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Previous Year Paper

Computer and Communication Technology - 2017

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Multiple Choice Questions

1. Which of the following can be used as valid variable identifier(s) in Python?

- A. total
- B. 7Salute
- C. Que\$tion
- D. Que\$tion

Answer

2. Amit used a pen drive to copy files from his friend's laptop to his office computer. Soon his office computer started abnormal functioning. Sometimes it would restart by itself and sometimes it would stop functioning totally. Which of the following options out of (i) to (iv), would have caused the malfunctioning of the computer. Justify the reason for your chosen option:

- A. Computer Worm
- B. Computer Virus
- C. Computer Bacteria
- D. Computer Bacteria

Answer

3. Jai is an IT expert and a freelancer. He recently used his skills to access the Administrator password for the network server of Megatech Corpn Ltd. and provided confidential data of the organization to its Director, informing him about the vulnerability of their network security. Out of the following options (i) to (iv), which one most appropriately defines Jai. Justify the reason for your chosen option:

- A. Hacker
- B. Cracker
- C. Operator
- D. Operator

Answer



Short Answer Type

4. Name the Python Library modules which need to be imported to invoke the following functions:

- (i) ceil()
- (ii) randint()

Answer

5. Rewrite the following code in python after removing all syntax error(s). Underline each
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for P in range(10,7):

```
print TEXT(T)
print T+TEXT
```

Answer

6. Find and write the output of the following Python code:

```
STR = ['90','10','30','40']
COUNT = 3
SUM = 0
for I in [1,2,5,4]:
    S = STR[COUNT]
    SUM = float (S)+I
    print SUM
    COUNT-=1
```

Answer

7. Find and write the output of the following Python code :

```
class ITEM:
    def __init__(self,I=101,N='Pen',Q=10): #constructor
        self.Ino=I
        self.IName=N
        self.Qty=int(Q);

    def Buy(self,Q):
        self.Qty = self.Qty + Q

    def Sell(self,Q):
        self.Qty -= Q

    def ShowStock(self):
        print self.Ino,':',self.IName,'#',self.Qty

I1=ITEM()
I2=ITEM(100,'Eraser',100)
I3=ITEM(102,'Sharpener')
```

I1.Buy(10)

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I1. ShowStock()
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I2. ShowStock()

Answer

8. What is the possible outcome(s) executed from the following code? Also, specify the maximum and minimum values that can be assigned to variable N.

```
import random
SIDES=[ 'EAST' , 'WEST' , 'NORTH' , 'SOUTH' ];
N=random.randint(1,3)
OUT=' '
for I in range(N,1,-1):
    OUT=OUT+SIDES[I]
    print OUT
```

SOUTHNORTH	SOUTHNORTHWEST
SOUTH	EASTWESTNORTH

Answer

9. List four characteristics of Object Oriented programming.

Answer

10. class Test:

```
rollno=1
marks=75
def __init__(self,r,m): #function 1
    self.rollno=r
    self.marks=m
def assign(self,r,m):      #function 2
    rollno = r
    marks = m
def check(self):           #function 3
    print self.rollno,self.marks
    print rollno,marks
```

(i) In the above class definition, both the functions - function 1 as well as function 2 have a similar definition. How are they different in execution?

(ii) Write statements to execute function 1 and function 2.

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Answer

```
RingID # Numeric value with a default value 101  
- Radius # Numeric value with a default value 10  
- Area # Numeric value
```

Methods:

```
- AreaCal() # Method to calculate Area as  
            # 3.14*Radius*Radius  
- NewRing() # Method to allow user to enter values of  
            # RingID and Radius. It should also  
            # Call AreaCal Method  
- ViewRing() # Method to display all the Attributes 4
```

[Answer](#)

12. Differentiate between static and dynamic binding in Python? Give the suitable example of each.

[Answer](#)

13. Write two methods in Python using the concept of Function Overloading (Polymorphism) to perform the following operations:

- (i) A function having one argument as side, to calculate Area of Square as side*side
- (ii) A function having two arguments as Length and Breadth, to calculate Area of Rectangle as Length*Breadth.

