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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER B.TECH DEGREE EXAMINATION(S), DECEMBER 2019

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 What is cache memory? (3)
- 2 What is a bus? What are the functions of system and expansion buses? (3)
- 3 What is an algorithm? Give the basic properties of an algorithm. (3)
- 4 Draw a flowchart to find the factorial of a number. (3)
- 5 Write the output for the following program segment:

for i in range(2,8,1):

 if i==5:

 continue

(2)

 print (i, end)

print "Done"

- 6 What will be the output if continue statement is replaced with a break statement?
Give the output for the following expression evaluation in Python:

(i) -4**2 (ii) 2**3**2 (iii) 45%0

(3)

- 7 Write a Python code using function to find the quadrant of a given point (x, y) (3)
- 8 Write a Python function to find the sum of all even numbers in a set of n numbers, entered by the user. (3)
- 9 What will be the output of the given code?

```
>>>values = "Apple, orange, grapes"
```

(2)

```
>>>list = values.split(",")
```

```
>>>print("list:", list)
```

- 10 Write a Python program to reverse the first half and second half of an even lengthed string separately. (Eg: if the string is "gooddays output should be "doogsyad") (3)
- 11 Write a Python program to remove the characters at odd index positions in a string. (3)
- 12 What is pickling? How is it implemented in Python? (3)
- 13 Let r1 and r2 be the objects of the class rank. Give the output of the following code: (3)

```
>>> r1=rank()
```

```
>>> r1.a=44
```

```
>>> r1.b=22
```

```
>>> r2 = r1
```

```
>>> r1 is r2
```

- 14 Write a function to check the existence of a file. (3)

PART B

Answer any four full questions, each carries 8 marks.

- 15 a) What is an operating system? Explain any three types of OS? (5)
 b) What are the key features of an interpreter? (3)
- 16 Give an algorithm and flowchart to generate prime numbers in a given range. (8)
- 17 Write a Python program to find the largest and second largest of n numbers. Assume $n \geq 3$ and all the numbers are distinct. No sorting algorithm should be used. (8)
- 18 Define a Python function *digit()* to extract the digits of a number. Use the function to accept a number from the user and display it only if all its digits are even. (8)
- 19 a) Write a Python program to print the following pattern.

```
5 4 3 2 1
```

```
4 3 2 1
```

```
3 2 1
```

```
2 1
```

```
1
```

- b) With an example explain *while...else* construct in Python. (3)

PART C

Answer any two full questions, each carries 14 marks.

- 20 a) Write a Python program to read a matrix and find the sum of each row and each column. (7)
 b) Write a Python program to input a list of 'n' numbers. Calculate the cube of each number and store it in a file. (7)
- 21 a) What is a dictionary? Explain any five dictionary operations with examples. (7)
 b) Write a Python program to create a text file. Read the contents of the file, encrypt every character in the file with a distance of 3 and write it to a new file. (7)

Eg. **yak** encrypted as **bdn**

- 22 a) Write a Python program to read a list of positive integers and separate the prime and composite numbers into two separate lists. (7)
 b) Define a class in Python to store the details of *book (title, author, cost)*, with the following methods:
 i) *get_details()*- to assign values to class attributes
 ii) *print_details()*- to display the attribute values (7)

Create an object of the class and invoke the methods.
