



विद्या सर्वार्थ साधिका

ANANDALAYA
PRE-BOARD EXAMINATION
Class: XII

Subject: Computer Science (083)
Date : 18-12-2024

MM :70
Time: 3 Hrs.

General Instructions:

1. This question paper contains 37 questions.
2. All questions are compulsory. However, internal choices have been provided in some questions.
3. The paper is divided into 5 Sections- A, B, C, D and E.
4. Section A consists of 21 questions (1 to 21). Each question carries 1 Mark.
5. Section B consists of 7 questions (22 to 28). Each question carries 2 Marks.
6. Section C consists of 3 questions (29 to 31). Each question carries 3 Marks.
7. Section D consists of 4 questions (32 to 35). Each question carries 4 Marks.
8. Section E consists of 2 questions (36 to 37). Each question carries 5 Marks.
9. All programming questions are to be answered using Python Language only.
10. In case of MCQ, text of the correct answer should also be written.

SECTION – A (21 x 1=21 Marks)

1. State True or False: In Python, only *if* statement has *else* clause. (1)
2. Identify the output of the following code snippet: (1)
text = "COMPUTATIONAL PROTEIN"
text=text.replace("TA','@')
print(text)
(A) COMPU@@@IONAL PRO@EIN (B) COMPU@@TIONAL PROTEIN
(C) COMPU@TIONAL PROTEIN (D) COMPUTATIONAL PROTEIN
3. Consider the given expression: *not True and False or True*. (1)
Which of the following will be correct output if the given expression is evaluated?
(A) True (B) False (C) None (D) Null
4. What is the output of the following code? (1)
String1, String2 = "my", "work"
print(String1+String2.upper())
(A) mywork (B) MY Work (C) myWORK (D) My Work
5. What will be the output of the following code snippet? (1)
print("SAHODAYA ATHLETIC MEET"[-2::-2])
6. What will be the output of the following code? (1)
A= ('A','B','C')
B=A
A += ('D',)
print(A is B)
(A) True (B) False (C) tuple1 (D) Error
7. If my_dict is a dictionary as defined below, then which of the following statements will raise an exception? (1)
my_dict = {'apple': 10, 'banana': 20, 'orange': 30}
(A) my_dict.get('orange') (B) print(my_dict['apple', 'banana'])
(C) my_dict['apple']=20 (D) print(str(my_dict))
8. List DAY is defined as follows: DAY=['Monday','Tuesday','Wednesday','Thursday','Friday'] (1)
Which of the following statements removes the middle element 'Thursday' from it so that the list DAY equals ['Monday','Tuesday','Wednesday','Friday'] ?
(A) del DAY[3] (B) DAY[2:3] = [] (C) DAY[2] = [] (D) DAY.remove (4)

9. What is a relation in RDBMS? (1)
 (A) Table (B) Key (C) Data Types (D) Row
10. Which function is used to read a specific number of bytes from a file opened in binary mode? (1)
 (A) file.read() (B) file.readline(size) (C) file.read(size) (D) file.readlines()
11. What will be the output of the following Python code? (1)
 lst = [1, 2, 3]
 lst[3]
 (A) NameError (B) ValueError (C) IndexError (D) TypeError
12. What will be the output of the following code? (1)
 My = 20
 def Cal():
 global My
 My = My - 3
 print(My, end='\$')
 Cal()
 My=15
 print(My, end='#')
 (A) 17\$15# (B) 17#15\$ (C) 15#17\$ (D) 15\$17#
13. Which SQL aggregate function calculates the average of values in a column of a given table? (1)
 (A) Avg() (B) Average() (C) Max() (D) Min
14. What will be the output of the query? (1)
 Delete from products where product_name like '%dbb';
 (A) Displays details of all products whose names start with 'dbb'
 (B) Displays details of all products whose names end with 'dbb'
 (C) Removes Names of all products whose names start with 'dbb'
 (D) Removes Names of all products whose names end with 'dbb'
15. In which datatype the value stored is padded with spaces to fit the specified length? (1)
 (A) date (B) varchar (C) float (D) char
16. In a MYSQL database, if a table Alpha has degree 5 and cardinality 3, another table beta has degree 3 and cardinality 5, what will be the degree and cardinality of the Cartesian product? (1)
 (A) 5, 3 (B) 5,15 (C) 8, 5 (D) 8, 15
17. Which protocol is used to send/transfer files over the Internet? (1)
 (A) FoIP (B) ftp (C) VoIP (D) http
18. Which network device is used to connect two networks that use different protocols? (1)
 (A) Modem (B) Gateway (C) Switch (D) Repeater
19. Which switching technique breaks data into smaller packets for transmission, allowing multiple packets to share the same network resources? (1)
 (A) Circuit Switching (B) Packet Switching (C) Relay Switching (D) Shared Switching
- Q20 and Q21 are Assertion (A) and Reason (R) based questions. Mark the correct choice as:
 (A) Both A and R are true and R is the correct explanation for A
 (B) Both A and R are true and R is not the correct explanation for A
 (C) A is True but R is False
 (D) A is False but R is True
20. **Assertion:** Modifying a string creates another string internally but modifying a list does not create a new list. (1)
Reason: Strings store characters while lists can store any type of data.
21. **Assertion:** The ALL and DISTINCT clauses of a SELECT query are related. (1)
Reason: The ALL clause is the opposite of the DISTINCT clause of a SELECT Query.

