

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

B.Tech degree examinations (S), September 2020 (S1/S2 - 2015 Scheme)

**Course Code: BE101-05****Course Name: INTRODUCTION TO COMPUTING AND PROBLEM SOLVING**

Max. Marks: 100

Duration: 3 Hours

**PART A***Answer all questions, each carries 2 or 3 marks.*

Marks

- |    |  |     |
|----|--|-----|
| 1  | Differentiate data bus, address bus and control bus.   | (3) |
| 2  | What is the role of translators in computers? Give examples.   | (3) |
| 3  | Give the various flowchart symbols and their use.  | (3) |
| 4  | Write an algorithm for swapping two integers.  | (3) |
| 5  | What are Boolean expressions? Give example Boolean statements in Python and its output.  | (3) |
| 6  | What will be the output of the following program segment?<br>i=5<br>while i<0:<br>print i<br>i = 1<br>else:<br>print "Sorry"   | (3) |
| 7  | What are the advantages of using functions?  | (3) |
| 8  | Write a python function to read the sides of a triangle a, b and calculate the hypotenuse using the formula $\sqrt{a^2 + b^2}$ .   | (3) |
| 9  | Let str='String operations in python'. What will be the output of the following expressions:<br>i. str[: -2]      ii. str[: ]      iii. str[10 : ]      iv. str[-6 : -2] | (2) |
| 10 | Write a Python program to read a string and use appropriate string operation to print the string 20 times in a line with no space. Do not use any iterative statement.   | (3) |
| 11 | Write a Python program to read a string and find the number of vowels and consonants in the string.  | (3) |
| 12 | Let r1 and r2 be the objects of the class rank. Give the output of the following code.   |     |

```

>>> r1=rank()
>>> r1.a=44
>>> r1.b=22
>>> r2=rank()
>>> r2.a=44
>>> r2.b=22
>>> r1 is r2

```

- 13 What is pickling? Give example. (3)
- 14 List the different file operating modes in Python? (2)

### PART B

*Answer any four full questions, each carries 8 marks.*

- 15 a) What are secondary storage devices? Explain any two. (5)
- b) Give the functions of accumulator, IR and MBR. (3)
- 16 Formulate an algorithm and draw a flowchart to solve a quadratic equation. (8)
- 17 Using 'while', write a Python program to print the multiplication table of n,  $2 \leq n \leq 10$ . Replace the 'while' statement with an equivalent 'for' statement to get the same output. (8)
- 18 Write a Python function to compute the power of a number. Use the function to compute the sum of the series  $(1 - x^2/2 + x^4/4 - x^6/6 + \dots \dots \dots n \text{ terms})$ . (8)
- 19 a) What are the functions of an operating system? (3)
- b) Write a Python function to find GCD (greatest common divisor) of two numbers. (5)

### PART C

*Answer any two full questions, each carries 14 marks.*

- 20 a) Write a Python program to find the transpose of a matrix using list. (7)
- b) Write a Python program to read numbers stored in a file and separate the even and odd numbers to two files named Even.txt and Odd.txt respectively. Display both the files. (7)
- 21 a) Create a dictionary with *items* and *number of units* of each item available in the stock. Write a Python program to show the stock updation as and when the units of the existing items are added or deleted. (7)
- b) Explain the concepts of classes, attributes and methods in Python, with suitable examples. (7)
- 22 a) Write a Python program to create a list of strings. Separate palindromes in the list to another list without using *reverse()* function. (7)

- b) Define a class in Python to store the details of a *ship* (*name, source, destination*), with the following methods:

i) *get\_details()* - to assign values to class attributes

(7)

ii) *print\_details()* - to display the attribute values

Create an object of the class and invoke the methods.

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ADR-ADR-ADR