MODEL PAPER
SUBJECT - COMPUTER SCIENCE
CLASS-XII

MM-70   **TIME-3HRS**

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 studies questions. Each case study has 4 case-based sub-parts.

    An examinee is to attempt any 4 out of the 5 subparts.

4. Part - B is Descriptive Paper.

5. Part- B has three sections

    a. Section-I is short answer questions of 2 marks each in which two question have internal options.

    b. Section-II is long answer questions of 3marks 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 option.

6. All programming questions are to be answered using Python Language only

Question No.	Part-A	Marks allocated

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 valid arithmetic operator in Python? **[1]**

    (a) //   (b) ?   (c) <   (d) and

2. Write the type of tokens from the following: **[1]**

    (a) if   (b) roll_no.

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

    (a) sin( )   (b) randint ( ) **[1]**

4. What is the out put of this code ? **[1]**

      >>>int ("3" + "4")

    (a) "7"   (b) "34"   (c) 34   (d) 24

5. Which line of code will cause an error? **[1]**

    1. num =[5,4,3,[2],1]   2. print(num[0])   3. print (num[3][0])   4. print(num[5])

    (a) Line 3   (b) Line 2   (c) Line 4   (d) Line 1

6. What is the result of this code ? **[1]**

      def print _double(x) :

        print(2**x)

    print_double(3)

    (a) 8   (b) 6   (c) 4   (d) 10

7. What is the output of this expression, 3*1**3 ?   **[1]**
   (a) 27   (b) 9   (c) 3   (d) 1
8. Which of the following keywords marks the beginning of the function block?   **[1]**
   (a) func   (b) define   (c) def   (d) function
9. What is the area of memory called ,which stores the parameter and local variables of the a function call?   **[1]**
   (a) a heap   (b) storage area   (c) a stack   (d) an array
10. Name the Python Library modules which need to be imported to invoke the following functions :   **[1]**
    (a) sqrt()   (b) dump()
11. Python case sensitive when dealing with identifiers.   **[1]**
    (a) yes   (b) no
    (c) machine dependent   (d) none of the mentioned
12. Which of the following is an invalid variable ?   **[1]**
    (a) my_day_2   (b) 2nd_day   (c) Day_two   (d) _2
13. What data type is the object below?   **[1]**
        L= [1,23,'hello',1]
    (a) list   (b) dictionary   (c) array   (d) tuple
14. Which of the following id not keyword ?   **[1]**
    (a) eval   (b assert   (c) nonlocal   (d) pass
15. Which of these is not a core data type.?   **[1]**
    (a) Lists   (b) Dictionary   (c) Tuples   (d) Class
16. Carefully observe the code and give the answer .   **[1]**
        def function1(a):
           a=a+'1'
             a=a*2
        >>>function1("hello")
    (a) indentation Error
    (b) cannot perform mathematical operation on strings
    (c) hello2
    (d) hello2 hello2
17. Which of these is not a core data type ?   **[1]**
    (a) Lists   (b) Dictionary   (c) Tuples   (d) Class
18. What is the out put of this code ?   **[1]**
    >>>int ("3" + "4")
    (a) "7"   (b) "34"   (c) 34   (d) 24
19. Given a function that does not return any value, what value is thrown by default when executed in shell?
    (a) int   (b) bool   (c) void   (d) none
20. What is expression and a statement ?   **[1]**
21. Differentiate between DELETE and DROP table commands ?   **[1]**

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

22. Consider the following tables GARMENT and FABRIC. Write SQL commands for the statements (a) to (d) and give outputs for SQL queries (e) to (g).

