- b.i. Develop a code for finding factorial using difference equation. 4 4 2 2
- ii. Create a program to play a note with 440 Hz in python. 6 4 2 2
28. a.i. A file contains monthly rainfall data (month name and rainfall in mm) in the year 1984. Write a program to find average and total rainfall. Plot the rainfall as a graph. Give necessary description for the program. 8 3 3 5
- ii. Compare list and dictionary. 2 3 3 5

(OR)

- b. Discuss following string manipulation operations with necessary examples.
- (i) Split 3 3 3 1
- (ii) Strip off white space (leading and trailing) 4 3 3 1
- (iii) Join the substring 3 3 3 1
29. a. Write a code to demonstrate Monte Carlo simulation. Explain the principle of Monte Carlo simulation. 10 3 4 1

(OR)

- b. Compute the statics of a possible position by Python language. Plot the particle position. Provide necessary explanation. 10 3 4 1
30. a. Discuss the statistical methods available in numpy with necessary code snippets. 10 3 5 5

(OR)

- b.i. Write a code to solve following expression $f(t) = 2\sin(10\pi t) + \sin(200\pi t)$ add noise with $f(t)$. Plot it. 6 3 5 2
- ii. Find the FFT for $f(t)$ with noise. Plot the real and imaginary part of FFT signals. Let $f(t) = 4\sin(20\pi t)$. 4 3 5 2
