COLLEGE OF ENGINEERING, PUNE

(An Autonomous Institute of Government of Maharashtra.)

END Semester Examination

Programme: FY B.Tech **Semester: I**

Course Code: **Course Name: PPS**

Branch: Group Electrical **Academic Year: 2019-20**

Duration: 2 Hrs **Max Marks: 40**

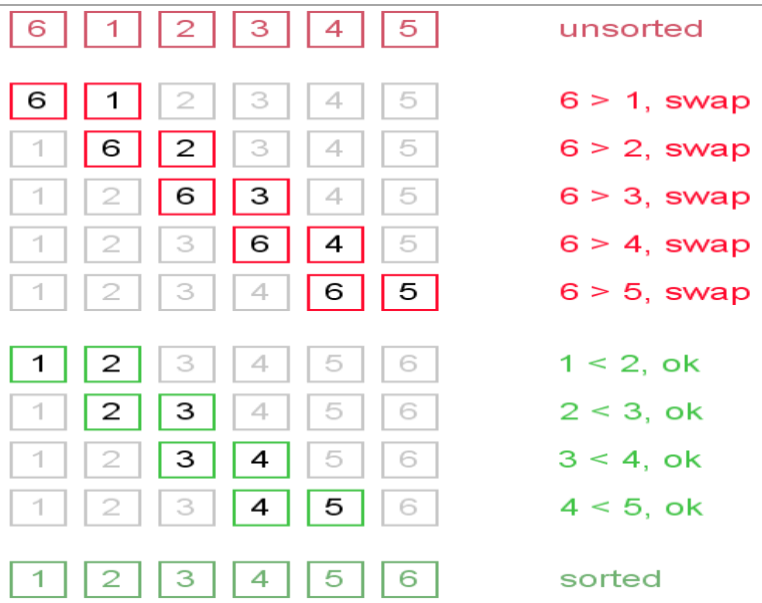
Student PRN No.

Instructions:

1. Figures to the right indicate the full marks.
2. Mobile phones and programmable calculators are strictly prohibited.
3. Writing anything on question paper is not allowed.
4. Exchange/Sharing of stationery, calculator etc. not allowed.
5. Write your PRN Number on Question Paper.

			Marks	CO	PO
Q 1	**a**	**Draw the architecture for the Von Neumann model.**	2	1, 2	1, 2, 4
	b	**The fetching of next instruction during current instruction execution from memory is called as** Pre-fetching a. Fetching b. Pre-fetching c. Fetch & Decoding d. All of the above	1		
	c	**Write a program in python and draw the flowchart for the following problem statement.** There are some goats and ducks on a farm; they have total **n** number of eyes and **m** number of feet. Given **n & m** as input; write a program to find the number of goats and ducks on the farm. **(Hint: Solve the given problem for n = 60 and m = 86 and find the equation in terms of n & m)**	4		
		Let us consider x for duck and y for goat. 2x + 2y = 60 Divide by 2 x + y =30 x = 30 - y ……1 2x + 4y = 86 2x = 86 - 4y x = 86 - 4y / 2 ……..2 equate 1 & 2 30 - y = 86 - 4y /2 60 - 2y = 86 - 4y 2y = 26 y = 13 x = 17			
	d	**Write a program in python to implement the following sequence upto 10 terms:**	3		

		4, 7, 10, 13, 16…			
		It is an Arithmetic sequence with common difference =3 a=4 i=0 d=3 while(i<10): print(a," ") a=a+d i+=1			
Q 2	**a**	**Q. Identify out of linear and binary search which is the most suitable technique for the following situations?** 1. Finding max or min element from an unsorted list. 2. Consider in a library, books are well-arranged in alphabetical order and you have to search a book.	2	3, 5	1, 4, 6, 11
		1. Linear search **2. Binary search**			
	b	**Write a program in python to count number of digits in a given positive number**.	2		
		n=int(input("Enter any positive number:")) count = 0 while n != 0: n //= 10 count+= 1 print ("Number of digits : % d"%count)			
	c	**Solve the following example with bubble sort algorithm and show the execution at each iteration. Write a program in python using bubble sort algorithm. Ex: 6 , 1, 2, 3, 4, 5**	4		




```
arr = [6,1,2,3,4,5]
n = len(arr)

   # Traverse through all array elements
for i in range(n):

      # Last i elements are already in place
   for j in range(0, n-i-1):
         # traverse the array from 0 to n-i-1
         # Swap if the element found is greater
         # than the next element
      if arr[j] > arr[j+1] :
         arr[j], arr[j+1] = arr[j+1], arr[j]
print ("Sorted array is:")
for i in range(len(arr)):
   print ("%d" %arr[i])
```

	d	**Write a program using list comprehension to print the cube of odd numbers from 1 to 10.**	2

		`list1 = [1,2,3,4,5,6,7,8,9,10]`
		`only_odd = [num**3 for num in list1 if num % 2 == 1]`
		`print(only_odd)`	

		OR	
	d	**Match the following pairs: (2)**	2

1. List	a) A collection of ordered and unchangeable elements.
2. Tuple	b) A collection of unordered and indexed elements.
3. Set	c) A collection of ordered and changeable elements.
4. Dictionary	d) A collection of unordered and unindexed elements.

