CLASS XII
POST MID TERM EXAM 2024- 2025
SUBJECT: COMPUTER SCIENCE
SET B2

Time allowed: 3 Hours **Maximum Marks: 70**

General Instructions:

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

Q No.	Section-A (21 x 1 = 21 Marks)	Marks
1.	Which of the following protocols allows the use of HTML on the WWW ? a. HTTP b. PPP c. FTP d. POP	(1)
2.	Select the correct output of the code: **D= {"AMIT": 90, "RESHMA": 96, "SUKHBIR": 92, "JOHN":95}** **print("JOHN" in D, 90 in D, sep="#")** a.True#False b.False#True c.False#False d. True#True	(1)
3.	Abhinav wants to transfer pictures from her mobile phone to her laptop. She uses Bluetooth Technology to connect two devices. Which type of network will be formed in this case? a. PAN b. LAN c. MAN d. WAN	(1)
4.	Identify the correct statement to create cursor: **import pymysql as msq** **con=msq.connect(# Connection String)** **mycursor=**_____ a. con.cursor() b. con.create_cursor() c. con.open_cursor() d. con.get_cursor()	(1)
5	Which SQL function is used to count the number of rows in a SQL query? a. COUNT(fieldname) b. NUMBER (fieldname) c. SUM (fieldname) d. COUNT (*)	(1)

6	Which of these is not a communication channel? a. Wi-Fi b. Microwave c. Radio wave d. Satellite	(1)
7	_____ is the total number of attributes in a relation. a. Primary Key b. Entity c. Cardinality d. Degree	(1)
8	Consider the statements given below and then choose the correct output from the given options: **T="Generative AI and Innovation"** **P=T.split()** **print(P[0].upper(),P[1].lower(),P[3].replace('n','$'))** a. GENERATIVE ai I$$ovatio b. GENERATIVE ai I$$ovatio$ c. AI ai I$$ovatio$ d. GENERATIVE I$$$	(1)
9	Which output option/options are possible : **import random** **STRING="CBSEONLINE"** **NUMBER = random.randint (0, 3)** **N=9** **while STRING[N] != "L":** **print (STRING[N] + STRING[NUMBER] + "#", end=" ")** **NUMBER = NUMBER +1** **N=N-1** a. ES#NE#IO# c.LE#NO#ON# b. NS#IE#LO# d. EC#NB#IS#	(1)
10	SMTP stands for _____ a. Systematic Mail Transfer Protocol b. Simple Matter Traverse Protocol c. Simple Mail Transfer Protocol d. Simple Mail Travel Parameter	(1)
11	_____ address is assigned to network cards by the manufacturer a. IP b. MAC c. Unique d. Domain	(1)
12	State whether the following statement is True or False: An exception may be raised even if the program is syntactically correct.	(1)
13	The modem at the sender's end acts as a _____. a. Model b. Modulator c. Demodulator d. Convertor	(1)
14	Sanjana wants to read a binary file and take the file pointer to 33rd byte from the end of the file.Which option will she select? a. F.seek(33,1) b.F.seek(33,0) c. F.seek(-33,2) d. F.seek(33,2)	(1)

15	What is the datatype of row/rows returned by method fetchone() used on the resultset? a. list b. tuple/tuples c. string d. none of the above	(1)

16.	What is the output of the following SQL statement? **SELECT COUNT(*) FROM employees;** (a) The total number of employees in the table (b) The number of employees with a non-null value in their ID column (c) The number of unique employee IDs in the table (d) The average number of employees per department in the table	(1)
17.	Suppose the contents of a text file is as follows : **poem.txt** Jack and Jill went up the hill What will be the output of the following code : **F=open("poem.txt")** **L=F.readlines()** **for i in L:** **S=i.split()** **print(len(S),end='#')** (i) 2#4# (ii) 3#4# (iii) 2# (iv) 7#	(1)
18.	How can the user change “Sad” into “Happy” in the “Mood” column in the Personality table? a. Update Personality set Mood=”Happy” where Mood=”Sad”; b. Update Personality set Mood=”Sad” where Mood=”Happy”; c. Modify Personality set Mood=”Happy” where Mood=”Sad”; d. Alter Personality set Mood=”Sad” where Mood=”Happy”;	(1)
19.	Which switching technique breaks data into smaller packets for transmission, allowing multiple packets to share the same network resources.	(1)

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 (A): The PRIMARY KEY constraint in SOL is used to ensure that each row in a table is unique. Reason (R): The PRIMARY KEY constraint is a combination of the NOT NULL and UNIQUE constraints.	(1)

21.	Assertion (A):- If the arguments in the function call statement match the number and order of arguments as defined in the function definition,such arguments are called positional arguments. Reasoning (R):- During a function call, the argument list first contains default argument(s) followed by positional argument(s)	(1)

