Theory Syllabus Unit Wise

Unit – I (Computational Thinking and programming -2) 40 Marks

Revision Tour (python covered in class XI)

Functions

Data File Handing

Data Structure (stack using list)

Unit – II (Computer Networking) 10 Marks

Unit- III (Data Base Management) 20 Marks

Data Base Concepts

DDL and DML SQL commands

Python- Mysql connectivity

Practical Syllabus (30 Marks)

Lab Test — 12 Marks

(a) Python Program — 8 Marks
(from file handling or functions)

(b) Stub program with python-mysql connectivity — 4 Marks
Data Structure (stack using list)

Practical File — 7 Marks

Minimum 15 python programs
SQL query (minimum 20 query statements)
Minimum 4 program on connectivity

Project — 8 Marks

Using File handling or connectivity

Viva-Voce — 3 Marks

Whole Syllabus

CBSE SAMPLE PAPER PATTERN 2022-23

1. Question paper contains five sections, Section A to E.
2. All questions(35 Nos) are compulsory.
3. Section A have 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type qs carrying 02 marks each.
5. Section C has 05 Short Answer type qs carrying 03 marks each.
6. Section D has 03 Long Answer type qs carrying 05 marks each.
7. Section E has 02 qs carrying 04 marks each. One internal choice is given in Q34 against part **c** only.

Chapter Wise Marks and Section Wise qs details

Topic	MCQ (1 mark)	2 Mark	3 Mark	4 Mark	5 Mark	Total	No of qs
Revision Tour	7	2*	1		*(2 marks)	16	11
Functions	1	2*			**(3 marks)	8	3
Data File Handling	3		1	1	1	15	6
Stack			1*			3	1
Computer Networking	1	2			1	10	4
Database concept & Sql commands	5	2	2	1		19	10
Connectivity	1				1 *(3 marks) **(3 marks)	4	3

Some question have internal choices. That is why total is 75 marks

Internal choices are given for qs numbers

Section B (2 marker) Qs 20, 24,25

Section C (3 marker) Qs 27, 30

Section D (5 marker) Qs 32, 33

Section E (4 marker) Qs 34(iii)

For 5 marker (2 function + 3 connectivity)

(2 revision tour + 3 connectivity)

Stub program(fill in the blanks) given

Qs 32(b) connectivity

Qs 35 binary file

Unit – I Content Details

Revision tour

Student should clear on the concept of

- details of tokens
- valid identifier naming
- data types
- selection and iteration statements
- error and debugging
- inbuilt functions related to string, tuple, list and dictionary

Unit -1 Functions

- definition of functions
- block structure of function
- actual and formal parameter
- differentiation b/w positional, default and keyword argument and their use in function
- Scope of local and global variable

Unit -1 Data File Handling

- types of files and their differentiation
- different type of modes of opening files
- different read and write functions in various file types
- atleast write, read and search operation in various files
- movement of file pointers by seek() and tell()

Unit -1 Data Structure Stack Using list

- What is a stack and characteristics of stack
- operations of stack like PUSH(), POP() and display
- should know complete menu driven program on stack

Unit -2 Data Communication and Network

Communication Terminology:

- Evolution of networking (ARPANET, NSFNET, interspace)
- Switching techniques(circuit, massage, packet)
- Communication terminology(channel, band, band width, data transfer rate)
- Transmission media(guided and un guided media)
- Guided(twisted pair, coaxial, optical fiber)
- Unguided(infrared, radio, microwave)

Unit -2 Data Communication and Network

Network devices, topologies and protocols:

- Network device(modem,RJ45 connector, Ethernet card, Hub/Switch, router, gateway, bridge, repeater, Wi-Fi card)
- Network topologies(Bus, Star, Tree)
- Types of networking(PAN, LAN, MAN, WAN)
- Protocols(HTTP, FTP,TCP/IP,SMTP,POP3,Telnet, HTTPs,VOIP)

Unit -2 Data Communication and Network

Web services:

- WWW, HTML, XML
- Domain Name, URL
- Websites, Web browser, web server, web hosting

Unit -2 Data Communication and Network

LAN Design:

Considering previous knowledge on networking, we have to design a LAN structure.

Unit – 3 Data Base Concepts

Only theory qs, based on data base concepts

- **Definition of database, DBMS, RDBMS, relation, tuple, attribute, cardinality, degree, domain.**
- **Various keys: primary, unique, candidate, alternate, foreign**
- **Constraints: primary key, Not Null, Unique**

Unit – 3 DDL and DML Mysql Commands

Student should know basic DDL and DML commands

- **Creation of database, deleting database, opening database.**
- **Creation, deletion and updation of table(add and remove attributes, add and remove constraints)**
- **Inserting, deleting, updating and viewing records**
- **Different clauses like : where, from, in, between, like, distinct, order by, null, not null**
- **Aggregate functions: (sum, max, min, avg, count), group by and having clause**
- **Cartesian product, equi join and natural join**

Unit – 3 Interface of python with SQL database

Prior knowledge of DDL and DML commands required

- **Creating database connectivity applications**
- **Performing insert, delete, update queries using cursor**
- **Displaying record(s) using fetchone(), fetchall() and fetchmany() And concept of rowcount**

Example of Qs and Answers Section Wise

Section A (Qs 1 to 18)

Contains 16 MCQ qs, 2 Assertion and Reasoning qs. Student has to write only correct option. Preferably option should be in capital letter.

e.g

Which of the following file opening mode is invalid?

