

DELHI PUBLIC SCHOOL JAMMU
SAMPLE PAPER (2024-25)

Class: XII

Subject: Computer Science (083)

General Instructions :

1. Programming language used is Python.
2. Use appropriate variable names.
3. Indent your program appropriately.
4. All questions are compulsory.

Q1. Multiple choice questions.

1. Which of the following is a valid identifier:
i. 9type ii. _type iii. Same-type iv. True
2. Which of the following is a relational operator:
i. > ii. // iii. or iv. **
3. Which of the following is a logical operator:
i. + ii. /= iii. and iv. in
4. Identify the membership operator from the following:
i. in ii. not in iii. both i & ii iv. Only i
5. Which one is a arithmetic operator:
i. not ii. ** iii. both i & ii iv. Only ii
6. What will be the correct output of the statement : >>>4//3.0
i. 1 ii. 1.0 iii. 1.3333 iv. None of the above
7. What will be the correct output of the statement : >>> 4+2**2*10
i. 18 ii. 80 iii. 44 iv. None of the above
8. Give the output of the following code:
>>> a,b=4,2
>>> a+b**2*10
i. 44 ii. 48 iii. 40 iv. 88
9. Give the output of the following code:
>>> a,b = 4,2.5
>>> a-b//2**2
i. 4.0 ii. 4 iii. 0 iv. None of the above
10. Give the output of the following code:
>>>a,b,c=1,2,3
>>> a//b**c+a-c*a
i. -2 ii. -2.0 iii. 2.0 iv. None of the above

11. If a=1,b=2 and c= 3 then which statement will give the output as : 2.0 from the following:
 i. >>>a%b%c+1 ii. >>>a%b%c+1.0 iii. >>>a%b%c iv. a%b%c-1
12. Which statement will give the output as : True from the following :
 i. >>>not -5 ii. >>>not 5 iii. >>>not 0 iv. >>>not(5-1)
13. Give the output of the following code:
 >>>7*(8/(5//2))
 i. 28 ii. 28.0 iii. 20 iv. 60
14. Give the output of the following code:
 >>>import math
 >>> math.ceil(1.03)+math.floor(1.03)
 i. 3 ii. -3.0 iii. 3.0 iv. None of the above
15. What will be the output of the following code:
 >>>import math
 >>>math.fabs(-5.03)
 i. 5.0 ii. 5.03 iii. -5.03 iv . None of the above

Q16. Match the columns:

if
 >>>L=list('computer')

Column A

Column B

- | | |
|--------------------------------|------------------------------------|
| 1. L[1:4] | a. ['t','e','r'] |
| 2. L[3:] | b. ['o','m','p'] |
| 3. L[-3:] | c. ['c','o','m','p','u','t'] |
| 4. L[:-2] | d. ['p','u','t','e','r'] |
| 5. >>>tuple([10,20,30]) | e. >>> (10,20,30) |
| 6. >>>("Tea",)* 3 | f. >>> 2 |
| 7. >>>tuple("Item") | g. >>> ('Tea', 'Tea', 'Tea') |
| 8. >>>print(len(tuple([1,2]))) | h. >>> ('I', 't', 'e', 'm') |
| 9.max() | i. will compute (x) ^{1/2} |
| 10.sqrt(x) | j. will return the largest value |

Q17. Write the corresponding python expression for the following mathematical expression.

$z=x/a-(b+d^2)$ 2. $A=a^2 - b^2$

Q18. Write a Python program to insert a given number at a particular index in a string where both the number and the index value are user input.

Q19. What is the output of the following?

```
x = "abcdef"
while i in x:
    print(i, end=" ")
```

20. What is the output of the following?

```
d = {0: 'a', 1: 'b', 2: 'c'}
for i in d:
    print(i)
```

Q21. What is the output when following code is executed ?

```
names1 = ['Amir', 'Bear', 'Charlton', 'Daman']
names2 = names1
names3 = names1[:]
names2[0] = 'Alice'
names3[1] = 'Bob'
sum = 0
for ls in (names1, names2, names3):
    if ls[0] == 'Alice':
        sum += 1
    if ls[1] == 'Bob':
        sum += 10
print sum
```

Q22. What is the difference between the following set of statements (a) and (b):

a) P = open("practice.txt", "r") P.read(10)
b) with open("practice.txt", "r") as P: x = P.read()

Q23. Write a command(s) to write the following lines to the text file named hello.txt. Assume that the file is opened in append mode. " Welcome my class" "It is a fun place" "You will learn and play"

Q24. Write a Python program to open the file hello.txt used in question no 6 in read mode to display its contents. What will be the difference if the file was opened in write mode instead of append mode?

Q25. Write a program to accept string/sentences from the user till the user enters "END" to. Save the data in a text file and then display only those sentences which begin with an uppercase alphabet.

Q26. Write a program to enter the following records in a binary file:

Item No	integer
Item_Name	string
Qty	integer
Price	float

Number of records to be entered should be accepted from the user. Read the file to display the records in the following format:

Item No:

Item Name :

Quantity:

Price per item:

Amount:

(to be calculated as Price * Qty

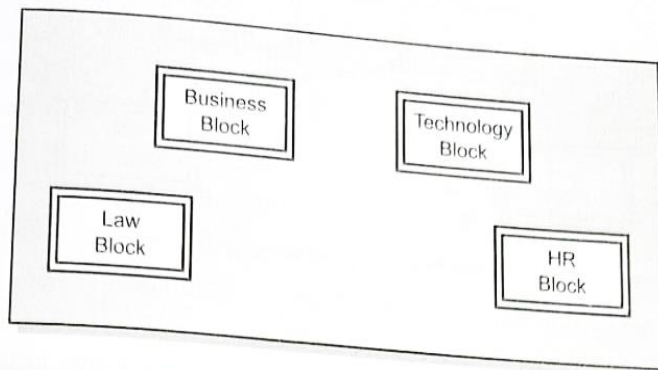
Q27. What do you mean by a modem? Why is it used?

Q28. Explain the following devices: a) Switch b) Repeater c) Router d) Gateway e) NIC

Q29. Draw a network layout of star topology and bus topology connecting five computers.

Q30.

168. MyPace University is setting up its academic blocks at Naya Raipur and is planning to set up a network. The University has 3 academic blocks and one Human Resource Center as shown in the diagram below :



Center to Center distances between various blocks/center is as follows :

Law Block to business Block	40 m
Law block to Technology Block	80 m
Law Block to HR center	105 m
Business Block to technology Block	30 m
Business Block to HR center	35 m
Technology block to HR center	15 m

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Number of computers in each of the blocks/Center is as follows :

Law Block	15
Technology Block	40
HR center	115
Business Block	25

- Suggest the most suitable place (i.e., Block/Center) to install the server of this University with a suitable reason.
- Suggest an ideal layout for connecting these blocks/centers for a wired connectivity.
- Which device will you suggest to be placed/installed in each of these blocks/centers to efficiently connect all the computers within these blocks/centers.
- Suggest the placement of a Repeater in the network with justification.
- The university is planning to connect its admission office in Delhi, which is more than 1250 km from university. Which type of network out of LAN, MAN, or WAN will be formed ? Justify your answer.