[Answer](#)

14. What will be the status of the following list after the First, Second and Third pass of the bubble sort method used for arranging the following elements in descending order ?

Note: Show the status of all the elements after each pass very clearly underlining the changes.

152, 104, -100, 604, 190, 204

[Answer](#)

15. Write the definition of a method OddSum(NUMBERS) to add those values in the list of NUMBERS, which are odd.

[Answer](#)

16. Write Addnew(Book) and Remove(Book) methods in Python to Add a new Book and Remove a Book from a List of Books, considering them to act as PUSH and POP operations of the data structure Stack.

[Answer](#)

17. Write the definition of a Method AFIND(CITIES) to display all the city names from a list of CITIES, which are starting with alphabet A.

For example:

If the list CITIES contains ['AHMEDABAD','CHENNAI','NEW DELHI','AMRITSAR','AGRA']

The following should get displayed

~~AHMEDABAD~~ Bookmark. Download. Make Notes. Print - Your Favourite Questions. Join www.zigya.com

18. Evaluate the following Postfix notation of expression:
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~~2, 3, *, 24, 2, 6, +, /, -~~

Answer

19. Differentiate between file modes r+ and w+ with respect to Python.

Answer

20. Write a method in Python to read lines from a text file DIARY.TXT, and display those lines, which are starting with an alphabet 'P'.

Answer

21. Considering the following definition of class COMPANY, write a method in Python to search and display the content in a pickled file COMPANY.DAT, where CompID is matching with the value '1005'.

```
class Company:
    def __init__(self,CID,NAM):
        self.CompID = CID          #CompID Company ID
        self.CName = NAM           #CName Company Name
        self.Turnover = 1000
    def Display(self):
        print self.CompID,':',self.CName,':',self.Turnover
```

Answer

22. Observe the following table CANDIDATE carefully and write the name of the RDBMS operation out of (i) SELECTION (ii) PROJECTION (iii) UNION (iv) CARTESIAN PRODUCT, which has been used to produce the output as shown in RESULT ? Also, find the Degree and Cardinality of the RESULT.

TABLE: CANDIDATE

No	NAME	STREAM
C1	AJAY	LAW
C2	ADITI	MEDICAL
C3	ROHAN	EDUCATION
C4	RISHAB	ENGINEERING

RESULT

No	NAME
C3	ROHAN

23. Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii), which are based on the tables

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TABLE: BOOK

Code	BNAME	TYPE
F101	The priest	Fiction
L102	German easy	Literature
C101	Tarzan in the lost world	Comic
F102	Untold Story	Fiction
C102	War Heroes	Comic

TABLE: MEMBER

MNO	MNAME	CODE	ISSUEDATE
M101	RAGHAV SINHA	L102	2016-10-13
M103	SARTHAK JOHN	F102	2017-02-23
M102	ANISHA KHAN	C101	2016-06-12

(i) To display all details from table MEMBER in descending order of ISSUEDATE.

(ii) To display the BNO and BNAME of all Fiction Type books from the table BOOK

(iii) To display the TYPE and number of books in each TYPE from the table BOOK

(iv) To display all MNAME and ISSUEDATE of those members from table MEMBER who have books issued (i.e ISSUEDATE) in the year 2017.

