**SAMPLE QUESTION PAPER (THEORY)I**
**CLASS: XII SESSION: 2024-25**
**COMPUTER SCIENCE (083)**

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

**General Instructions:**

- This question paper contains 37 questions.
- All questions are compulsory. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions
- 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. | State True or False:<br>The Python interpreter handles logical errors during code execution. | (1) |
| 2. | Consider two tuples : tup1=(1,2,4,3) ; tup2=(1,2,3,4)<br>What will the following statement print(tup1< tup2)<br>A) True B) False C) Error D) None of these | (1) |
| 3. | Which of the following statements are True.<br>a. [1,2,3,4]>[4,5,6] b. [1,2,3,4]< [1, 5, 2, 3]<br>c. [1, 2, 3, 4] >[1,2,0,3] d. [1,2,3,4]< [ 1, 2, 3, 2 ]<br>A) a, b, d B) a, c, d C) b, c D) only d | (1) |
| 4. | …….function will always return tuple of 3 elements.<br>A) index() B) split() C) partition() D) strip() | (1) |
| 5. | Which of the following is the correct syntax of string slicing:<br>A) str_name[start:end] B) str_name[start:step]<br>C) str_name[step:end] D) str_name[step:start] | (1) |
| 6. | What will be the output of the following code?<br>T= (‘C’,‘O’,’M’,’P’,’U’,’T’,’E’,’R’)<br>print(T[-2:-7:-2])<br>A) (’R’,’T’,’P’,’O’) B) (’E’,’U’,’M’) C) (‘O’,’M’,’P’) D) (’M’,’P’,’U’) | (1) |
| 7. | Which of the following statements are not correct:<br>A. An element in a dictionary is a combination of key-value pair<br>B. A tuple is a mutable data type<br>C. We can repeat a key in dictionary<br>D. clear( ) function is used to deleted the dictionary.<br>A) a, b, c B) b, c, d C) b, c, a D) a, b, c, d | (1) |
| 8. | What will be the output of the following code snippet?<br>a = {(1,2):1,(2,3):2}<br>print(a[(1,2)])<br>A) Key Error B) 1 C) {(2,3):2} D) {(1,2):1} | (1) |
| 9. | An attribute in a relation is foreign key if it is the _____key in any other relation.<br>(a) Candidate (b) Primary (c) Super (d) alternate | (1) |
| 10. | Which statement will move the file pointer 10 bytes backward from current position?<br>(a) f.seek(-10,0) (b) f.seek(10,0) (c) f.seek(-10,1) (d) None of the above | (1) |
| 11. | State whether the following statement is True or False:<br>It is raised when the file specified in a program statement cannot be opened.<br>(a) SyntaxError (b) ValueError (c) IOError (d) KeyboardInterrupt | (1) |

