CBCS SCHEME

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18MCA32

Third Semester MCA Degree Examination, Dec.2019/Jan.2020
Programming using Python

Time: 3 hrs. Max. Marks: 100

Note: *Answer FIVE full questions, choosing ONE full question from each module.*

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. Write the following in python:

i) $0 < n < 1$

ii) 2^{3^2}

iii) $\dfrac{\log_2 x + \text{Sin}45^\circ}{xy}$

iv) a is greater than any one of x, y, z

v) $a + \dfrac{b}{c + \dfrac{d}{ef}}$

vi) $a\left\{[b+c]^{3/2}\sqrt{gh}\right\}$ **(06 Marks)**

b. Define a function $f(x,y,z) = \sqrt{x+y+z}$ and use it in a program to compute the following:

$p = \sqrt{a+b+c}$

$q = \sqrt{a^2 + 4b^2 + c^4}$

$r = \dfrac{abc}{(a+b+c)^{3/2}}$

$s = \sqrt{a+b+\sqrt{a+b+c}}$ **(08 Marks)**

c. Explain how input operation is performed through keyboard. **(06 Marks)**

OR

2 a. Evaluate the following showing each step based on precedence and associativity:

i) 5//3*2 – 6/3*5%3

ii) 5*3%2 + 2**3**2

iii) 5%8*3+8%3*5

iv) 10*2 > = 5*2 and not 10 > 20 **(08 Marks)**

b. Write a program to read marks of 3 tests M_1, M_2, M_3 and find the average of best 2 tests rounding to next integer in case of fraction in average without using if statement. **(06 Marks)**

c. Explain how the following are used in strings: i) Multiline string ii) Quotes iii) Escape sequence characters. **(06 Marks)**

Module-2

3 a. Explain different forms of "if" statements with syntax and examples. **(08 Marks)**

b. Write a program to input x and y coordinates of a point. Find the lines in any of the following: i) Origin ii) x-axis iii) y-axis iv) Ist quadrant v) IInd quadrant vi) IIIrd quadrant or vii) IVth quadrant. **(06 Marks)**

c. Define your own module "conversion" consisting of 2 methods i) to convert INR to USD ii) to convert USD to INR. Import this module and show how the Indian Rupees (INR) are converted to American Dollars (USD) and vise-versa assuming 1USD = 72INR. **(06 Marks)**

OR

4 a. Explain different forms of importing modules. **(06 Marks)**

b. Discuss the significance of docstrings. **(06 Marks)**

c. Explain the following string methods with examples:
i) split ii) strip iii) swapcase iv) count v) upper vi) lower vii) find viii) rjust. **(08 Marks)**

Module-3

5 a. Explain any 7 methods of list with examples. **(07 Marks)**

b. Consider a list x with elements [5, 7, 6, 4, 3, 9, 2]. Show how the following operations are performed on x without using built-in methods/functions:
i) Remove the first element
ii) Remove the last element
iii) Insert 10 at the beginning
iv) Insert 10 at the end
v) Remove element in position 2
vi) Insert 10 into position 3
vii) Remove all the elements in x. **(07 Marks)**

c. Write a program to find the sum of digits in a given number using while loop. **(06 Marks)**

OR

6 a. Explain in operator and range function with examples. **(06 Marks)**

b. Show how matrix a of order 4 × 4 is created using list initializing a as unit matrix. Write the python code segment to find the trace (sum of diagonal elements) of a. **(08 Marks)**

c. Write a program to compute $f(x) = \sqrt{x^2 + 2x - 1}$ for all x ranging from 2.0 to 3.0 in steps of 0.1 using for loop with range function. **(06 Marks)**

Module-4

7 a. Explain any 4 methods on each of the following storage collection types i) file ii) set iii) dictionary. Give examples. **(12 Marks)**

b. Write a program to read string in lower case and count the occurrence of each alphabet with the help of dictionary. **(08 Marks)**

OR

8 a. Compare the storage collection types strings, lists, tuples, sets and dictionary. **(12 Marks)**

b. What is inversion of dictionary? Give examples. **(08 Marks)**

Module-5

9 a. What are classes and objects? Explain encapsulation, polymorphism, inheritance in object oriented programming. **(10 Marks)**

b. Define a class distance with 2 data members feet and inches along with 3 member functions to read a distance object, print a distance object and add 2 distance objects. Use this class in a program to read and add 3 distance objects. **(10 Marks)**

OR

10 a. Explain any 10 GUI widgets with respect to tkinter. **(10 Marks)**

b. What is event driven programming? Explain any 3 event driven operations. **(10 Marks)**

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