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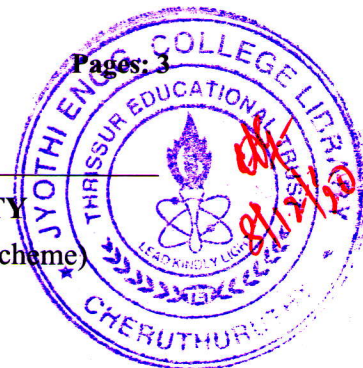
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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

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?
i=5
while i<0:
 print i
 i = 1
else:
 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:
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
```

(3)

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 $(1 - x^2/2 + x^4/4 - x^6/6 + \dots n \text{ terms})$.

(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.

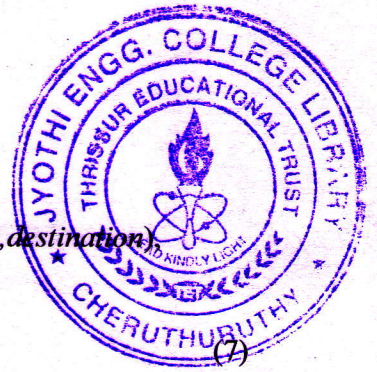
(7)

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
- ii) *print_details()* - to display the attribute values

Create an object of the class and invoke the methods.