| | | |
|---|---|---|
| 12. | What will be the output of the following code?<br>x=3<br>def myfunc():<br>global x<br>x+=2<br>print(x,end=' ')<br>print(x,end=' ')<br>myfunc()<br>print(x,end=' ')<br>(a) 3 5 5 (b) 5 5 5 (c) 5 3 5 (d) 3 3 5 | (1) |
| 13. | In SQL, what is the use of IS NULL operator? | (1) |
| 14. | Abhay want to remove the table STORE from the database MyStore. Which command will he use from the following:<br>a) DELETE FROM store; (b) DROP TABLE store;<br>c) DROP DATABASE mystore; (d) DELETE store FROM mystore; | (1) |
| 15. | Which function is used to display the total number of records/cardinality from table in a database?<br>(a) sum(*) (b) total(*) (c) count(*) (d) return(*) | (1) |
| 16. | Which of the following types of table constraints will prevent the entry of duplicate rows? 1<br>(a) Unique (b) Distinct (c) Primary Key (d) NULL | (1) |
| 17. | Which of the following is NOT a standard Python exception?<br>(a) KeyError (b) ValueException (c) IndexError (d) TypeError | (1) |
| 18. | Which transmission media is capable of having a much higher bandwidth (data capacity?<br>(a) Coaxial (b) Twisted pair cable (c) Untwisted cable (d) Fiber optic | (1) |
| 19. | Switch is a<br>(a) Broadcast device (b) Uni-cast device<br>(c) Multi-cast device (d) None of the above | (1) |
| | **Q20 and Q21 are Assertion(A) and Reason(R) based questions. Mark the correct choice as:**<br>**(A) Both A and R are true and R is the correct explanation for A**<br>**(B) Both A and R are true and R is not the correct explanationfor A**<br>**(C) A is True but R is False**<br>**(D) A is False but R is True** | |
| 20. | Assertion (A): Default parameters are used in Python functions to specify values for arguments that are not explicitly passed by the caller.<br>Reasoning (R): This allows the function to have a default behaviour when the caller does not provide a value for an argument. | (1) |
| 21. | Assertion (A): The BETWEEN operator in SQL is used to match a within a range of values.<br>Reasoning (R): The BETWEEN operator can only be used with numerical values in SQL. | (1) |
| | **Section-B ( 7 x 2=14 Marks)** | |
| 22. | What is slicing? Write the output for the following:<br>Str="Computer Science"<br>(i) print(Str[-10:4]) (ii) print(Str[-10:-4]) | (2) |
| 23. | What is an exception in Python? Write suitable example. | (2) |
| 24. | If L1=[1,2,3,2,1,2,4,2, . . . ], and L2=[10,20,30, . . .], then<br>*(Answer using built in functions only)*<br>(I)<br>A) Delete 5th position value of the list L2.<br>OR<br>B) Empty list L2<br>(II) | (2) |

| | | |
|---|---|---|
| | A) Write a statement to insert element 7 in 5th position of List L1<br>OR<br>B) Write a statement to reverse the elements of list L1. | |
| 25. | What are the possible outcome(s) will get after execution of the following code?<br>import random<br>lst=['a', 'b', 'c', 'd', 'e']<br>for i in range(3):<br>print(ord(random.choice(lst))+1,'@', end= "")<br>(a) 102@99@100@ (b) 98@99@98@ (c) 103@100@98 (d) 97@99@101@ | (2) |
| 26. | Write a program to replaces elements having even values with its half and elements having odd values with twice its value in a list.<br>eg: if the list contains<br>3, 4, 5, 16, 9<br>then rearranged list as<br>6, 2,10,8, 18<br>However, there are syntax and logical errors in the code. Rewrite it after removing all errors. Underline all the corrections made.<br><br>Def rearranged(L):<br>L=[3, 4, 5, 16, 9]<br>for i in range(n):<br>if L[i] % 2 == 0:<br>L[i] =/ 2<br>else:<br>L[i] =/ 2<br>print (L) | |
| 27. | A) List one advantage and one disadvantage of Ring topology.<br>**OR**<br>B) Expand the term MODEM. What is the use of MODEM? | (2) |
| 28. | (i) a) An attribute A of datatype varchar(20) has the value "Amit" . The attribute B of datatype char(20) has value "Karanita" . How many characters are occupied in attribute A ? How many characters are occupied in attribute B?<br>**OR**<br>(ii) a) While creating a table named "Employee", Mr. Rishi got confused as which data type he should choose for the column "EName" out of char and varchar. Help him in choosing the right data type to store employee name. Give valid justification for the same. | (2) |
| | **Section-C ( 3 x 3 = 9 Marks)** | |
| 29. | A) A text file contains alphanumeric text (say an.txt). Write a program that reads this text file and prints only the numbers or digits from the file.<br>**OR**<br>B) Write a function remove_lowercase() that accepts two filenames, and copies all the lines that do not start with a lowercase letter from the first file into the second. | (3) |
| 30. | A) Julie has created a dictionary containing names and marks as key value pairs of 6 students. Write a program, with separate user defined functions to perform the following operations:<br>● Push the keys (name of the student) of the dictionary into a stack, where the corresponding value (marks) is greater than 75.<br>● Pop and display the content of the stack.<br>For example: If the sample content of the dictionary is as follows:<br>R={"OM":76, "JAI":45, "BOB":89, "ALI":65, "ANU":90, "TOM":82}<br>The output from the program should be: TOM ANU BOB OM | |