TABLE: GARMKNT

GCODE	DESCRIPTION	PRICE	FCOOE	READYDATE
10023	PENCIL SKIRT	1150	F03	19-DEC-08
10001	FORMAL SHIRT	1250	F01	12-JAN-08
10012	INFORMAL SHIRT	1550	F02	06-JUN-08
10024	BABY TOP	750	F03	07-APR-07
10090	TULIP SKIRT	850	F02	31-MAR-07
10019	EVENING GOWN	850	F03	06-JUN-08
10009	INFORMAL PANT	1500	F02	20-OCT-08
10007	FORMAL PANT	1350	F01	09-MAR-08
10020	FROCK	850	F04	09-SFP-07
10089	SLACKS	750	F03	20-OCT-08

TABLE: FABRIC

FCODE	TYPE
F04	POLYSTER
F02	COTTON
F03	SILK
F01	TERELENE

(e)
DESCRIPTION	TYPE
INFORMAL SHIRT	COTTON
INFORMAL PANT	COTTON
FORMAL PANT	TERELENE

(a) To display GCODE and DESCRIPTION of each GARMENT in descending order of GCODE.
(b) To display the details of all the GARMENTS, which have READYDATE in between 08-DEC-07 and 16-JUN-08 (inclusive of both the dates).
(c) To display the average PRICE of all the GARMENTS. Which are made up of FABRIC with FCODE as F03.
(d) To display FABRIC wise highest and lowest price of GARMENTS from GARMENT table. (Display FCODE of each GARMENT along with highest and lowest price.)
(e) SELECT DESCRIPTION, TYPE FROM GARMENT, FABRIC
WHERE GARMENT.FCODE = FABRIC.FCODE AND GARMENT.PRICE >=1260:
(f) SELECT MAX(FCODE) FROM FABRIC;
(g) SELECT COUNT(DISTINCT PRICE) FROM GARMENT;

23. Consider the following tables. Write SQL commands for the statements (a) to (d) and give outputs for SQL queries (e) to (g).

TABLE: SENDER

SenderID	SenderName	SenderAddress	SenderCity
ND01	R Jain	2, ABC Appts	New Delhi
MU02	H Sinha	12, Newtown	Mumbai
MU15	S Jha	27/A, Park Street	Mumbai
ND50	T Prasad	122-K, SDA	New Delhi

TABLE: RECIPIENT

RecID	SenderID	RecName	RecAddress	RecCity
KO05	ND01	R Bajpayee	5, Central Avenue	Kolkata
ND08	MU02	S Mahajan	116, A Vihar	New Delhi
MU19	ND01	H Singh	2A, Andheri East	Mumbai
MU32	MU15	P K Swamy	B5, C S Terminus	Mumbai
ND48	ND50	S Tripathi	13, B1 D, Mayur Vihar	New Delhi

(a) To display the names of all Senders from Mumbai.

(b) To display the RecID, SenderName, SenderAddress, RecName, RecAddressfor every Recipient.

(c) To display Recipient details in ascending order of RecName.

(d) To display number of Recipients from each City.

(e) SELECT A.SenderName, B.RecName FROM SENDER A, RECIPIENT B

WHERE A.Sender ID=B.Sender ID AND B.RecCity = 'Mumbai';

(f) SELECT RecName, RecAddress FROM RECIPIENT WHERE RecCity NOT IN

('Mumbai', 'Kolkata');

(g) SELECT RecID, RecNam FROM RECIPIENT

WHERE SenderlD = 'MU02' OR SenderlD = ' ND50 ' ;

PART-B

SECTION-1

24. Rewrite the following code in Python after removing all syntax errors.   **[2]**

```
30= To
for k in range (0,To)
IF  k %4 ==0:
   print(k* 4)
Else :
    print (k+3)
```

25. Find and write the output of the following python code : **[2]**
```
for Name in [ 'Jayes' , 'Ramya', 'Taruna','Suraj']:
 print(Name)
 if Name[0]=='T' :
   break
 else :
   print('Finished!')
print ('Got it')
```
26. Differentiate between the round() and floor() functions with the help of suitable example. **[2]**

OR

Name the Python Library modules which need to be imported to invoke the following functions
sqrt()
dump()
27. Rewrite the following for loop into while loop: **[2]**
```
for a in range(25,500,25):
 print( "a")
```
28. What is the difference between a tuple and a list? **[2]**
29. Rewrite the following for loop into while loop: **[2]**
```
for a in range(25,500,25):
 print( "a")
```
30. Fill in the blanks : **[2]**
(a) _____ is an example of Public cloud.
(b) _____ is a network of physical objects embedded with electronics, software, sensors and network connectivity.
(c) _____ is a device that forwards data packets along networks.
(d) _____ describes the maximum data transfer rate of a network or Internet connection.
31. Give the full forms of the following **[2]**
TCP:
IP:
MAC :
LAN :
MAN :
WAN :
NFC :
NIC :
32. What are protocols ? what is the significance of protocols in networks **[2]**
33. What is the use of wildcard? **[2]**

Section- II

34. What are the various integrity constraints? **[3]**
35. Write code to connect to a MYSQL database namely School and then fetch all those records from table Student where grade is 'A'   . **[3]**
36. What is the output of following code fragment? **[3]**
37. Write a program to input any string and to find the number of words in the string **[3]**

OR

Write a program to input n numbers and to insert any number in a particular position.

