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Reg. No._____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIRST SEMESTER B.TECH DEGREE EXAMINATION, JULY 2017

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

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions.

1.   What are the objectives of operating system?   (2)

2.   What is the significance of cache memory?   (2)

3.   Differentiate between assemblers, compilers and interpreters.   (3)

4.   Write an algorithm to find the sum of first 'n' odd numbers, for a given positive
      integer n.   (2)

5.   What are the advantages of top-down design?   (2)

6.   Draw the flowchart to generate the first 'n' numbers in the Fibonacci sequence. (3)

7.   Write the output produced by the following code.

      a.   for count in range(10,0,-2) :   b. Print $4 + 2 * * 3 * 6$ (2)
               print(count, end=" ")

8.   Write a Python code that prints the absolute value of a given number without using
      Python's **abs** function.   (2)

9.   Write a program to find the roots of a quadratic equation.   (3)

10.   Write a function in Python to print a newline.   (2)

11.   What are the advantages of using functions?   (2)

12.   Write two functions isdigit(), which returns True if the character passed is a digit and
      isletter(), which returns True if the character passed is a letter.   (3)

13.   Write a program to remove all vowels from a given string.   (3)

14.   Is the compound type tuple in Python is mutable? Write a Python script to interchange
      2 variables using tuple.   (3)

15.   Write a function exists() which returns True if the given file exists and False if it does
      not.   (3)

16.   What is meant by pickling in python? Explain its significance with the help of
      example.   (3)

PART B
Answer any 4 complete questions, each having 8 marks.

17. a) Describe the Von-Neumann architecture. (4)

b) Explain the memory hierarchy used in the computer storage with a diagram. (4)

18. Design an algorithm that accepts a positive integer 'n' and print all prime numbers up to 'n'. Also draw the flowchart. (8)

19. a) Write a python program to find the sum of digits of a given positive integer. (4)

b) Write a program to print the following pattern

    1
    2 3
    4 5 6 (4)

20. a) Write a program using function to display a multiplication table of n*n size, for any given 'n'. (5)

b) Compare the built-in functions int() and str() with examples. (3)

21. a) Write a program using function to find the binomial coefficient, ^nC_r. (4)

[Note: $^nC_r = n! / r!*(n-r)!$]

b) Write a program that accepts the length of three sides of a triangle as input and determine whether or not the triangle is a right triangle. (4)

PART C
Answer any 2 complete questions, each having 14 marks.

22. a) Write a program to perform the following operations on a given string. (7)

i. convert all small letters in a string into capital letters.

ii. find the number of occurrences of a given substring.

b) How to create a Dictionary in Python? Write a Python program to read and display a sparse matrix using dictionary. (7)

23. a) Write a program to read numbers stored in one file and store the sorted numbers in another file after deleting duplicates. (7)

b) Create a class 'Rectangle' with attributes length and breadth and method area() for calculating the area of the rectangle. Create two instances of the class and call the method for each instance (7)

24. a) Write a program to sort a list of names in alphabetical order and print the sorted list in uppercase. (7)

b) How exceptions are handled in Python? Illustrate with example. (7)

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