**OR**

(B) Write a program to create a Stack for storing only odd numbers out of all the numbers entered by the user. Display the content of the Stack along with the largest odd number in the Stack. (Hint. Keep popping out the elements from stack and maintain the largest element retrieved so far in a variable. Repeat till Stack is empty) (3)

31. Predict the output of the following code: (3)

```
def fun(s):
    k=len(s)
    m=" "
    for i in range(0,k):
        if(s[i].isupper()):
            m=m+s[i].lower()
        elif s[i].isalpha():
            m=m+s[i].upper()
        else:
            m=m+'bb'
    print(m)
fun('school2@com')
```

OR

Predict the output of the following code:

```
v=50
def display(n):
  global v
  v=25
  if n%7==0:
    v=v+n
  else:
    v=v-n
print(v,end="#")
display(20)
print(v)
```

**Section-D ( 4 x 4 = 16 Marks)**

32. Write the characteristics of CSV files. (4)

Write a Program in Python that defines and calls the following user defined functions:

i) APPEND() – To add two records of book to a CSV file BOOK.csv". Each record consists of a list with field elements as bookid, bname and price to store book id, book name and book price respectively.

ii) DISP() – To count and display the number of records in the following format. Books above price 500 :

| BookID | Bname | price |
|---|---|---|
| 101 | Computer Application | 450 |
| 102 | Computer Science | 670 |
| 105 | Informatics Practices | 500 |

33. Consider the tables BOOK and MEMBER Given table: (4)

Table: BOOK

| CODE | BNAME | TYPE |
|---|---|---|
| F101 | The Priest | Fiction |
| L102 | German easy | Literature |
| C101 | Tarzan in the lost world | Comic |
| F102 | Untold story | Fiction. |
| C102 | War heroes | Comic |

TABLE: MEMBER

| MNO | MNAME | CODE | ISSUEDATE |
|---|---|---|---|
| M101 | Raghav Sinha | L102 | 2016-10-13 |

| | | | |
|---|---|---|---|
| M103 | Sarthak John | F102 | 2017-02-23 |
| M102 | Anisha Khan | C101 | 260-06-12 |

Write SQL queries for the following:

(i) To display all details from table MEMBER in descending order of ISSUEDATE.

(ii) To display the CODE and BNAME of all Fiction Type books from the table Book.

(iii) To display each Member name and corresponding Bookname.

(iv) To display Booknames, Member name and issue date for books of type 'Fiction'.

OR

Write the output of the queries (i) to (iv) based on the table, SALES given below:

**Table : SALES**

| SID | NAME | SALES | DESIG |
|---|---|---|---|
| S1 | ANITA SINGH ARORA | 250000 | D1 |
| S2 | Y.P. SINGH | 1300000 | D3 |
| S3 | TINA JAISWAL | 1400000 | D2 |
| S4 | GURDEEP SINGH | 1250000 | D2 |
| S5 | SIMI FAIZAL | 1450000 | D1 |

i) SELECT DESIG FROM SALES WHERE NAME LIKE '%H';

ii) SELECT DESIG, COUNT(*), MIN(SALES) FROM SALES GROUP BY DESIG HAVING COUNT(DESIG)>1;

iii) SELECT NAME,SALES FROM SALES WHERE SALES BETWEEN 100000 AND 1000000;

iv) SELECT DESIG, SUM(SALES) FROM SALES GROUP BY DESIG;

34. **Consider the following MOVIE table and write the SQL queries based on it.** (4)