SECTION-B (7 × 2=14 Marks)

22. What is the difference between local and global variables? (2)
23. Give two examples of each of the following: (2)
- (I) Logical operators. (II) Relational operators.
24. If L1=[1,2,3,2,1,2,4,2,..], and L2=[10,20,30,..], then (Answer using built-in functions only) (2)
- (I) Write a statement to count the occurrences of 4 in L1.

OR

Write a statement to sort the elements of list L1 in ascending order.

- (II) Write a statement to insert all the elements of L2 at the end of L1.

OR

Write a statement to reverse the elements of list L2.

25. Identify the correct output(s) of the following code. Also write the minimum and the maximum possible values of the variable b. (2)

```
import random
flowers=["Rose","Calendula","Jasmine","Lotus","Hibiscus","Tulip","Marigold"]
b=random.randint(1,6)
for i in range(0,b,2):
    print(flowers[i],end='#')
```

- (A) Rose # (B) Rose # Calendula #
(C) Rose # Jasmine # (D) Rose # Calendula # Jasmine #

26. Rewrite the following Python code after removing all syntax error(s). Underline the corrections done. (2)

```
total = 0;
def sum(arg1, arg2):
    total = arg1 + arg2;
    print("Total :", total)
return total;
sum(10, 20);
print("Total :" total)
```

27. (A) Write an SQL command to add a column Marks with not NULL constraint in Student table. (2)

OR

Which operator tests a column for the absence of data (i.e., NULL value)?

- (B) Write an SQL command to remove the Unique constraint from a table, named Movies. M_ID is the Unique key of the table.

OR

Write an SQL command to make the column M_ID as the Primary Key of an already existing table, named MOBILE.

28. List two technologies to connect to Internet wirelessly. (2)

OR

What is protocol? Name any two commonly used protocols.

SECTION - C (3 x 3 = 9 Marks)

29. Write a Python function that counts the words "to" and "the" present in a text file "Poem.txt". (3)

OR

Write a program to count the number of upper-case alphabets present in a text file "Article.txt".

30. You have a stack named Carrer_Stack that contains records of Carrers. Each carrer record is represented as a list containing Career_Name, Branch and Education Required. (3)
- Write the following user-defined functions in Python to perform the specified operations on

the stack Carrer_Stack:

- (I) push_ Carrer (Carrer_Stack, new_Career): This function takes the stack Carrer_Stack and a new Carrer record new_Career as arguments and pushes the new Career record onto the stack.
- (II) pop_ Carrer (Carrer_Stack): This function pops the topmost career record from the stack and returns it. If the stack is already empty, the function should display "Underflow".
- (III) peep(Carrer_Stack): This function displays the topmost element of the stack without deleting it. If the stack is empty, the function should display 'None'

OR

Write the definition of a user-defined function push_Pos(N) which accepts a list of integers in a parameter `N` and pushes all those integers which are positive integers from the list `N` into a Stack named `PosNumbers`. Write function pop_Pos() to pop the topmost number from the stack and returns it. If the stack is already empty, the function should display "Empty". Write function Disp_Pos() to display all element of the stack without deleting them. If the stack is empty, the function should display 'None'.

For example: If the integers input into the list `VALUES` are :

[12, -5, 6, -3, 22,-6]

Then the stack `PosNumbers` should store :

[10, 8, 12]

31. Predict the output of the following code:

(3)

```
d = {" Nigeria": 234, " Tanzania": 255, "Uganda": 256}
code = ""
for key in d:
    code = code + str(d[key]) + "@" + key + "#\n"
cc = code[:-2]
print(cc)
```

OR

Predict the output of the following code:

```
def Call(P = 40, Q = 20):
    P = P + Q
    Q = P - Q
    print(P, '@', Q)
    return P
R = 200
S = 100
R = Call(R, S)
print(R, '@', S)
S = Call(S)
print(R, '@', S)
```

SECTION-D (4 x 4 = 16 Marks)

32. Consider the table AI_Tools as given below :

(4)

Table : AI_Tools

Tool_id	Tool_Name	Company	CEO	Tool_TYPE
1001	ChatGPT	OpenAI	Sam Altman	Content Creation
1003	Copy AI	Copy.AI	Paul Yacoubian	Writing
1004	Consensus	Consensus NLP inc	Garin Hess	Research
1005	DeepCode	Snyk	Boris Paskalev	Coding
1007	10Web	10Web.Ai	Tigran Nazaryan	Coding

(Note: The table contains many more records than shown here.)

A. Write the following queries:

- (I) To display Tool_name of 'Coding' type of tool.
- (II) To display the Tool_name and CEO sorted by CEO in descending order.
- (III) To display the distinct tool Type from the AI_Tools table.

(IV) Display the all the tool_Name for which the Tool_Type ends with 'ing'.