Q No	Section-B (7 x 2 = 14 Marks)	Marks
22	(i) How is circuit switching different from packet switching? (ii) What is the importance of XML over HTML?	(2)
23	Rajesh is working on a database named MyDatabase, in which he has created a table named “Watch” containing columns Watchid, Name, Price, and Man_Date. After creating the table, he realized that the attribute Company has to be added to the table . This attribute WatchId cannot be left blank and should not have duplicate value Help him to write the commands to complete both tasks.	(2)
24.	What is the importance of a foreign key in a table? Explain with a suitable example.	(2)
25.	Predict the output of the Python code given below: **def compare(N1, N2) :** **if N1%N2:** **return N1-N2** **else:** **return N2-N1** **NUM=[10,23,14,54,32]** **for CNT in range (4,0,-1):** **A= NUM[CNT]** **B = NUM[CNT-1]** **print (compare (A,B), '#', end=' ')**	(2)
26	Consider the following table CUSTOMERS in database SALES : **CUSTOMERS** CNO | CNAME | ADDRESS 101 | RICHA JAIN | DELHI 102 | SURBHI SINHA | CHENNAI 103 | LISA THOMAS | BANGALORE 104 | IMRAN ALI | DELHI 105 | ROSHAN SINGH | CHENNAI A cursor named Cur is created in Python for a connection established by the host, to execute the following set of queries: **Cur.execute('USE SALES')** **Cur.execute(“SELECT * FROM CUSTOMER”')**	(2)

```
Recs=Cur.fetchall()
for R in Recs:
    print(R[1])
```

a. Write the output for the execution of the above Python statements.

b. What will the value of : **print(Cur.rowcount)**

27. Consider the following table and answer the following queries : (2)

Table: Travel_Details

NO	NAME	TDATE	KM	CODE	NOP
101	JAMISH	2015-11-13	200	BB1	32
102	VEDIKA SHARMA	2016-04-21	100	BB2	45
103	TARUN RAI	2016-03-23	350	BB3	42
104	JOHN	2016-02-13	90	BB3	40
105	AHMED KHAN	2015-01-10	75	BB4	2
106	RAVEENA	2016-04-21	80	BB5	4

a) SELECT COUNT (*),CODE FROM TRAVEL_DETAILS GROUP BY CODE HAVING COUNT(*)>1;
b) SELECT DISTINCT CODE FROM TRAVEL_DETAILS;
c) SELECT * FROM TRAVEL DETAILS WHERE KM<90 ORDER BY KM DESC;
d) SELECT * FROM TRAVEL_DETAILS WHERE NOP BETWEEN 40 AND 45;

28. (i) Define the term **bandwidth** with respect to computer networks. (2)

(ii) How is HTTP different from FTP?

Q No.	Section-C (3 x 3 = 9 Marks)	Marks
29.	Write the definition of a function ChangeGender() in Python, which reads the contents of a text file "BIOPIC.TXT" and displays the content of the file with every occurrence of the word 'he' replaced by 'she'. For example, if the content of the file "BIOPIC.TXT" is as follows : **Last time he went to Agra, there was too much crowd, which he did not like. So this time he decided to visit some hill station.** The function should read the file content and display the output as : **Last time she went to Agra, there was too much crowd, which she did not like. So this time she decided to visit some hill station.**	(3)
30.	A list, City contains the following record as list elements: [Citycode, Cityname, Population_in_Million] Each of these records is nested together to form a nested list. Write the following user-defined functions in Python to perform the specified operations on the stack named city. (i) Push_element(City): It takes the nested list as an argument and pushes a list object containing the name of the city whose population is less than 20 Million. (ii) Pop_element(): It pops the objects from the stack and displays them. Also, the function should display “Stack Empty” when there are no elements in the stack. For example: If the nested list contains the following data: City=[[11,"NewDelhi",30],[22,"Mumbai",20],[33,"Kolkata",15],[44,"Chennai",11]] The output should be: [33,"Kolkata",15] [44,"Chennai",11] Stack Empty	(3)
31.	Predict the output of the following code: **d = {"apple": 15, "banana": 7, "cherry": 9}** **str1 = ""** **for key in d:** **str1 = str1 + str(d[key]) + "@" + “\n”** **str2 = str1[:-1]** **print(str2)**	(3)