1 -> c
2 -> a
3 -> d
4 -> b

e **Find the output of the following snippets:** 2

1)

```
names1 = ["Mango", "Banana", "Cherry"]
names2 = names1
names3 = names1[:]
names2[0] = "Orange"
names3[1] = "Grapes"
sum = 0
for ls in (names1, names2, names3):
    print(ls)
    if ls[0] == "Orange":
        sum += 1
    if ls[1] == "Grapes":
        sum += 10
print(sum)
```

12

2)

```
str1="Welcome All!"
str2="Python Programming."
str3=str1[:7]+str2[len(str2)-2:]
print(str3)
```

Welcomeg.

f **Consider the following Python Program to Count Alphabets, Digits and Special Characters in a String using For Loop. Fill the blanks according to the comments given in the program.** 3

```
str1 = “Hello, Mary! My id is 123.”
#Assign alphabets, digits and special count variable to zero
alphabets = digits = special = 0
#Iterate till the length of string
for i in range(len(str1)):
 #check whether any character is alphabet or not in a string. If yes then increment alphabet count by 1
        if((str1[i] >= 'a' and str1[i] <= 'z') or (str1[i] >= 'A' and str1[i] <= 'Z')):
                alphabets = alphabets+1
#check whether any character is digit or not in a string. If yes then increment digit count by 1
        elif (str1[i] >= '0' and str1[i] <= '9'):
                digits =digits+1
        # otherwise it consider it is an special character and increment special character count by 1
        else:
                special = special+1
```

```
print("\nTotal Number of Alphabets in this String :  ", alphabets)
print("\nTotal Number of Digits in this String :  ", digits)
print("\nTotal Number of Special Characters in this String :  ", special)
```

Q 3 **a** **Implement recursive function call for finding multiplication of two positive numbers which are accepted from user. Note, you are not allowed to use multiplication operator to perform multiplication.** 3 4, 5 1, 11

```
# recursive function to calculate
# multiplication of two numbers
def product( x , y ):
    # if x is less than y swap
    # the numbers
    if x < y:  #5<2
        return product(y, x)

    # iteratively calculate y
    # times sum of x
    elif y != 0:
        return (x + product(x, y - 1))

    # if any of the two numbers is
    # zero return zero
    else:
        return 0

# Driver code
x = int(input("Enter a Number"))
y = int(input(("enter a number"))
print( product(x, y))
```

b **Following program generates an error. What modification should be done within function so that expected output will be achieved?** 1

Program :	**Output after Execution :**

var1="good"
def show():
  var2 ="morning"
  print(var1)
  print(var2)
show()
print(var1)
print(var2)
	good
	morning
	good
	Traceback (most recent call last):
	  File "p2.py", line 8, in <module>
	  print(var2)
	NameError: name 'var2' is not defined

Note and Hint: **You are not allowed to change sequence of print function.**	**Excepted Output is :** good morning good

			morning		

		Program :
		var1="good"
		def show():
		  global var2
		  var2 ="morning"
		  print(var1)
		  print(var2)
		show()
		print(var1)
		print(var2)			

	c	**Write a one line python code for each of the following situations.** a) Create and open a python file where we can edit and read the contents of the file. b) Open binary file in read mode.			2
		a) file = open("abc.py", "r+") or file = open("abc.py", "w+") **b)** file=open("xyz.txt","rb")			
	d	**Find the output of the following snippets:**			4

1)	**2)**

def recur(n):
  if n <= 1:
  return n
  else:
  return(recur(n-1) + recur(n-2))
nterms = 10
if nterms <= 0:
  print("Please enter a positive integer")
else:
  for i in range(nterms):
  print(recur(i))
	def out(notout):
	  new = list()
	  for num in notout:
	  new.append(num+2)
	  return new
	def p(run):
	  for e in run:
	  print(e, ':', end=' ')
	wicket = out([2, 5, 12])
	p(wicket)

0 1 1 2 3 5 8 13 21 34	**4 : 5 : 14 :**

3)
 	
def coep(x):
  return x + 3
 	
def college(a, n):
  print(a*n)
 	
print(coep(7))
college('*', 2)
college(coep(2), 6)
c=coep(37)
print(c)
	4)
	
	def find_answer(que1,que2):
	  if (que1<que2):
	  print(que1)
	  else:
	  print(que2)
	q1="Hi"
	q2="bye"
	find_answer(q2,q1)

10	**bye**

		** 30 40			
	e	**Complete the following fill in the blanks by using number conversion system and show the steps of solving.** **1)** $(1E2)_H$ **=** $(\_\_\_\_\_)_{10}$ **2)** $(417)_{10}$ **=** $(\_\_\_\_\_)_O$	1		
	f	**Consider that following text file is created in read only mode where you cannot edit the file, and name of file is python.txt which contains the message as shown below:** Hello All, Hope you have enjoyed learning python Programming. We have tried to get every detail concept of PPS. Hope you will integrate your knowledge in python Programming All the Best!!! **Write a program in python to count how many lines are written or used for files of this type. Finally print number of lines in file.**	2		
		Solution : line_count=0 file = open("python.py","r+") for line in file: line_count+=1 file.close() print("Number of lines are ", line_count)			
	g	**Show mathematical representation for conversion of positive decimal number to a binary number. Write a program in python for the same where take decimal number as input from user.**	2		