COMPUTER SCIENCE

Time : 3 hrs Max. Marks : 70

General Instructions

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each.
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 03 Long Answer type questions carrying 05 marks each.
7. Section E has 02 questions carrying 04 marks each. One internal choice is given in Q35 against part c only.
8. All programming questions are to be answered using Python Language only.

Section A

1. State True or False

"Given a dictionary Studict. The statement Studict.items() displays the keys of the item only." [1]

2. Which module is to be imported to use the floor() function? [1]

(a) statistics
(b) matplotlib
(c) random
(d) math

3. Given L=[2,3,4,5,6] . The output of print(L[-2]) is [1]

(a) 6
(b) Error
(c) 5
(d) 3

4. This function is used to calculate total occurrence of given elements of list. [1]

(a) len()
(b) sum()
(c) count()
(d) extend()

5. You can repeat the elements of the tuple using which operator? [1]

(a) *
(b) +
(c) **
(d) %

6. The method used to get the position of file pointer is [1]

(a) tell()
(b) get()
(c) seek()
(d) pos()

7. Which of the following command displays the attributes of a table along with their types and sizes? [1]

(a) Alter
(b) Show structure
(c) Show create table
(d) View structure

8. The ..... command adds records to a table. [1]

(a) ADD
(b) APPEND
(c) ADDRECORD
(d) INSERT

9. Which function is used to convert string into tuple? [1]

(a) string()
(b) tup()
(c) tuple()
(d) str_tuple()

10. The purpose of the primary key in a database is to [1]

(a) unlock the database
(b) provide a map of the data
(c) uniquely identify a record
(d) establish constraints on database operations

11. A file can be opened both for reading and writing using ..... mode. [1]

(a) r
(b) r+
(c) a
(d) None of these

12. The ..... clause can be used as an alternative to multiple OR. [1]

(a) IN
(b) BETWEEN
(c)NOT
(d) range

13. In a ..... topology, the nodes are connected by separate cables. [1]

(a) Star
(b) Bus
(c) Tree
(d) Mesh

14. Given a list Lst=[45,100,20,30,50]. What will be the output of Lst[: :]? [1]

(a) [45,100,20,30,50]
(b) []
(c) Error
(d) [45]

15. The rule of referential integrity is based on ..... . [1]

(a) Primary key
(b) Foreign key
(c) Alternate key
(d) None of these

16. Which method returns the next row from the result set as tuple? [1]

(a) fetchone ( )
(b) fetchmany ( )
(c) fetchall ( )
(d) rowcount

Directions (Q.Nos. 17-18) *are Assertion and Reason based questions.*

17. **Assertion (A)** Binary files are processed faster than text files. [1]

Reasoning (R) They are written in Binary format and are more close to the computer.

(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.

18. **Assertion (A)** A function that is neither built in nor modular must be defined. [1]

Reason (R) The code of built in and modular functions are available for the Python compiler , but if the function is not defined anywhere the compiler cannot get the code.

(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.

Section B

19. Observe the code given below and find the output. [2]

```
s="OceanView"
print(s[8] +s[2:] +str(len(s)))
```

20. What is the purpose of switch in a network? [2]

Or

Write names of few network devices.

21. (a) What is the output of below questions? [1]

```
l1 = [23, 45, 19, 77, 10, 22]
```

(i) `l1.sort()`
(ii) `max(l1)`

(b) Find error in defination of the function given. [1]

```
def  finderrors(x=20,y)
     print(x+y*2)
```

22. List some commonly used DBMS software packages. [2]

23. (a) Write the full forms of [2]

(i) HTML (ii) HTTPs

(b) Write any two advantages of tree topology.

24. What output will the following code produce? [2]

```
empdict={'Eno':[1,2,3,4],'Ename':['Raj','Seema','John','Smith'],'Sal':[10000,20000,
30000,40000]}
print(empdict['Ename'][0],empdict['Sal'][0])
```

Or

Write any two differences between Dictionary and Tuple.

25. Mention atleast three limitations of DBMS. [2]

Or

What are primary and alternate key in a database? Give suitable example to explain each.

Section C

26. Consider the tables Hotel and Room given below : [1+2]

Table : Hotel

TId	CName	RoomId	DtofArrival	Charges
T1	Ritesh	R1	2016-09-09	1800
T2	Sumana	R2	2020-08-01	2000
T3	Abhi	R3	1995-04-05	3000
T4	Ram	R1	1994-02-02	2500
T5	Nitin	R2	NULL	7000

Table : Room

RoomID	RoomType	FLoor
R1	AC	First
R2	Deluxe	Second
R3	General	Second

(a) Write a command to display the customer names and the types of rooms in which they are staying.

(b) With respect to the tables given above, write SQL commands for the following.

(i) Create the table hotel and insert the 1st record

(ii) Display the details of customers who have arrived after 01-05-2005

(iii) Display names and room types of customers whose charges are between 2000 and 3000.

(iv) Display Names of customers who are staying in "AC" rooms"

27. A binary file "data.dat" contains records of students as per following structure : [3]

Ano	Sname	Marks
1	Raj	850
⋮		

Write a Program in Python to search for a student whose number/id is input by the user. If not found appropriate message should be displayed.

Or

Write a program with method countand( ) to count the word 'and' or 'And' as an independent word in a text file "status.txt". e.g. if the content of the file "status. txt" is as follows:

Welcome to your one-step solutions for all your study, practice and assessment needs for various competitive & recruitment examinations and school segment. We have been working tirelessly for over a decade to make sure that you have best in class study resources because you deserve SUCCESS AND NOTHING LESS...

