Roll No. …………………..

KVS RO Guwahati

COMPUTER SCIENCE (083)

*Class: XII Session: 2019 – 20*

*Time allowed: 3 hours Maximum Marks: 70*

***General Instructions:***

1. ***All*** *questions are compulsory.*
2. *Questions 2(b), 2(d), 3 and 4 have internal choices.*
3. Please check that this question paper contains **7** questions.
4. 15 minute time has been allotted to read this question paper. The question paper will be distributed 15 minute before the commencement (writing) of exam, the students will read the question paper only and will not write any answer on the answer-book during this period.
5. **Please write down the Serial Number of the question before attempting it.**
6. Please check that this question paper contains **04** printed pages.

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| --- | --- | --- | --- |
| 1 | A | Write the names of data types (sequence and mapping) available in Python. | 2 |
|  | B | Name the Python Library modules which need to be imported to invoke the following functions:  sqrt(), randint() | 1 |
|  | C | Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.  250 = Number  WHILE Number <= 1000:  if Number => 750:  print(Number)  Number = Number + 100  else  print(Number \* 2)  Number = Number + 50 | 2 |
|  | D | Find and write the output of the following python code :  Msg1="WeLcOME"  Msg2="GUeSTs"  Msg3=""  for I in range(0,len(Msg2)+1):  if Msg1[I]>="N" and Msg1[I]<="Z":  Msg3=Msg3+Msg1[I]  elif Msg1[I]>="A" and Msg1[I]<="M":  Msg3=Msg3+Msg2[I]  else:  Msg3=Msg3+"#"  print(Msg3) | 2 |
|  | E | Find and write the output of the following python code :  def Changer(P,Q=15):  P=P/Q  Q=P%Q  Print( P,"#",Q)  return P  A=50  B=5  A=Changer(A,B)  print (A,"$",B)  B=Changer(B)  print (A,"$",B)  A=Changer(A)  print (A,"$",B) | 3 |
|  | F | What possible outputs are expected to be displayed on the screen at the time of execution of the program from the following code? Also specify the minimum and maximum values that can be assigned to the variable c.  import random  temp=[10,20,30,40,50,60]  c = random.randint(0,4)  for I in range(0, c):  print(temp[i],”#”)   1. 10#20# (ii) 10#20#30#40#50#   (iii). 10#20#30# (iv) 50#60# | 2 |
| 2 | A | Differentiate Global Variable and Local Variable. Give an Example. | 2 |
|  | B | Differentiate passing an Immutable Type value and mutable Type value with example.  OR  How python returns multiple values. Illustrate with proper example. | 2 |
|  | C | Differentiate argument and parameter w.r.t. python programming language. Explain different types of parameter with suitable example. | 4 |
|  | D | What is recursion? Explain base case and recursive case. Write a recursive function to find the factorial of an Integer.  OR  Write a function to pop an element from the stack. | 4 |
| 3 | A | Convert X : A + ( B \* C - ( D / E ^ F ) \* G ) \* H into post fix expression.  OR  Evaluate following Postfix expression.  True False True NOT False true OR NOT AND OR AND | 3 |
|  | B | Define Function and its advantage.  OR  Differentiate recursion and iteration. | 2 |
|  | C | What is Computational Complexity? What are the factors which affects performance of an algorithm?  OR  Explain is List Comprehension and its advantage. Also explain the working of following python statements.  Res = [“Even” if I % 2 == 0 else “Odd” for I in range(10,20)]  Print(res) | 3 |
|  | D | Find the output of following python statement.  print(“$”.join(“HYE”,”2020”))  print(“I Love Python”.split(“o”))  print(“I Love Python”.replace(“Python”,”Programming”))  print(round(5.555682,3))  OR  Write a recursive function to implement binary search. | 4 |
| 4 | A | Write a function in Python to count and display the number of lines starting with alphabet ‘A’ present in the test file “Line.txt”. e.g. the file “Line.txt” contains the following lines.  A boy is playing there.  There is a playground.  An aeroplane is in the sky.  Alphabets and numbers are allowed in password.  OR  Given an array: 89, 20, 31, 56, and 20. Sort this array in ascending order using Bubble sort. | 3 |
|  | B | Differentiate Text File and Binary File.  OR  Write a python function to traverse a queue. | 2 |
|  | C | Differentiate absolute and relative paths.  OR  Name the operations associated with QUEUE. | 1 |
| 5 | A | Determine the complexity of the program that checks if a number n is prime.  # program that checks if a number n is prime  N = int(input(“Enter a number: ”))  Flag = 0  for I in range(2,N):  if N % I == 0:  Flag = 1  break  if flag:  print(n,”is prime number”)  else:  print(n,”is not prime number”) | 3 |
|  | B | Create an array in range 1 to 20 with values 1.25 apart. Another array contains the log values of the elements in first array.   1. Simply plot the two arrays first vs second in a line chat. 2. Specify the x axis title as ‘Random Values’ and y axis title as ‘Log Values’ 3. Create third array that stores the cos values of first array and then plot both the second and third array vs first array. The cos values should be plotted with a dashdotted line. 4. Change the marker type as a circle with blue colour in second array. 5. Only mark the data point as this: second array data points as blue small diamonds, third array data points as black circles. | 5 |
| 6 | A | Differentiate LAN and WAN. | 2 |
|  | B | Write the expanded names for the following abbreviated terms used in Networking and Communications:  (i) FTP (ii) SMTP (iii) VoIP (iv) ASCII | 2 |
|  | C | What is P2P Networking. | 1 |
|  | D | What do you understand by the term ‘IoT’? Name the devices that can form IoT. | 3 |
|  | E | Explain cloud computing with its type. | 2 |
| 7 | A | Arun opened his e-mail and found that his inbox was full of hundreds of unwanted mails. It took him around two hours to delete these unwanted mails and find the relevant ones in his inbox. What may be the cause of his receiving so many unsolicited mails? What can Arun do to prevent this happening in future? | 2 |
|  | B | Assume that 50 employees are working in an organization. Each employee has been allotted a separate workstation to work. In this way, all computers are connected through the server and all these workstations are distributed over two floors. In each floor, all the computers are connected to a switch. Identify the type of network? | 1 |
|  | C | Your friend wishes to install a wireless network in his office. Explain him the difference between guided and unguided media. | 1 |
|  | D | Write the expanded names for the following abbreviated terms used in Networking and Communications:  (i) CDMA (ii) HTTP (iii) XML (iv) URL | 2 |
|  | E | Multipurpose Public School, Bangluru is Setting up the network between its Different Wings of school campus. There are 4 wings named as SENIOR(S), JUNIOR(J), ADMIN(A) and HOSTEL(H).                                    SENIOR      ADMIN        JUNIOR    HOSTEL     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Distance between various wings are given below:   |  |  | | --- | --- | | WingAtoWingS | 100m | | WingAtoWingJ | 200m | | WingAtoWingH | 400m | | WingStoWingJ | 300m | | WingStoWingH | 100m | | WingJtoWingH | 450m | | Number of Computers installed at various wings are as follows:     |  |  | | --- | --- | | Wings | NumberofComputers | | WingA | 20 | | WingS | 150 | | WingJ | 50 | | WingH | 25 | |   Suggest the best wired medium and draw the cable layout to efficiently connect various wings of Multipurpose PublicSchool, Bangluru.  Namethe most suitablewing wherethe Servershouldbe installed.Justifyyour answer.  Suggest a device/software and its placement that would provide data security for the entire network of the School.  Suggest a device and the protocol that shall be needed to provide wireless Internet access to all smartphone/laptop users in the campus of Multipurpose Public School, Bangluru. | 4 |