OR

B. Write the output :

(I) Select company, count(*) from AI_tools group by Tool_Type.

(II) Select * from AI_tools where ceo like '%an';

(III) Select Tool_Name ,Company from AI_Tools where tool_id between 1003 and 1007;

(IV) Select count(*) from AI_Tools;

33. A csv file "Literacy.csv" contains the data of a survey. Each record of the file contains the following data: (4)

- Name of a city
- Population of the city
- Area (Area in Square K.M)
- Literacy Rate (% of People who can read can read and write with understanding)

For example, a sample record of the file may be:

['AHMEADABAD', 466, 5577940, 78.46%]

Write the following Python functions to perform the specified operations on this file:

- Read all the data from the file in the form of a list and display all those records for which the population is more than 500000.
- Count the number of records in the file.

34. Amrish is working is JadeBlue store, which sales the product of different brands. Help him extract the following information by writing the desired SQL queries as mentioned below. (4)

Table: Brands

B_ID	BName	Origin	Total_Stores	Year_Founded
102	Louis Philippe	India	420	1989
103	Van Heusen	Pennsylvania	625	1881
104	Peter England	Ireland	1200	1889
105	Raymond	India	637	1925
106	Allen Solly	London	169	1993

Table: Products

P_ID	B_ID	PName	Price
P21	102	Diverse Men Formal Shirt	1199
P22	106	Men's Solid Slim Fit Casual Shirt	849
P23	104	Slim Fit Casual Shirt	1499
P24	106	Full Sleeves Shirt	1999
P25	102	Casual Shirt	2399
P26	105	Formal Shirt	1200

- To display complete details (from both the tables) of those products, whose brand has more the 1000 stores.
- To display the details of products whose Price is in the range of 1100 to 1500 (both values included).
- To increase the Price of all Products by 10% of B_ID 104.
- (A) To display names (BName and Origin) of Brands founded before 1900.

OR

(B) To display the degree of Cartesian Product of these two tables.

35. A table, named NOVELS, in LIBRARYDB database, has the following structure: (4)

Field	Type
NovelNo	int(11)
NovelName	varchar(15)
Price	float
Qty	int(11)

Write the following Python function to perform the specified operation: AddAndDisplay():

To input details of a Novel and store it in the table LIBRARYDB. The function should then retrieve and display all records from the NOVELS table where the Price is greater than 650. Assume the following for Python-Database connectivity:

Host: localhost, User: root, Password: lib123

SECTION-E (2 X 5 = 10 Marks)

36. Saraswati Vidhyalaya wants to store the following information of each of the participants, (5) who are participating at Atheletic Meet:

- Participant_ID – integer
- Participant_Name – string
- School-Name – string
- Category – string (U-16/U-19)

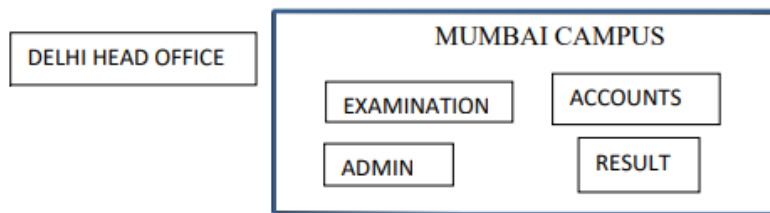
You, as a programmer, have been assigned a job of coding for Saraswati Vidhyalaya.

- (I) Write a function to input the data of a participants and append it in a binary file.
- (II) Write a function to update the data of participants whose category is U-16 and change their Category to U-16 Boys.

OR

Write a function to read the data from the binary file and display the data of all those participants, who are not from "Saraswati Vidhyalaya ".

37. You as a network expert have to suggest the best network related solutions for their (5) problems raised in (i) to (v), keeping in mind the distances between the buildings and other given parameters.



Shortest distances between various buildings:

ADMIN TO ACCOUNTS	55 m
ADMIN TO EXAMINATION	90 m
ADMIN TO RESULT	50 m
ACCOUNTS TO EXAMINATION	58 m
ACCOUNTS TO RESULT	46 m
EXAMINATION TO RESULT	42 m
DELHI Head Office to MUMBAI campus	2150 m

Number of computers installed at various buildings are as follows:

ADMIN	110
ACCOUNTS	75
EXAMINATION	40
RESULT	12
DELHI HEAD OFFICE	20

- (I) Suggest the most appropriate location of the server inside the MUMBAI campus. Justify your choice.
- (II) Suggest and draw cable layout to efficiently connect various buildings within the MUMBAI campus for a wired connectivity.
- (III) Which networking device will you suggest to be procured by the company to interconnect all the computers of various buildings of MUMBAI campus?
- (IV) What would be your recommendation for enabling live visual communication between the Admin Office at the Mumbai campus and the DELHI Head Office from the following options:
 - (A) Video Conferencing
 - (B) Email
 - (B) Telephony
 - (D) Instant Messaging
- (V) What type of network (PAN, LAN, MAN, or WAN) will be set up among the computers connected in the MUMBAI campus?