(a) a+ (b) rw (c) w+ (d) None of these

Ans: (B)

Example of Qs and Answers Section Wise

Section B(Qs 19 to 25)

Each qs carries 2 marks. No internal choice.

- **Ques in this section include**
  - **Finding error- Rewrite the question after correcting errors and Underline each correction made.**
  - **Output ques- inside a box(preferably)**
  - **Theoretically ques which should be substantiated with example . For differentiation questions it is advisable to write in column form.**

Ex of Qs and Answers Section Wise Section B(Qs 19 to 25)

Amarish has written a code to check a number to be prime or not. Code is having some errors. Rewrite the correct code and underline the correction made.

```
def prime():
    n=int(input(" Enter number to check : ")
    for I in range(2, n//2):
        if n % I =0:
            print(" Number is not prime \n ")
        break
        else:
            print(" Number is prime \n')
```

Ans:

```
def prime():
    n=int(input(" Enter number to check : "))          # bracket missing
    for I in range(2, n//2):
        if n % I ==0:                                  # wrong operator
            print(" Number is not prime \n ")
            break                                      # wrong indent
        else:
            print(" Number is prime \n")               # quote mismatch
```

(1/2 mark for each correct correction made and underlined)

Example of Qs and Answers Section Wise

Section C(Qs 26 to 30)

Each ques carries 3 marks. No internal choice. However each qs carries subparts. Carefully see and attempt

- **For SQL ques**

1. **Write the commands in capital letters preferably.**
2. **Output ques, it is preferable to write heading and the required data below the heading. Also check if the output should be in the same line or in different lines.**

- **For python related programs**

1. **Indentation should be proper.**
2. **All delimiter or punctuators should be taken care.**

Ex. of Qs and Answers Section Wise Section C(Qs 26 to 30)

Each qs carries 3 marks.

Write the output of the following queries (i) and (iv) based on the following table.

Table: **COURSE**

CID	CNAME	FEES	STARTDATE	TID
201	Animation	12000	2022-07-02	101
202	CADD	15000	2021-11-15	NULL
203	DCA	10000	2020-10-01	102
204	DDTP	9000	2021-09-15	104
205	Mobile App	18000	2022-11-01	101
206	Digital Marketing	16000	2022-07-25	103

a) SELECT DISTINCT TID FROM COURSE;
b) SELECT TID, COUNT(*), MIN(FEES) FROM COURSE GROUP BY TID HAVING COUNT(TID)>1;
c) SELECT CNAME FROM COURSE WHERE FEES>15000 ORDER BY CNAME;
d) SELECT AVG(FEES) FROM COURSE WHERE FEES BETWEEN 15000 AND 17000;

Ans:

(i)**Distinct TID**

101
102
103
104

CID	CNAME	FEES	STARTDATE	TID
201	Animation	12000	2022-07-02	101
202	CADD	15000	2021-11-15	NULL
203	DCA	10000	2020-10-01	102
204	DDTP	9000	2021-09-15	104
205	Mobile App	18000	2022-11-01	101
206	Digital Marketing	16000	2022-07-25	103

i. SELECT TID, COUNT(*), MIN(FEES) FROM COURSE GROUP BY TID HAVING COUNT(TID)>1;
ii. SELECT CNAME FROM COURSE WHERE FEES>15000 ORDER BY CNAME;
iii. SELECT AVG(FEES) FROM COURSE WHERE FEES BETWEEN 15000 AND 17000;

Ans:

TID	COUNT(*)	MIN(FEES)
101	2	12000

CNAME
Digital Marketing
Mobile App

AVG(FEES)
16333

Example of Qs and Answers Section Wise

Section D(Qs 31 to Qs 33) . Each carries 5 marks

Questions have sub parts (2+3).

This section mostly contains

1. Output ques,
2. LAN design,
3. Connectivity
4. CSV file handling.

Stub programs given for CSV as well as connectivity program.

These may be considered as Case Based questions.

Internal choice is given in this section .

Example of Qs and Answers Section Wise Section D

(a) Write the output of the code given below

```
p=5
def sum(q,r=2):
    global p
    p=r+q**2
    print(p, end= '#')

a=10
b=5
sum(a,b)
sum(r=5,q=1)
```

Ans:

105#6#

(1 mark for 105# and 1 mark for 6#)

Example of Qs and Answers Section Wise Section D

The code given below inserts the following record in the table Student:
RollNo – integer
Name – string
Clas – integer
Marks – integer
Note: the following to establish connectivity between Python and MYSQL:
Username is root
Password is tiger
The table exists in a MYSQL database named school.
The details (RollNo, Name, Clas and Marks) are to be accepted from the user.

