

CLASS XII COMPUTER SCIENCE (083)
MODEL TEST PAPER – 1 (THEORY) (2020-21)
(UNSOLVED)

Maximum Marks: 70

Time Allowed: 3 hrs

General Instructions:

1. This question paper contains two parts, A and B. Each part is compulsory.
2. Both Part A and Part B have choices.
3. Part A has 2 sections:
 - (a) Section I is short answer questions, to be answered in one word or one line.
 - (b) Section II has two case study questions. Each case study has 5 case-based sub-parts. An examinee is to attempt any 4 out of the 5 sub-parts.
4. Part B is Descriptive Paper. Part B has three sections:
 - (a) Section I is short answer questions of 2 marks each in which two questions have internal options.
 - (b) Section II is long answer questions of 3 marks each in which two questions have internal options.
 - (c) Section III is very long answer questions of 5 marks each in which one question has internal options.
5. All programming questions are to be answered using Python language only.

PART A – Section I

Select the most appropriate option out of the options given for each question. Attempt any 15 questions from question no. 1 to 21.

1. Which of the following is not considered a valid identifier in Python? (1)
 - (i) `_main`
 - (ii) `2 score`
 - (iii) `Total_marks_out_of_100`
 - (iv) `Percentage`
2. Name the Python Library modules which need to be imported to invoke the following functions: (1)
 - (i) `floor()`
 - (ii) `load()`
3. Find the output of the following operation: (1)

```
>>> 9// -4
```

 - (i) 2
 - (ii) -3
 - (iii) 3
 - (iv) -2.25
4. Which Python function is used to iterate over a sequence of numbers by specifying a numeric end value within its parameters? (1)
 - (i) `len()`
 - (ii) `substr()`
 - (iii) `random()`
 - (iv) `range()`
5. A session between the application program and the database is called _____. (1)
6. Consider two Tuples T1 and T2. (1)

```
T1 = (10, 20, 30, 40) and T2 = (100, 200, 300)
```

Write the output of the following statement:

```
>>>T1+T2
```
7. Suppose `list1 = [10 * x for x in range(10,50,5)]`; the output of list1 is: (1)
8. Write the output of the following Python code: (1)

```
def inner():  
    print("Inner x is ", x)  
x=20  
print("Outside x is ", x)  
inner()
```
9. Name the protocol that allows you to make calls and provides multimedia services such as audio, video and data over the internet. (1)



10. _____ is the text file that stores an individual's information of browsing history. (1)
11. Find and write the output of the following Python code: (1)

```
>>>str="Computer Science"  
>>>str[-6:-3]
```
12. What is the use of Bridge in the network? (1)
(i) To connect LANs (ii) To separate LANs
(iii) To control network speed (iv) All of the above
13. Differentiate between group by and order by clause. (1)
14. Name the SQL command used to modify the rows of the table. (1)
15. Name the network device used to connect two or more logically and physically different networks. (1)
16. To open a file d:\\project.txt for appending data, we can give the statement: (1)
(i) fobj=open("d:\\project.txt", "a")
(ii) fobj=open("d:\\project.txt", "rw")
(iii) fobj=open("d:\\project.txt", "w")
(iv) fobj=open("d:\\project.txt", "r")
17. Differentiate between Pickling and Unpickling. (1)
18. Write a query in SQL to delete the database named 'School'. (1)
19. Out of the following, which is the fastest (a) Wired and (b) Wireless medium of communication? (1)
Infrared, Bluetooth, Coaxial Cable, Twisted Pair Cable, Satellite, Optical fibre
20. State True or False: (1)
(i) NULL values are entered by the following command:
INSERT INTO Table_Name VALUES ("NULL") ;
(ii) Foreign key column derives its value from the Primary key of the parent table.
21. Give two examples of Mobile wallets. (1)

Section II

Both the case study-based questions are compulsory. Attempt any 4 sub-parts from each question. Each sub-part carries 1 mark.

22. Consider the following tables, Company and Model, and answer the following questions:

Table: Company

Comp_Id	CompName	CompHO	ContactPerson
1	Titan	Okhla	S.K. Saha
2	Ajanta	Shahdara	Ashutosh
3	Maxima	Rohini	Raj Kumar
4	Seiko	Okhla	C. Kumar
5	Ricoh	Karol Bagh	J. Kishore

Table: Model

Model_Id	Comp_Id	Cost	DateofManufacture
T090	1	5000	2020-05-19
S100	4	8000	2020-09-10
A200	2	6000	2019-08-09
S120	4	3000	2020-07-19
M800	3	9000	2018-09-10
T100	1	5000	2020-10-10