Q No.	Section-D (4 x 4 = 16 Marks)	Marks
32	Vedansh is a Python programmer working in a school. For the Annual Sports Event, he has created a csv file named Result.csv, to store the results of students in different sports events. The structure of Result.csv is : [St_Id, St_Name, Game_Name, Result] where St_Id is Student ID (integer) St_Name is Student Name (string) Game_Name is name of game in which student is participating(string) Result is result of the game whose value can be either 'Won', 'Lost' or 'Tie' For efficiently maintaining data of the event, Vedansh wants to write the following user defined functions: ● Accept() – to accept a record from the user and add it to the file Result.csv. The column headings should also be added on top of the csv file. ● wonCount() – to count the number of students who have won any event.	(4)
33.	Consider the following tables given below : **Table: WORKER** **ECODE** | **NAME** | **DESIGN** | **PLEVEL** | **DOJ** | **DOB** 11 | Radhe Shyam | Supervisor | P001 | 13-Sep-2004 | 23-Aug-1981 12 | Chander Nath | Operator | P003 | 22-Feb-2010 | 12-Jul-1987 13 | Fizza | Operator | P003 | 14-Jun-2009 | 14-Oct-1983 15 | Ameen Ahmed | Mechanic | P002 | 21-Aug-2006 | 13-Mar-1984 18 | Sanya | Clerk | P002 | 19-Dec-2005 | 09-Jun-1983 **Table : PAYLEVEL** **PLEVEL** | **PAY** | **ALLOWANCE** P001 | 26000 | 12000 P002 | 22000 | 10000 P003 | 12000 | 6000 Write SQL queries for the following: (i) Display name and allowance of workers from tables WORKER and PAYLEVEL. (ii) Display the structure of the table WORKER table. (iii) Display the count of worker names of each designation along with the designation. (iv) Display the names of workers who joined after year 2008.	(4)

34. Consider the following tables, and write the queries for (a) to (d) (4)

WATCHES

Watchid	Watch_name	Price	Type	Qty_store
W001	High time	10000	Unisex	100
W002	Lifetime	15000	Ladies	150
W003	Wave	20000	Gents	200
W004	High fashion	7000	Unisex	250
W005	Golden time	25000	Gents	100

SALE

Watchid	Qty_Sold	Quarter
W001	10	1
W003	5	1
W002	20	2
W003	10	2
W001	15	3
W002	20	3
W005	10	3
W003	15	4

(a) To display all the details of those watches whose name ends with 'time'

(b) To display watch name and price of those watches which have price range between 5000-15000

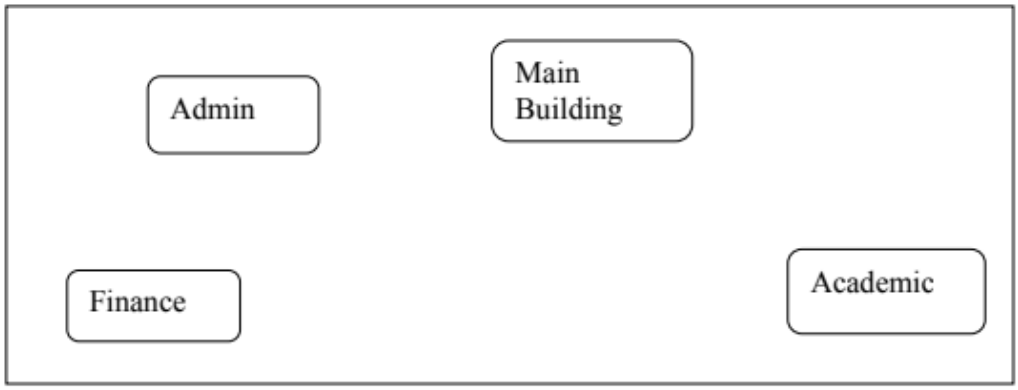
(c) To display the total quantity in store of unisex type watches

(d) To display the watch name and the quantity sold in the first quarter

35.	Anya has created a table named Student in MYSQL database,SCHOOL: Rno(Roll number)- integer Name(Name) - string DOB (Date of birth) – Date Fee – float Note the following to establish connectivity between Python and MySQL: Username - root Password - tiger Host - localhost Anya now wants to display the records of students whose fee is more than 5000. Help her to write the program in Python.	(4)

Q.No.	**SECTION E (2 X 5 = 10 Marks)**	Marks
36.	Radha is an HR manager working in an IT company. She needs to manage the records of various employees. For this, she wants the following information of each employee to be stored: - ED – integer - EName – string - Designation – string - Salary – float You, as a programmer of the company, have been assigned to do this job for Radha. (i) Write a function to input the data of a candidate and append it in a binary file. (ii) Write a function to read the data from the binary file and display the data of all those candidates who are not "Senior Manager"	(5)

37. Himachal University is setting up a secured network for its campus in Himachal Pradesh for operating its day-to-day office & web-based activities. They are planning to have network connectivity between four buildings. Answer the questions (i) to (iv) after going through the building positions in the campus & other details which are given below: (5)



The distances between various buildings of university are given as:-

Building 1	Building 2	Distance(in mtrs.)
Main	Admin	50
Main	Finance	100
Main	Academic	70
Admin	Finance	50
Finance	Academic	70
Admin	Academic	60

Number of computers:-

Building	No. of Computers
Main	150
Admin	75
Finance	50
Academic	60

As a network expert, you are required to give best possible solutions for the given queries of the university administration:-

(a) Suggest cable layout for the connections between the various buildings.

(b) Suggest the most suitable building to house the server of the network of the university,

(c) Suggest the placement of the following devices with justification:

1. Switch/Hub 2. Repeater

(d) Suggest the technology out of the following for setting-up very fast Internet connectivity among buildings of the university

1. Optical Fiber 2. Coaxial cable 3. Ethernet Cable

(e)Which network device will be used to connect computers in each block to form a local area network?