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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER B.TECH DEGREE EXAMINATION, JANUARY 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. List any three CPU registers and give the purpose of each one. (3)
2. List out the different types of buses used in a computer system. (2)
3. Differentiate between system software and application software. (2)
4. Draw the flowchart to generate the numbers between 100 and 200 which are divisible by 3, but not divisible by 4. (2)
5. Write an algorithm to count the number of digits in a positive integer. (2)
6. Pretend you are a python interpreter. Evaluate each of the expressions given below. Write down the value they evaluate to, and the type of that value.

   (i) len(range(4,5)) (ii)"a"+"b"*2 (iii) 4**(3.0/2) (3)
7. Write a python program to find the sum of all odd terms in a group of n numbers entered by the user. (3)
8. Illustrate the concept of modules in Python with a typical example. List out the names of some commonly used modules. (3)
9. Write the output of this program. Briefly explain the working of this code. (2)

```
def proc(x):
    x=2*x*x
def main():
    x=10
main
proc(x)
print x
```

10. Let s='orange' be a string. What will be the output of the following expressions.
    (i) (a) s[0:4] (b) s[6] (c) s[-4] (d) s[-3:]
    (ii) You are given a string, for instance, 'How are you'. Split the string on to a " " (space) delimiter and join using a – (hyphen) delimiter. (final output of the given example will be 'How-are-you')
    (3)

11. Compare tuple and List on the basis of mutability. Give example to illustrate this. (3)
12. Distinguish between object identity and structural equivalence. (2)
13. Let student = {'John':50,'Tom':60, 'Nina':82} be a dictionary. Discuss the output obtained after executing the following statements:

```
newstudent = student
newstudent['Tom'] = 45
print newstudent
print student
```

(3)

14. List out the different modes in which a file can be opened in Python. (2)
15. Differentiate between syntax error and runtime error with example. (2)
16. What do you mean 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) Draw and explain instruction execution cycle in a computer (4)
    (b) Write notes on OMR, MICR, and OCR devices (4)
18. Give the algorithm and draw flowchart for generating Armstrong number between the given ranges. (Armstrong number is a number ***n*** such that sum of cubes of the digits of ***n*** is equal to ***n***) (8)
19. (a) Illustrate the usage of break and continue statements with proper examples. (3)
    (b) Write a program to find the quadrant of a given point (x,y). (5)
20. (a) Write a program that reads an integer N from the keyboard and then calls a user defined function to compute and displays the sum of the numbers from N to (2*N) if N is nonnegative. If N is negative, then displays the sum of the numbers from (2*N) to N.The starting and ending points are included in the sum. (4)
    (b)Write a program to compute the sum of first n positive integers using a recursive function. (4)
21. (a) List the advantages of using functions. (3)
    (b) Write a menu driven program to calculate area of circle, triangle, rectangle and square. Use a separate function to implement each operation. (5)

(Answer any two questions each having 14 marks)

22. (a) Write a program to check if a given string is a palindrome or not, without reversing the original string. (7)

(b) Write a python program to create a dictionary of phone numbers and names of five persons. Display the contents of the dictionary in alphabetical order of names. (7)

23. (a) Write a python code to find transpose of a matrix using list. (4)

(b) Describe how exceptions are handled in python with suitable illustration. (10)

24. (a) Define the terms class,attribute,method and instance with the help of an example. (4)

(b) Create a class person with attributes Name, age, salary and a method display() for showing the details. Create two instances of the class and call the method for each instance. (5)

(c) Write a python program that opens a file for input and prints the count of four letter words in it. (5)