- (a) Identify the Primary key and Foreign key of table Model. (1)
- (b) How many rows and columns will be there after the Cartesian product of these two tables? (1)
- (c) Write SQL query to delete column ContactPerson. (1)

- (d) Write a query to display details of all models in the Model table in ascending order of Date of manufacture. (1)
- (e) Write a query to display details of those models manufactured in 2019 whose cost is greater than 4000. (1)

23. Deepika works as a programmer with Sound Technologies System which deals in Sound devices. She has been assigned the job of generating the report of total equipment available in the office. She has written a program to read CSV file "equipment.csv" which will contain details of all the equipment. She has written the following code. As a programmer, help her to successfully execute the given task.

```
import _____ # Line 1
def Countequip ( ) : # to read data from the CSV file
    with open('equipment.csv', '_____') as f: # Line 2
        reader = csv. _____ (f) # Line 3
        c = 0
        for i in reader:
            c= _____ # Line 4
        print("Total Number of Equipment", c) # Line 5
```

- (a) Name the module he should import in Line 1. (1)
- (b) In which mode should the file open to read data? (1)
- (c) Fill in the blank in Line 3 to read the data from a csv file. (1)
- (d) Fill in the blank in Line 4 to increment the record to count total. (1)
- (e) Write the command to close the file explicitly. (1)

PART B – Section I

24. Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code. (2)

```
d1= dict[]
i=1
n=input("Enter the number of entries:")
while i<=n:
    a= input("Enter Name:")
    b=int("Enter age:")
    d1(a)=b
    i=i+1
disp=d1.key[]
for i in disp:
    print(i, '\t', 'd1[i]')
```

25. Explain the difference between web hosting and web server with suitable examples. (2)

OR

In networking, what is WAN? How is it different from LAN?

26. Expand the following terms: (2)

- (i) GPRS (ii) WLL
(iii) Wi-Max (iv) URL

27. Write a user-defined function `max_num()` that accepts a list and returns the largest number from the list. (2)

OR

Write a user-defined function `String_reverse()` that accepts a string as an argument and returns after reversing a string.

Sample String: "Pythonxyz"

Expected Output: "zyxnohtyP"





28. Consider the following code: (2)
- ```
f = open("test", "w+")
f.write("0123456789abcdef")
f.seek(-3, 2) // Statement 1
print(f.read(2)) // Statement 2
```
- (i) Explain statement 1.  
(ii) Give output of statement 2.
29. Write the output of the following code: (2)
- ```
def interest(prnc,time=2, rate =0.10):
    return(prnc * time * rate)
print(interest(6100,1))
print(interest(5000,rate= 0.05))
print(interest(5000,3,0.12))
print(interest(time= 4,prnc=5000))
```
30. Is return statement optional? Compare and comment on the following two return statements: (2)
- ```
return
return num
```
31. Sarika has entered the following SQL command on Table 'Result' that has TotalMarks as one of the columns: (2)
- ```
SELECT Count(TotalMarks) from RESULT;
```
- The output displayed is 42.
Then Sarika enters the following command:

```
Select count(*) from RESULT;
```


Now the output displayed is 50.
What will be the possible reason for different outputs? How many total records are there in the table Result?
32. Differentiate between Synchronous and Asynchronous data transmission. (2)
33. What possible output(s) are expected to be displayed on screen at the time of execution of the program from the following code? Also specify the maximum values that can be assigned to each of the variables FROM and TO. (2)
- ```
import random
Arr=[20,30,40,50,60,70]
FROM= random.randint(1,3)
TO= random.randint(2,4)
for a in range(FROM, TO+1):
 print(Arr[a].end="#")
```
- (i) 10#40#70# (ii) 30#40#50#  
(iii) 50#60#70# (iv) 40#50#70#

### Section II

34. Write a method `DeleteRecord()` that accepts a roll number as an argument and deletes the records of the student from a pickled file `student.dat`. (3)
35. Write a user-defined function `CountLines()` that counts the number of lines in a text file 'Project.txt' which start with the alphabet 'P'. (3)
- OR
- Write a function `transfer()` that copies a text file "Diary.txt" onto "Blog.txt" barring the lines starting with a "#" sign.