Section-III

38. Trine Tech Corporation (TTC) is a professional consultancy company. The company is planning to set up their new offices in India with its hub at Hyderabad. As a network adviser, you have to understand their requirement and suggest them the best available solutions. Their queries are mentioned as (i) to (iv) below. **[5]**

Physical locations of the blocks of TTC
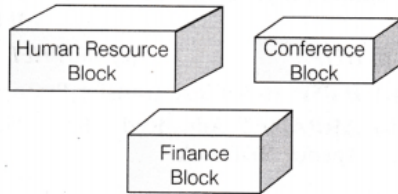
Block to block distance (in m)

Block (From)	Block (To)	Distance
Human Resource	Conference	110
Human Resource	Finance	40
Conference	Finance	80

Expected number of computers to be in each block

Block	Computers
Human Resource	25
Finance	120
Conference	90

1. Which will be the most appropriate block, where TTC should plan to install their server?
2. Draw a block to block cable layout to connect all the buildings in the most appropriate manner for efficient communication.
3. What will be the best possible connectivity out of the following, you will suggest to connect the new set up of offices in Bengalore with its London based office.
   o Satellite Link
   o Infrared
   o Ethernet
4. Which of the following device will be suggested by you to connect each computer in each of the buildings?
   o Switch
   o Modem
   o Gateway

OR

Freshminds University of India is starting its first campus in Ana Nagar of South India with its centre admission office in Kolkata. The university has three major blocks comprising of Office block, Science block and Commerce block is in 5 km area campus. As a network expert, you need to suggest the network plan as per (i) to (iv) to the authorities keeping in mind the distance and other given parameters.
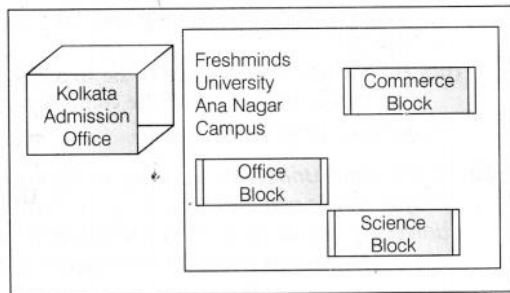
Expected wire distance between various locations

Office Block to Science Block   90 m
Office Block lo Commerce Block   80 m
Science Block lo Commerce Block 15m
Kolkata Admission Office to Ana
Nagar Campus   2450 km

Expected number of computers to be installed at various locations in the university are as follows:

Office Block	10
Science Block	140
Commerce Block	30
Kolkata Admission Office	8

1. Suggest the authorities, the cable layout amongst various blocks inside university campus for connecting the blocks.
2. Suggest the most suitable place (i.e. block) to house the server for this university with a suitable reason.
3. Suggest an efficient device form the following to be installed in each of the block to connect all the computers,
   (a) Modem (b) Switch (c) Gateway
4. Suggest the most suitable (very high speed) service to provide data connectivity between admission office located in Kolkata and the campus located in Ana Nagar form the following options:
   o   Telephone line
   o   Fixed line dial-up connection
   o   Co-axial cable network
   o   GSM
   o   Leased line
   o   Satellite connection.

39.   Which key word is used to sort the records of a table in descending order?   **[5]**
      (a) The SQL ORDER BY Keyword
      (b) Which command is used to modify the records of the table?
      (c) Which clause is used to remove the duplicating rows of the table?
      (d) Differentiate between Primary key and Candidate key.

