**KENDRIYA VIDYALAYA SANGATHAN: JABALPUR REGION**

**FIRST PRE-BOARD (2024-25)**

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

**COMPUTER SCIENCE (083-THEORY)**

**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 carries1 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.

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| **Q No.** | **Section-A (21x1=21Marks)** | **Marks** |
| 1. | State-True or false:  Python interpreter handles semantic errors during code execution. | (1) |
| 2. | 1. Which of the following will return False: 2. A) not (True and False) B) True or False 3. C) not (True or False) D) not (False and False) | (1) |
| 3. | 1. Which of the following function will help in converting a string to list with elements separated according to delimiter passed? 2. A) list( ) B) split( ) C) str( ) D) shuffle( ) | (1) |
| 4. | What is the output of the following?  OCEANS=('pacific','arctic','Atlantic','southern')  print(OCEANS[4])  A) ‘southern’ B) (‘southern’) C) Error D) INDEX | (1) |
| 5. | What is the output of the following  x="Excellent day"  print(x[1::3])  A) x B) xlnd C) error D) dnlx | (1) |
| 6. | What can be the possible output of the following code: def Element(x):  z=""  for y in x:  if not y.isalpha():  z=z+z.join(y)  print(z) Element("W2e0Py2th4n") #Function Call   1. 2 B) 02 C) 024 D) 2024 | (1) |
| 7. | If D={‘Mobile’:10000, ‘Computer’:30000, ‘Laptop’:75000} then which of the following command will give output as 30000  A) print(D) B) print(D['Computer'])  C) print(D.values( )) D)print(D.keys( )) | (1) |
| 8. | Which of the following is not correct?  (A) del deletes the list or tuple from the memory  (B) remove deletes the list or tuple from the memory  (C) pop is used to delete an element at a certain position  (D) pop(<index>) and remove(<element>) performs the same operation | (1) |
| 9. | A relation in a database can have \_\_\_\_\_ number of primary key(s)?  A) 1 B) 2 C) 3 D) 4 | (1) |
| 10. | What is the value of ‘p’ and how many characters will be there in the variable ‘data’ in the following statement  with open ("lists.txt","r",encoding="utf-8") as F:  data = F.read(100)  p=F.seek(10,0)  print(p)  A) 10, 100 B) 100, 10 C) 10, 110 D) 110, 10 | (1) |
| 11. | Write the name of block / command(s) can be used to handle the error/exception in Python. | (1) |
| 12. | What will be the output of the following code?  def add():  c=1  d=1  while(c<9):  c=c+2  d=d\*c  print(d, end="$")  return c  print(add( ),end="\*")   1. 945$9\* B) 945$9 C) 9\*945$ D) 9$945\* | (1) |
| 13. | Which type of command is used to delete the structure of the relation?  A) DDL B) DML C) Select D) Cannot delete structure | (1) |
| 14. | What will the following query show?  (considering a table student with some columns)  SELECT \* FROM students WHERE age in (17,19,21);   1. Show tuples of students table with all the age values from 17 to 21 2. Show tuples of students table only with the age values 17,19,21 3. Show tuples of students table only with the age values other then 17,19,21 4. Show tuples of students table with all the age values outside the range 17 to 21 | (1) |
| 15. | Which of the following is not a data type in Python  A) date B) string C) tuple D) float | (1) |
| 16. | Which of the following is not an aggregate function?  A) max( ) B) count( ) C) sum( ) D) upper( ) | (1) |
| 17. | Which of the following protocol helps in e-mail services?   1. FTP B) PPP C) UDP D) MIME | (1) |
| 18. | In order to cover a long-distance network which of the following device will be helpful?   1. Modem B) Gateway C) Switch D) Repeater | (1) |
| 19. | What is SIM & GPRS?   1. Small Information Machine & Global People Research and Science 2. Subscriber Identity Module & General Packet Radio Service 3. Subscriber Information Module & General Public Radio Shrive 4. None of these | (1) |
| **Q20 and Q21 are Assertion(A) and Reason(R) based questions. Mark the correct choice as:**   1. **Both A and R are true and R is the correct explanation for A** 2. **Both A and R are true and R is not the correct explanation for A** 3. **A is True but R is False**   **D) A is False but R is True** | | |
| 20. | Assertion(A): In a relation of RDBMS, redundancy can be reduced.  Reasoning (R): This can be done with the help of join operations in between relation. | (1) |
| 21. | Assertion (A): A function in Python can have any number of arguments.  Reasoning(R): variable length parameter can be used to deal with such number of arguments. | (1) |
| **Q No** | **Section-B (7x2=14 Marks)** | **Marks** |
| 22. | a) Explain dictionary with example?  b) What is the data type of (i) x=10 (ii) x=10,20 | (2) |
| 23. | Explain ‘in’ operator and write a small code in Python to show the use of ‘in’ operator. | (2) |
| 24. | Consider T=(10,20,30) and L=[60,50,40] answer the question I and II  (I) Write command(s) to add tuple T in list L.  OR  Write command to find and delete element 20 from tuple T | (1) |
| (II) Write command to add 50 in L at position 2.  OR  Write command to delete the variable T. | (1) |
| 25. | Identify the correct output(s) of the following code and write the minimum and the maximum possible values of the variable b.  import random  a="ComputerScience"  I=0  while (I<3):  b=random.randint(1,len(a)-1)  print(a[b],end='$')  I+=2   1. C$m$ B) m$p$ C) c$n$ D)c$e$c$ | (2) |
| 26. | Write a function named RECORDS() which can open a binary file named ‘district.dat’ containing the population data of all the districts of a state. The function will ask for the name of the district to be searched in file and display its data from the file. [Note: Name of dist. is stored at 0 index of record in district.dat] | (2) |
| 27. | [I]   1. Benjamin a database administrator created a table with few columns. He wants to stop duplicating the data in the table. Suggest how he can do so.   OR   1. Consider two tables student (rno, name, class) and marks (rno, mrk\_obt, percent). You as a database administrator how will your stop redundancy of data in the table students and how the tables students and marks can be connected with each other   [II]  A) Write an SQL command to change the data type of a column named price  to number (10,2) in a table named stationary  **OR**  B) Write an SQL command to change the values of all the rows of the column   price of table stationary to Null | (2) |
| 28. | 1. Difference between star and mesh topology.   **OR**   1. Write the full forms of (i) VoLTE **(ii)** GSM | (2) |