36. Consider Table **Hospital** as shown below. Write commands in SQL for the following queries: (3)

| SNo | Doc_Name | Department  | Gender | City   | OPDCharges |
|-----|----------|-------------|--------|--------|------------|
| 1   | Arpit    | Surgery     | M      | Delhi  | 550        |
| 2   | Atul     | ENT         | M      | Jaipur | 350        |
| 3   | Simran   | Cardiology  | F      | Kanpur | 600        |
| 4   | Shuchi   | ENT         | F      | Jaipur | 350        |
| 5   | Palak    | Orthopaedic | F      | Delhi  | 400        |

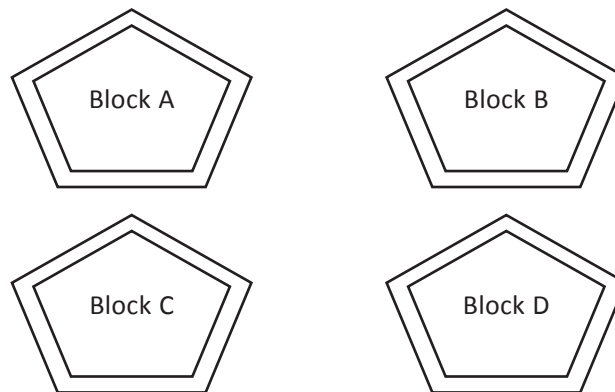
- (a) Write a query to display all the details of female doctors who are in ENT department.  
 (b) Write a query to find the Minimum OPD Charges of doctors of different departments.  
 (c) Write a query to display doctors whose name starts with 'A'.
37. Write a function in Python to implement a stack for the book details (book no., book name). Just implement Pop and display operations of the Stack data structure. (3)

OR

Write a function in Python `PUSH(Arr)`, where `Arr` is a list of numbers. From this list, push all numbers divisible by 3 into a stack implemented by using a list. Display the stack if it has at least one element, otherwise display appropriate error message.

### Section III

38. The organization Smart Ventures has set up its new centre at Delhi for its office and e-commerce activities. It has 4 blocks of buildings as shown in the diagram below: (5)



Distance between the various blocks is as follows:

|        |       |
|--------|-------|
| A to B | 60 m  |
| B to C | 180 m |
| C to D | 65 m  |
| A to D | 140 m |
| B to D | 110 m |
| A to C | 60 m  |

Number of computers:

|         |     |
|---------|-----|
| Block A | 30  |
| Block B | 80  |
| Block C | 140 |
| Block D | 25  |

- (i) Suggest the most suitable place (the Block) to install the server of this organization with a suitable reason.  
 (ii) Suggest an ideal layout for connecting these blocks/centres for a wired connectivity.



- (iii) Which device will you suggest to be placed/installed in each of these blocks to efficiently connect all the computers within these blocks?
- (iv) Suggest the placement of a Repeater in the network with justification.
- (v) The organization is planning to link its office to an office in the hilly areas. Suggest a way to connect it economically. Justify your answer.

39. Consider the following two tables: Stationery and Consumer. Write commands for the queries for SQL queries (i) to (iii) and output for (iv) and (v): (5)

**Table: Stationery**

| S_ID | S_NAME         | Company  | Price | StockDate     |
|------|----------------|----------|-------|---------------|
| BP01 | Ball Pen Blue  | Flair    | 16    | 31-March-2019 |
| BP02 | Ball Pen Black | Flair    | 20    | 01-Jan-2020   |
| GP04 | Gel Pen Black  | Active   | 14    | 13-Feb-2020   |
| GP06 | Gel Pen Red    | Reliable | 22    | 10-Mar-2019   |
| ES01 | Eraser small   | Natraj   | 5     | 12-Dec-2019   |
| EB02 | Eraser big     | Natraj   | 10    | 11-Jan-2020   |
| SC01 | Sharpener      | Doms     | 8     | 23-Jan-2020   |

**Table: Consumer**

| C_ID | ConsumerName        | Address   | P_ID |
|------|---------------------|-----------|------|
| 01   | Reliable Stationers | Delhi     | BP02 |
| 06   | Classic Plastics    | Mumbai    | GP04 |
| 12   | Topper              | Delhi     | SC01 |
| 15   | Smart Deals         | Delhi     | ES01 |
| 17   | Write & Draw        | Bengaluru | ES01 |

- (i) To display details of all the Stationery items in the Stationery table in descending order of stock date.
  - (ii) To display Consumer Name, Address from the Consumer table and Company and price from Stationery table with their corresponding S\_ID.
  - (iii) To find the maximum and minimum price of Stationery.
  - (iv) `Select Count(Distinct Address) from Consumer;`
  - (v) `Select StationeryName, Price*5 from Stationery where company = 'Natraj';`
40. Write a Python function `InsertRecord()` to insert and `Display()` to display records of 'L' block members of the society in a "Members.dat" file containing name, Block Number and contact number using a dictionary. (5)

OR

Consider a binary file `Product.dat` containing details such as `ProdNo`, `Prodname`, `Sales`, `Year`. Write a Python function:

- (i) `CreateProd()` to create a binary file with the above data.
- (ii) `DisplaySales()` to display sales > 50000.