**Table : Movie**

| MovieID | MovieName | Category | ReleaseDate | ProductionCost | BusinessCost |
|---|---|---|---|---|---|
| 001 | Hindi_Movie | Musical | 2018-04-23 | 124500 | 130000 |
| 002 | Tamil_Movie | Action | 2016-05-17 | 112000 | 118000 |
| 003 | English_Movie | Horror | 2017-08-06 | 245000 | 360000 |
| 004 | Bengali_Movie | Adventure | 2017-01-04 | 72000 | 100000 |
| 005 | Telugu_Movie | Action | NULL | 100000 | NULL |
| 006 | Punjabi_Movie | Comedy | NULL | 30500 | NULL |

a) Display all the information from the Movie table.

b) List business done by the movies showing only MovieID, MovieName and Total_Earning. Total_Earning to be calculated as the sum of ProductionCost and BusinessCost.

c) List the different categories of movies.

d) Find the net profit of each movie showing its MovieID, MovieName and NetProfit. Net Profit is to be calculated as the difference between Business Cost and Production Cost.

35. Aarya has created a table named Emp in MySQL: (4)

EmpNo – integer

EmpName – string

Age– integer

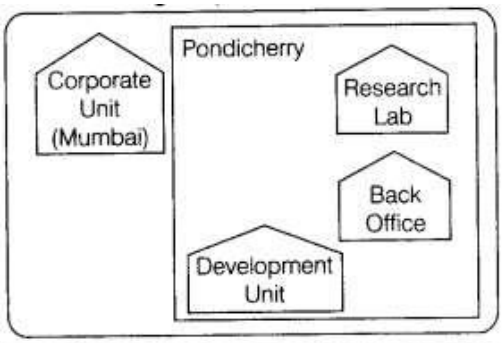
Salary – integer

Note the following to establish connectivity between Python and MYSQL:

- Username - root
- Password - tiger
- Host - localhost
- The Emp table exists in a MYSQL database named company.
- The details of Emp table (EmpNo, EmpName, Age and Salary)

Aarya wants to display All Records of Emp relation whose age is greater than 55. Help Aarya to write program in python.

| **Q.No.** | **SECTION E (2 X 5 = 10 Marks)** | **Marks** |
|---|---|---|

| | | |
|---|---|---|
| 36. | A binary file "Book.dat" has structure [BookNo, Book_Name, Author, Price].<br>i. Write a user defined function createFile() to input data for a record and add to Book.dat.<br>ii. Write a function to increase price 100/- those Book name has 'Computer Science'.<br>iii. Write a function countRec(Author) in Python which accepts the Author name as parameter and count and return number of books by the given Author are stored in the binary file "Book.dat". | (5) |
| 37. | Bias Methodologies is planning to expand their network in India starting with three cities in India to build infrastructure for research and development of their chemical products. The company has planned to setup their main office in Pondicherry at three different locations and have named their offices as Back Office, Research Lab and Development Unit. The company has one more research office namely Corporate Unit in Mumbai. A rough layout of the same is as follows:<br>  <br><br>Research Lab 158<br>Development Unit 90<br>Back Office 79<br>Corporate Unit 51<br><br>Approximate distance between these offices is as follows:<br>From / To / Distance<br>Research Lab – Back Office – 110 m<br>Research Lab – Development Unit – 16 km<br>Research Lab – Corporate Unit – 1800 km<br>Back Office – Development Unit – 13 km<br><br>In continuation of the above, the company experts have planned to install the following number of computers in each of these offices.<br>(i) Suggest the kind of network required (out of LAN, MAN, WAN) for connection each of the following office unit<br>(a) Research Lab and Back Office<br>(b) Research Lab and Development Unit<br>(ii) Which of the following devices will you suggest for connecting all the computers with each of their office units?<br>(a) Switch/Hub (b) Modem (c) Telephone<br>(iii) Which of the following communication media, will you suggest to be procured by the company for connecting their local office units in Pondicherry for very effective (high speed) communications?<br>(a) Telephone cable (b) Optical fiber (c) Ethernet cable<br>(iv) Suggest a cable/wiring layout for connecting the company's local office units located in Pondicherry. Also, suggest an effective method/technology for connecting the company's office located in Mumbai.<br>(v) Suggest the most appropriate location of the server inside the Pandicharry campus. Justify your choice. | (5) |