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| **Q No.** | **Section-C(3x3=9Marks)** | **Marks** |
| 29. | 1. Write a Python function that displays all the words starting from the letter ‘C’ in the text file "chars.txt".   **OR**   1. Write a Python function that can read a text file and print only numbers stored in the file on the screen (consider the text file name as "info.txt"). | (3) |
| 30. | 1. You have a stack named Inventory that contains records of medicines. Each record is represented as a list containing code, name, type and price.   Write the following user-defined functions in Python to perform the specified operations on the stack Inventory:   * 1. New\_In (Inventory, newdata): This function takes the stack Inventory and newdata as arguments and pushes the newdata to Inventory stack.   2. Del\_In(Inventory): This function removes the top most record from the stack and returns it. If the stack is already empty, the function should display "Underflow".   3. Show\_In(Inventory): This function displays the topmost element of the stack without deleting it. If the stack is empty, the function should display 'None'.   OR  **B**) Write the definition of a user-defined function `Push(x)` which accepts a string in parameter `x` and pushes only consonants in the string `N` into a Stack named `Consonants`.  Write function Display () to display all element of the stack.  For example: x = “Python”  Then the stack `Consonants’ should store: [‘P’,’y’,’t’,’h’,’n’] | (3) |
| 31. | Predict the output of the following code:  d={}  V="programs"  for x in V:  if x in d.keys():  d[x]=d[x]+1  else:  d[x]=1  print(d)  **OR**  Predict the output of the following code:  V="interpreter"  L=list(V)  L1=""  for x in L:  if x in ['e','r']:  L1=L1+x  print(L1) | (3) |