40.   Differentiate between DDL and DML commands.   **[5]**

Solution : Paper

Section-A

1. (a)
2. (a) Keyword   (b) Identifier
3. (a) math   (b) random
4. (c)
5. (c)
6. (a)
7. (c)
8. (c)
9. (c)
10. (a) math   (b) pickle
11. (a)
12. (b)
13. (a)
14. (a)
15. (d)
16. (a)
17. (d)
18. (c)
19. (d)
20. Expressions are any legal combination of symbol that represents a value statements are programming instructions.
21. DELETE command is used to remove information from a particular row or rows. If used without condition, it will delete all row information but not the structure of the table. It is a DML command.
    DROP table command is used to remove the entire structure of the table and information. It is a DDL command.
22.
(a) SELECT GCODE, DESCRIPTION FROM GARMENT ORDER BY GCODE DESC;
(b) SELECT*FROM GARMENT
WHERE READYDATE BETWEEN '08-DEC-07' AND '16-JUN-08';
(c) SELECT AVG(PRICE) FROM GARMENT WHERE FCODE = 'E03' ;
(d) SELECT FCODE, MAX(PRICE), MIN(PRICE) FROM GARMENT GROUP BY FCODE;
(e) MAX(FCODE)
     F04
(f) COUNT (DISTINCT PRICE)
     7

23.
(a) SELECT SenderName FROM SENDER WHERE SenderCity = 'Mumbai';
(b) SELECT RecID, SenderName, SenderAddress, RecName, RecAddress
FROM RECIPIENT, SENDER WHERE RECIPI ENT.Sender ID = SENDER.Sender ID;
(c) SELECT * FROM RECIPIENT ORDER BY RecName;
(d) SELECT COUNT(*) As "No. of Recipients", RecCity FROM RECIPIENT
GROUP BY RecCity;

(e) SenderName	RecName
R Jain	H Singh
SJha	P K Swamy

(f) RecName	RecAddress
S Mahajan	116, AVihar
S Tripathi	13.B1D, Mayur Vihar

(g) RecID	RecName
ND08	S Mahajan
ND48	S Tripathi

Section-B

24. To =30   # variable name should be LHS
        for k in range (0,To) :
    print (k * 4)
    else :   # else should be in lower case
    print (k+3)

25.   Jayes
       Finished!
       Ramya
      Finished!
      Taruna
      Got it!

26. The function round() is used to convert a fractional number into whole as the nearest next whereas the function floor() is used convert to the nearest lower whole number,
    e.g., round (5.8) = 6, round (4.1) = 5 and floor (6.9) = 6, floor (5.01) = 5

    OR

    math
    pickle

27. a=25
     while a < 500:
        print ("a")
    a = a + 25

28. A tuple is immutable whereas a list is a mutable.
    A tuple cannot be changed whereas a list can be changed internally.

A tuple uses parentheses (()) whereas a list uses square brackets ([]).

tuple initialization: a = (2, 4, 5)

list initialization: a = [2, 4, 5]

29. a=25
  while a < 500:
    print ("a")
  a = a + 25

30. (a) Microsoft Azure
(b) IOT (Internet of Things)
(c) ROUTERS
(d) Bandwidth

31. Transmission Control Protocol
Internal Protocol
Media Access Control
Local Area Network
Metropolitian Area Network
Wide Area Network
Near Field Communication
Network Interface Card

32. A protocol is a system of rules that allow two or more entities of a communications system to transmit information via any kind of variation of a   physical quantity. For example ,there are protocols for the data interchange at the hardware device level and protocols   for data interchange at the application program level.
Network protocols govern the end to end processes of timely ,secure network communication . Network protocols in corporate all the processes, requirements and constraints of initiating and accomplishing communication between computers ,servers, routers and other network enabled devices.

33. The wildcard operators are used with the LIKE operator to search a value similar to a specific pattern in a column. There are 2 wildcard operators.
% – represents 0,1 or many characters – – represents a single number or character

34. Various Integrity Constraints are -
NOT NULL- Ensures value for the column is not left unassigned
UNIQUE-ensures that all values in a column are distinct or no two rows can have the same values for a column having UNIQUE constraint.
CHECK-ensures that value s for a particular column satisfy the specified condition.
DEFAULT-ensures that the default value is assumed if value for the column is not specified.
PRIMARY KEY –Automatically applies UNIQUE and NOT NULL for uniquely identifying rows /records in a table.