Then the output of the program should be: Count of _and_ in file is/are: 3

28. (a) Write the SQL commands for (i) to (iv) on the basis of the table HOSPITAL [3]

TABLE: HOSPITAL

No	Name	Age	Department	Dateofadm	Charges	Sex
1	Sandeep	65	Surgery	23/02/98	300	M
2	Ravina	24	Orthopaedic	20/01/98	200	F
3	Karan	45	Orthopaedic	19/02/98	200	M
4	Tarun	12	Surgery	01/01/98	300	M
5	Zubin	36	ENT	12/01/98	250	M
6	Ketaki	16	ENT	24/02/98	300	F
7	Ankita	29	Cardiology	20/02/98	800	F
8	Zareen	45	Gynaecology	22/02/98	300	F
9	Kush	19	Cardiology	13/01/98	800	M
10	Shailya	31	Nuclear Medicine	19/02/98	400	M

(i) To show all information about the patients of Cardiology Department.

(ii) To list the name of female patients, who are in Orthopaedic Department.

(iii) To list names of all patients with their date of admission in ascending order.

(iv) To display Patient's Name, Charges, Age for male patients only.

(b) Write the command to view all the tables in database.

29. Write user defined functions factors(num) and factorial(num) to find the factors and factorial of a number accepted from the user and passed to the functions from main function. [3]

30. Write the Push operation of stack containing person names. Notice that the name should only accept characters, spaces and period(.) except digits. Assume that Pname is a class instance attribute. [3]

Or

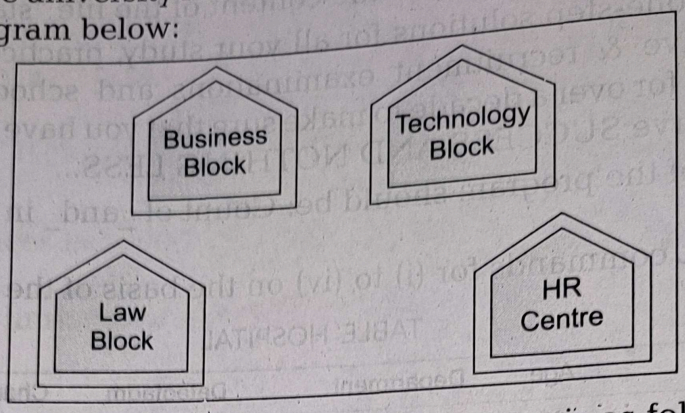
Find the final contents of a stack that encounters the following tokens.

Assume that an operand is pushed to stack and a binary operator pops two operands from stack and pushes the result to the stack.

45,30,+,50,80, +,+

Section D

31. Quick Learn University is setting up its academic blocks at Prayag Nagar and planning to set up a network. The university has three academic blocks and one human resource centre as shown in the diagram below:



Centre to centre distance between various blocks/centre is as follows:

Law Block to Business Block	40 m
Law Block to Technology Block	80 m
Law Block to HR Centre	105 m
Business Block to Technology Block	30 m
Business Block to HR Centre	35 m
Technology Block to HR Centre	15 m

Number of computers in each of the blocks/centre are as follows:

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

(i) Suggest the most suitable place (i.e. block/centre) to install the server of this university with a suitable reason. [1]

(ii) Suggest an ideal layout for connecting these block/centre for a wired connectivity. [1]

(iii) Which device you will suggest to be placed/installed in each of these blocks/centre to efficiently connect all the computers with in these blocks/centre ? [1]

(iv) The university is planning to connect its admission office in the closest big city, which is more than 250 km from university, which type of network out of LAN, MAN or WAN will be formed? Justify your answer. [1]

(v) Expand the following [1]

LAN

WAN

32. (a) Underline the errors in the following code and write the correct code : [2+3]

```
while  s>0
  if a%2=0
        print(a%2)
  elseif a%3=0 then
       print(a%3)
```

(b) What is database connectivity? How to create a connection object?

Or

(a) Differentiate between identifier and keyword.

(b) What conditions or terms are included by BD-API?

33. What does csv writer() function do? [5]

Write a python program for operating on a csv file "people.csv" using following functions :

(a) addPeople() :To input details of people and add them to a csv file "people.csv" without removing the previous records. The record structure is as follows :

AdhrNo Name City Age

The file should store only those people whose age is greater than and equal to 18.

(b) getPeople() : To open the file "people.csv" and display records whose name starts with "P"

Or

What is the use of writerow() function?

A file "Toys.csv" exists storing details of toys as per following structure :

ToyID Toyname Category Cost

Write a program in python with functions as follows :

(a) addToy() : To append data of toys and store them to the file "Toys.csv" only if the Toy category is "Boys". Also display the number of toys added.

(b) showToys() : To open the file "Toys.csv" and display records of toys whose cost is above 1000.

Section E

34. Consider the following table Cab : [1+1+2]

Table : Cab

CabID	CabType	Nop	Rate
Cb1	Sedan	4	40
Cb2	Yellow Taxi	5	25
Cb3	Mini	3	30
Cb4	Micro	2	20

(i) Which column qualifies to be the primary key?

(ii) Write a command to display the fields of the table along with their types and sizes.

(iii) Write statements to :

(a) Add a new column Driver varchar(30)

(b) Change data type of Rate column to float(6,1).

Or (Option for part (iii) only)

(a) To display the cab type whose rate is more than 25.

(b) To display cab id and Number of passengers for cab sedan.

35. Riya wrote a program to search any string in text file "school". Help her to execute the program successfully.

```
def check () :
    datafile = open (.....)
```

```
        found = input ("Enter any string to be searched : ")
        f = False
        for line in ..... :
            if found in line :
                f = .....
                break
        return f
    f = check ()
    if (f = = .....) :
        print ("True")
    else :
        print (.....)
```

(i) Riya should open which file to search any string? [1]

(ii) Which value will assign to f in Line 7? [2]

(iii) Fill the blank in Line 5. [1]