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| **Q No.** | **Section-D( 4x4=16Marks)** | **Marks** |
| 32. | Consider the tables given below  **Watches**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Id** | **Wname** | **Price** | **Type** | **Qty** | | W01 | High Time | 1200 | Common | 75 | | W02 | Life line | 1600 | Gents | 150 | | W03 | Wave | 780 | Common | 240 | | W04 | Timer | 950 | Gents | 460 | | W05 | Golden era | 1760 | Ladies | 250 |   **WSale**   |  |  |  | | --- | --- | --- | | **Wid** | **QSold** | **Qtr** | | W01 | 25 | 1 | | W02 | 23 | 1 | | W03 | 2 | 1 | | W04 | 10 | 2 | | W05 | 12 | 2 | | W03 | 22 | 3 | | W04 | 22 | 3 | | W02 | 23 | 3 |   “Note: Consider the table contains the above records.”   1. Write the queries for the following:    1. To display the total quantity sold (qsold) of wsale for qtr number 3.    2. To display the details of watches in descending order of qty.    3. To display the total quantity of watches.    4. To display the wname and maximum qsold from the table watches and wsale sold in qtr=1   **OR**   1. Write the output    1. Select sum(price) from watches;    2. Select \* from watched where wname '%e';    3. Select sum(qty), type from watches group by type;    4. Select wname, price, qtr from watches, wsold   where watches.id = wsale.wid and watches.type=’Common’; | (4) |
| 33. | A csv file "candidates.csv" contains the data collected from an online application form for selection of candidates for different posts, with the following data   * Candidate Name * Qualification * Percent\_XII * Percent\_Qualification   E.g. [‘Smith Jones’, ‘M Tech’, 80, 76]  Write the following Python functions to perform the specified operations on this file:   1. READ() function which can read all the data from the file and display only records with Percent\_XII more than 75 2. IDENTIFY() function which can find and print the number of such records which are having Percent\_XII not more than 75 | (4) |
| 34. | A school is maintaining the records of his departments and their in-charges in the following table and wants to see the data according to the following conditions. Study the following table and write the queries for (i) to (iii) and output for (iv)  **Table: Departments**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **D\_No** | **D\_name** | **D\_Incharge** | **Date\_join** | **grant** | | D94 | Physics | Binny | 12-10-2021 | 34000 | | D46 | Chemistry | Virat | 24-12-2010 | 49500 | | D78 | Biology | Jimmy | 10-05-2001 | 79000 | | D99 | Geography | Adams | 05-09-2006 | 62000 | | D23 | Primary | Ajay | 15-06-2009 | Null |  1. To display complete details of those departments where date\_join is less then   01-01-2010   1. To display the details of departments with the name of incharges containing   m in their name.   1. To increase the grant of department by 1200 of D\_no either D99 or D23. 2. Select d\_name, grant from department where grant is null;   **OR**  Select sum(grant) from department where date\_join>’10-10-2020’; | (4) |
| 35. | Consider a database named ‘DB’ containing a table named ‘Vehicle’ with the following structure   |  |  | | --- | --- | | **Field** | **Type** | | Model | char(10) | | Make\_year | Int(4) | | Qty | Int(3) | | Price | Number(8,2) |   Write the following Python function to perform the following operation as mentioned:   1. Add\_Vehicle() - which takes input of data and store it to the table 2. Search\_vehicle() – which can search a model given by user and show it on screen   \* Assume the following for Python – Database connectivity:  **Host:** localhost, **User:** root, **Password:** root | (4) |
| **Q.No.** | **SECTIONE(2X5=10 Marks)** | **Marks** |
| 36. | Rajiv Kumar is an owner of a company willing to manage the data of his office employees like their biodata, salary centrally for all his offices located in the state of Karnataka.  He planned to make a database named ‘company’ with the table ‘staff’ that contains following structure   * ID–integer(4) * Name–string(30) * Designation–string(10) * Birth\_date–date * Salary-decimal(10,2)   You as his database administrator write the following queries (I) to (IV)  **(I)** Create a table ‘staff’ with above structure and id as primary key.  **(II)** Display all the records with designation ‘Sales Executive’  **(III)** To change the designation = ‘Assistant’ of all the staff having salary from  15000 to 17000 (both values included)  **(IV)** To display the total number of records with name ending at letter ‘j’ | (2)  (1)  (1)  (1) |
| 37. | PK International is an advertising agency who is setting up a new office in Gurgaon in an area of 2.5 kms with four building Admin, Finance, Development, Organizers. You have been assigned the task to suggest network solutions by answering the following questions (i) to (v)   |  |  |  |  | | --- | --- | --- | --- | | **No. of computers in the building** | | **Distance between buildings** | | | Admin | 10 | Admin-Finance | 96 | | Finance | 10 | Admin-Development | 58 | | Development | 46 | Admin-Organizers | 48 | | Organizers | 25 | Finance-Development | 42 | |  | | Finance-Organizers | 35 | | Development-Financers | 40 |   Organizers  Finance  Development  Admin | (5) |
| 1. Suggest the most appropriate location of the server inside the above campus. Justify your choice. 2. Which hardware device can be used to connect all the computers within each building? 3. Draw the cable layout for economic and efficiently connect various buildings within the campus? 4. Whether repeater is required for your given cable layout? Yes or No? Justify your answer. 5. **A)** Give your recommendation for live visual communication between all the offices and customer located in different cities    1. Video Conferencing    2. Email    3. Telephony    4. Instant Messaging   **OR**  **B)** What type of network (PAN, LAN, MAN or WAN) will be setup  among the computers connected in this campus? |