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PES UNIVERSITY

UE18CS101

End Semester Assessment (ESA) B. Tech. 1st SEMESTER – Aug - Dec-2018
UE18CS101 - Introduction to Computing Using Python

Time: 3 Hrs. | Answer All Questions | Max Marks: 100

1	a)	Say True or False for the following. i) An operating system is the part of the hardware that controls all other hardware components of a computer system. ii) Most programs are written in machine code because this is the only thing the CPU can process. iii) Any algorithm that correctly solves a given problem must solve the problem in a reasonable amount of time; otherwise it is of limited practical use. iv) An identifier in Python is a sequence of one or more characters that must begin with a letter or a digit. v) Unary operators are applied to a single operand.	5
	b)	Evaluate the following expressions: I) a = 12; b = 5; print(a | b) ii) x = 5 ; print(x << 2, x >> 2) iii) print(3 ^ 3 ^ 3) iv) x= 0; y= 10 i) print(x == 0 and y// x > 5) ii) print(x == 0 or y// x> 5)	5

	c)	What gets printed?
		i)
		`n = 4`
		`while ++n:`
		`  print(n)`
		`  n=n+1`
		ii) `x = "abcdef"`
		`i = "a"`
		`while i in x:`
		`  print('i', end = " ")`
		iii) `for i in [1, 2, 3, 4][::-1]:`
		`  print (i,end=' , ' )`
		iv) `for i in range(1, 5, -1) :`
		`  print(i + 1, end = " ")`
		`  i=i+1`
			4

	d)	A website requires the user to input username and password to register. Write a python program to check the validity of password input by the user. Following are the criteria for checking the validity of the password:- i. At least 1 letter between 'a-z' ii. At least 1 number between '0-9' iii. At least 1 letter between 'A-Z' iv. At least 1 character from '$#@' v. Minimum length of transaction password: 6 vi. Maximum length of transaction password: 12 case 1: input: ABd1234@1 output: valid case 2: input: ABCDqwer output: invalid	6

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2	a)	Write a python program to print the following pattern. abcd bcd cd d	5
	b)	What is the output? i) list1 = [10,20,30,40] list2 = [10,20,30,40] list1[0] = 100 print(list2) ii) s = "PESU" s = (s + s).replace(s, ' ') print(s) iii) t = ([11, 22], [33, 44]) t[0] += [55, 66] print(t) iv)Output not in particular order d = dict() for i in range(1, 4): d['a' + str(i)] = 'a' * i print(d)	6 (1+1+ 1+3)
	c)	Write the output(not in particular order.) s1 = set(range(5)) s2 = set(range(0, 10, 2)) s3 = s1 – s2; print(s3) s4 = s2 – s1; print(s4) s5 = s3 & s4; print(s5) s6 = s3 | s4; print(s6)	4
	d)	With a given integral number n, write a program to generate a dictionary that contains i:i*i such that is an integral number between 1 and n (both inclusive). and then the program should print the dictionary. If n=6 ,then the output sould be {1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36}	5

3	a)	Write the output for the following:-
		i)
		def list1(val, list=[]):
		list.append(val)
		return list
		
		lst1 = list1(10)
		lst2 = list1(123,[])
		print(lst1)
		print(lst2)
		
		ii)
		def f1(x):
		for k in range(0, len(x)):
		if x[k] < 0:
		x[k] = 0
		return sum(x)
		y = [15, -7, 5, 2, -6, -1]
		total = f1(y)
		print('total = ', total)
		print(y)
			5
			(2+3)

	b)	Write a Python program to calculate the value of a to the power b using recursion.	5
	c)	Define a function that can accept two strings as input and print the string with maximum length on to the console. If two strings have the same length, then the function should print both the strings.	5

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	d)	Complete the # todo part of the function definition to get the desired output. Input: num_dict={1:[100,1,1003],3:[300,3,1002],2:[200,2,1001]} Expected output: {2:[200,2,1001],3:[300,3,1002],1:[100,1,1003]} def sort_dict(d): # todo function definition to return a sorted dictionary based on the last element of the list which is used as the value for the given key . num_dict={1:[100,1,1003],3:[300,3,1002],2:[200,2,1001]} print(sort_dict(num_dict))	5

4	a)	What is the output ?
		i)
		a = [1,2,4,1,2,3]
		s =set(a)
		def check(n):
		if n in s:
		return True
		else:
		return False
		print (filter(check, a))
		
		ii)
		x = 'abcd'
		print(list(map(list, x)))
		
		iii) Write a code to determine the maximum element in a given list containing values using reduce.
			6
			(2+2+2)

	b)	Write a python code for the following using list comprehension. i) Find all numbers which are odd and which are palindromes between a pair of numbers between 20 and 100 (both inclusive). ii)Create a list of numbers and a list of strings. Both the lists are of same size. Combine two lists to make a list of tuples.	6 (3+3)

	c)	Write the output for the following.
		def G_fun(n):
		i=0
		while i<=n:
		if i%2==0:
		yield i
		i+=1
		n=10
		values = []
		for i in G_fun(n):
		values.append(str(i))
		print (",".join(values))
			3

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	d)	i) Explain 4 ways of importing a file. ii)Find the output when a.py is executed as python a.py. File: abc.py print("this is with in abc.py") print('abc', __name__) File: a.py print("this is with in a.py") a=10 def f1(): print("this is function f1") import abc print('a',__name__)	5 (2+3)
5	a)	Define a user defined type named Shape. Derive a type Square from Shape. The Square takes length as an argument. Add a function area() in both the types. Shape's area is 0 by default.Write the implementation for the following interface. aSquare= Square(3) print (aSquare.area()) aShape=Shape() print(aShape.area())	8

	b)	I)Explain the following.
		i) try: ii) except iii) finally
		II) What is the output for the following code?
		i) def f():
		  try:
		  return 1
		  finally:
		  return 2
		k = f()
		print(k)
		ii. try:
		  if '1' != 1:
		  raise "someError"
		  else:
		  print("someError has not occured")
		except "someError":
		  print ("someError has occurred")
			6
			(3+1+2)

	c)	Write a program to count the number of capital letters and small letters in a file. Write the output to a separate file.	6