(v) SELECT MAX(ISSUEDATE) FROM MEMBER;

(vi) SELECT DISTINCT TYPE FROM BOOK;

(vii) SELECT A.CODE, BNAME, MNO, MNAME FROM BOOK A, MEMBER B WHERE A.CODE=B.CODE ;

(viii) SELECT BNAME FROM BOOK

WHERE TYPE NOT IN ('FICTION', 'COMIC');

Answer

24. State Distributive Laws of Boolean Algebra and verify them using truth table.

25. Draw the Logic Circuit of the following Boolean Expression using only NAND Gates:

$$X.Y + Y.Z$$

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Answer

26. Derive a Canonical SOP expression for a Boolean function F, represented by the following truth table:

U	V	W	F(U,V,W)
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	0

Answer

27. Reduce the following Boolean Expression to its simplest form using K-Map:

$$F(X,Y,Z,W) = \sum (0,1,2,3,4,5,10,11,14)$$

Answer

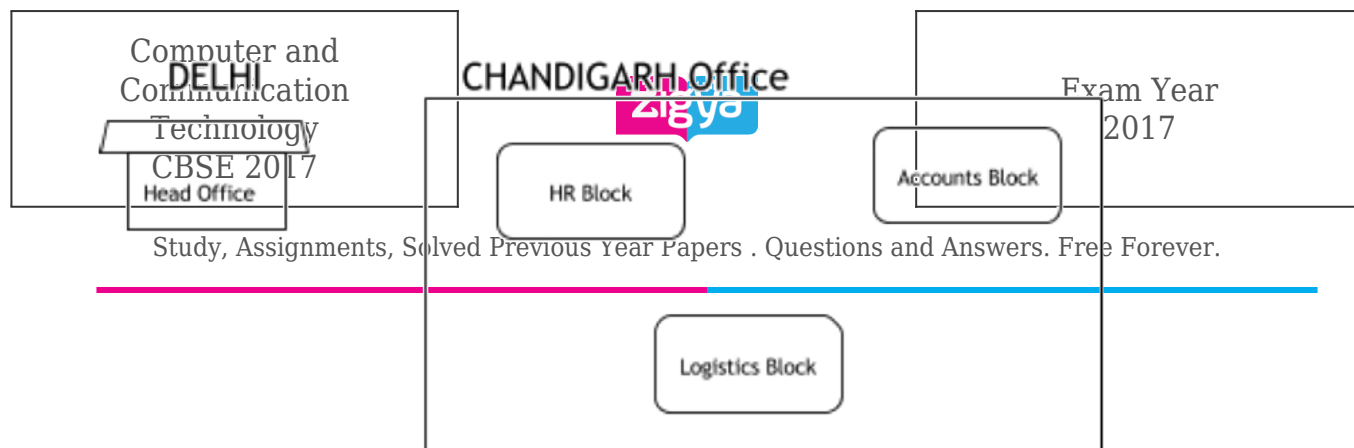
28. Differentiate between Radio Link and Microwave in context of wireless communication technologies.

Answer



Long Answer Type

29. Hi-Speed Technologies Ltd is a Delhi based organization which is expanding its office setup to Chandigarh. At Chandigarh office campus, they are planning to have 3 different blocks for HR, Accounts and Logistics related work. Each block has a number of computers, which are required to be connected in a network for communication, data and resource sharing. As a network consultant, you have to suggest the best network related solutions for them for issues/problems raised in (i) to (iv), keeping in mind the distances between various blocks/locations and other given parameters.



Shortest distances between various blocks/locations:

HR Block to Accounts Block	400 meters
Accounts Block to Logistics Block	200 meters
Logistics Block to HR Block	150 meters
DELHI Head Office to CHANDIGARH Office	270 Km

Number of Computers installed at various blocks are as follows:

HR Block	70
Account Block	50
Logistics Block	40

- Suggest the most appropriate block/location to house the SERVER in the CHANDIGARH Office (out of the 3 Blocks) to get the best and effective connectivity. Justify your answer.
- Suggest the best wired medium and draw the cable layout (Block to Block) to efficiently connect various Blocks within the CHANDIGARH office compound.
- Suggest a device/software and its placement that would provide data security for the entire network of CHANDIGARH office.
- Which of the following kind of network, would it be
 - PAN
 - WAN
 - MAN
 - LAN

Answer