35. import mysql.connector as a
mydb = a.connect(host="localhost",user="root",
password="portal express", database = "Student")
cur = mydb.cursor()
run = "select * from Student where grade = 'A' "
cur . execute(run)
data = cur.fetchall()

```
        for i in data :
            print(i)
        mydb.close()
```

36.
```
    fruit={}
    f1=['Apple','Banana','apple','Banana']
    for index in f1 :
        if index  in fruit :
            fruit[index] +=1
    else:
            fruit[index]=1
        print(fruit)
    print(len(fruit))
    solution    {'Apple':1 }
                {'Apple': 1,'Banana':1}
                {'Apple': 1,'Banana':1,'apple': 1}
                {'Apple': 1,'Banana':2,'apple': 1}
                3
```

37.
```
    str = "Honesty is the best policy"
    words = str.split()
     print (len(words))
```

<div align="center">OR</div>

```
    n=input("Enter no. of values")
     num=[]
     for i in range (n):
     number=input("Enter the number")        num.append(number)
     newno = input("Enter the number to be inserted")
     pos = input("Enter position") num.insert(newno,pos)
     print (num)
```
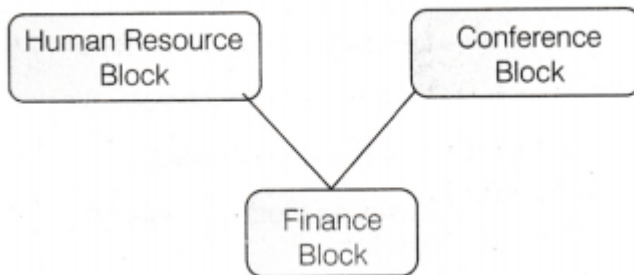
38. 1. TC should install its server in finance block as it is having maximum number of computers.
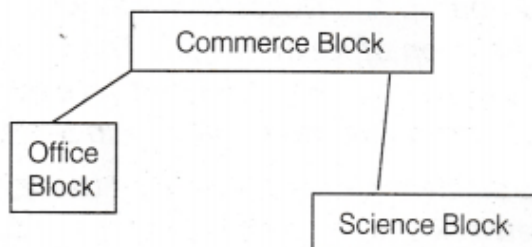

2. The above layout is based on minimum cable length required, which is 120 metres in the above case.
3.Satellite Link.
4.Switch.

<div align="center">OR</div>

1. The most suitable place to house the server is Science Block as it has maximum number of computers. Thus, reducing the cabling cost and increases efficiency of network.
2. (b) Switch is the device to be installed in each of the blocks to connect all the computers.
3. Satellite connection.

39. The ORDER BY keyword is used to sort the result-set in ascending or descending order. The ORDER BY keyword sorts the records in ascending order by default. To sort the records in descending order, use the DESC keyword.
(b) The alter command is used when we want to modify a database or any object contained in the database. The drop command is used to delete databases from MySQL server or objects within a database. The rename command is used to change the name of a table to a new table name.
(c) SQL delete duplicate Rows using Group By and having clause
In this method, we use the SQL GROUP BY clause to identify the duplicate rows. The Group By clause groups data as per the defined columns and we can use the COUNT function to check the occurrence
(d) Primary key describes the unique and most important attribute of a relation whereas candidate key provides candidates among which one can be taken as the primary key. Every primary key is a candidate key but every candidate key is not the primary key.

40. DDL
1 = DDL is Data Definition Language
2 = These are used to define data structure
3 = It is used to define database structure or schema
4 = Commands are: CREATE, ALTER, DROP, TRUNCATE, RENAME
5 = It works on whole table
6 = It do not have a where clause to filter
7 = Changes done by DDL commands cannot be rolled back
8 = Example -- Drop table student
DML –
1 = It is Data Manipulation Language
2 = It is used to manipulate the existing databases.
3 = It is used for managing data within schema objects
4 = Commands are: SELECT, INSERT, DELETE, UPDATE, MERGE, CALL
5 = It works on one or more rows
6 = It have where clause to filter records
7 = Changes can be rolled back
8 = It is further classified as procedural and non procedural
9 = Example --- Select * from student