Write the following missing statements to complete the code:
Statement 1 – to form the cursor object
Statement 2 – to execute the command that inserts the record in the table Student.
Statement 3- to add the record permanently in the database

```
import mysql.connector as mysql
def sql_data():
    con1=mysql.connect(host="localhost",user="root", password="tiger", database="school")
    mycursor=_____                    #Statement 1
    rno=int(input("Enter Roll Number :: "))
    name=input("Enter name :: ")
    clas=int(input("Enter class :: "))
    marks=int(input("Enter Marks :: "))
    querry="insert into student values({},'{}',{},{})".format(rno,name,clas,marks)
    _____                             #Statement 2
    _____                             # Statement 3
    print("Data Added successfully")
```

Ans:

Statement 1: con1.cursor()

Statement 2: mycursor.execute(querry)

Statement 3: con1.commit()

(1 mark for each correct answer)

Example of Qs and Answers Section Wise

Section E (Qs 34 to Qs 35) Each carries 4 marks.

This ques have sub parts.

SQL ques -

1. **General concepts**
2. **DML commands.**

Stub program on binary file program. Student has to fill the blanks in the program.

Example

Navdeep creates a table RESULT with a set of records to maintain the marks secured by students in Sem 1, Sem2, Sem3 and their division. After creation of the table, he has entered data of 7 students in the table.

Table: **RESULT**

ROLL_NO	SNAME	SEM1	SEM2	SEM3	DIVISION
101	KARAN	366	410	402	I
102	NAMAN	300	350	325	I
103	ISHA	400	410	415	I
104	RENU	350	357	415	I
105	ARPIT	100	75	178	IV
106	SABINA	100	205	217	II
107	NEELAM	470	450	471	I

Based on the data given above answer the following questions:

i. Identify the most appropriate column, which can be considered as Primary key.

Ans: ROLL_NO

(1 mark for correct answer)

(ii) If two columns are added and 2 rows are deleted from the table result, what will be the new degree and cardinality of the above table?

Ans:

New Degree: 8

New Cardinality: 5

(1/2 mark for correct degree and ½ mark for correct cardinality)

(iii) Write the statements to:

a. Insert the following record into the table – Roll No- 108, Name -Aadit, Sem1- 470, Sem2-444, Sem3-475, Div – I.
b. Increase the SEM2 marks of the students by 3% whose name begins with 'N'.

Ans:

a. INSERT INTO RESULT VALUES (108, 'Aadit', 470, 444, 475, 'I');
b. UPDATE RESULT SET SEM2=SEM2+ (SEM2*0.03) WHERE SNAME LIKE "N%";

(1 mark for each correct statement)

OR (Option for Part iii only)

iii. Write the statements to:

a. Delete the record of students securing IV division.

b. Add a column REMARKS in the table with datatype as varchar with 50 characters

Ans:

a. DELETE FROM RESULT WHERE DIV=’IV’;

b. ALTER TABLE RESULT ADD (REMARKS VARCHAR(50));

(1 mark for each correct statement)

Q35. Aman is a Python programmer. He has written a code and created a binary file **record.dat** with employeeid, ename and salary. The file contains 10 records. He now has to update a record based on the employee id entered by the user and update the salary. The updated record is then to be written in the file temp.dat. The records which are not to be updated also have to be written to the file temp.dat. If the employee id is not found, an appropriate message should to be displayed. As a Python expert, help him to complete the following code based on the requirement given above:

```
import _______                                          #Statement 1
def update_data():
    rec={}
    fin=open("record.dat","rb")
    fout=open("_______________")                        #Statement 2
    found=False
    eid=int(input("Enter employee id to update their salary :: "))
    while True:
        try: rec=_________________          #Statement 3
            if rec["Employee id"]==eid:
                found=True
```

```
                rec["Salary"]=int(input("Enter new salary :: "))
                pickle._____                          #Statement 4
            else:
                pickle.dump(rec,fout)
        except:
            break
    if found==True:
        print("The salary of employee id ",eid," has been updated.")
    else:
        print("No employee with such id is not found")
    fin.close()
    fout.close()
```

(i) Which module should be imported in the program? (Statement 1)

Ans: pickle

(1 mark for correct module)

(ii)Write the correct statement required to open a temporary file named temp.dat for writing the updated data. (Statement 2)

Ans:

fout=open('temp.dat', 'wb')

(1 mark for correct statement)

(iii) Which statement should Aman fill in Statement 3 to read the data from the binary file, record.dat and in Statement 4 to write the updated data in the file, temp.dat?

Ans:

Statement 3: pickle.load(fin)

Statement 4: pickle.dump(rec,fout)

(1 mark for each correct statement)