

**Class: XII Session: 2020-21**  
**Computer Science (083)**  
**Sample Question Paper (Theory)**

**Maximum Marks: 70**

**Time Allowed: 3 hours**

**General Instructions:**

1. This question paper contains two parts A and B. Each part is compulsory.
2. Both Part A and Part B have choices.
3. Part-A has 2 sections:
  - a. Section – I is short answer questions, to be answered in one word or one line.
  - b. Section – II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.
4. Part - B is Descriptive Paper.
5. Part- B has three sections
  - a. Section-I is short answer questions of 2 marks each in which two question have internal options.
  - b. Section-II is long answer questions of 3 marks each in which two questions have internal options.
  - c. Section-III is very long answer questions of 5 marks each in which one question has internal option.
6. All programming questions are to be answered using Python Language only

| <b>Question No.</b> | <b>Part-A</b>   | <b>Marks allocated</b> |
|---------------------|---|------------------------|
|                     | <p style="text-align: center;"><b>Section-I</b></p> <p><b>Select the most appropriate option out of the options given for each question. Attempt any 15 questions from question no 1 to 21.</b></p> |                        |
| 1                   | Find the invalid identifier from the following<br>a) MyName    b) True    c) 2ndName    d) My_Name  | 1                      |
| 2                   | Given the lists L=[1,3,6,82,5,7,11,92] , write the output of print(L[2:5])  | 1                      |
| 3                   | Write the full form of CSV.   | 1                      |
| 4                   | Identify the valid arithmetic operator in Python from the following.<br>a) ?    b) <    c) **    d) and   | 1                      |

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| 5  | Suppose a tuple T is declared as T = (10, 12, 43, 39), which of the following is incorrect?<br>a) print(T[1])<br>b) T[2] = -29<br>c) print(max(T))<br>d) print(len(T))                                      | 1 |
| 6  | Write a statement in Python to declare a dictionary whose keys are 1, 2, 3 and values are Monday, Tuesday and Wednesday respectively.   | 1 |
| 7  | A tuple is declared as<br>$T = (2,5,6,9,8)$<br>What will be the value of sum(T)?  | 1 |
| 8  | Name the built-in mathematical function / method that is used to return an absolute value of a number.  | 1 |
| 9  | Name the protocol that is used to send emails.  | 1 |
| 10 | Your friend Ranjana complaints that somebody has created a fake profile on Facebook and defaming her character with abusive comments and pictures.<br>Identify the type of cybercrime for these situations. | 1 |
| 11 | In SQL, name the clause that is used to display the tuples in ascending order of an attribute.  | 1 |
| 12 | In SQL, what is the use of IS NULL operator?  | 1 |
| 13 | Write any one aggregate function used in SQL.   | 1 |
| 14 | Which of the following is a DDL command?<br>a) SELECT b) ALTER c) INSERT d) UPDATE  | 1 |
| 15 | Name The transmission media best suitable for connecting to hilly areas.  | 1 |
| 16 | Identify the valid declaration of L:<br>$L = ['Mon', '23', 'hello', '60.5']$  | 1 |

|    |  |   |
|----|--|---|
|    | a. dictionary    b. string    c. tuple    d. list  |   |
| 17 | If the following code is executed, what will be the output of the following code?<br><br>name="ComputerSciencewithPython"<br>print(name[3:10])   | 1 |
| 18 | In SQL, write the query to display the list of tables stored in a database.  | 1 |
| 19 | Write the expanded form of Wi-Fi.  | 1 |
| 20 | Which of the following types of table constraints will prevent the entry of duplicate rows?<br><br>a) Unique<br>b) Distinct<br>c) Primary Key<br>d) NULL   | 1 |
| 21 | Rearrange the following terms in increasing order of data transfer rates.<br><br>Gbps, Mbps, Tbps, Kbps, bps   | 1 |
|    | <b>Section-II</b><br><br><b>Both the Case study based questions are compulsory. Attempt any 4 sub parts from each question. Each question carries 1 mark</b>   |   |
| 22 | A departmental store MyStore is considering to maintain their inventory using SQL to store the data. As a database administer, Abhay has decided that :<br><br><ul style="list-style-type: none"> <li>• Name of the database - mystore</li> <li>• Name of the table - STORE</li> <li>• The attributes of STORE are as follows:<br/><br/>ItemNo - numeric<br/>ItemName – character of size 20<br/>Scode - numeric<br/>Quantity – numeric</li> </ul> |   |

|        | <p>Table : STORE</p> <table border="1"> <thead> <tr> <th>ItemNo</th><th>ItemName</th><th>Scode</th><th>Quantity</th></tr> </thead> <tbody> <tr> <td>2005</td><td>Sharpener Classic</td><td>23</td><td>60</td></tr> <tr> <td>2003</td><td>Ball Pen 0.25</td><td>22</td><td>50</td></tr> <tr> <td>2002</td><td>Get Pen Premium</td><td>21</td><td>150</td></tr> <tr> <td>2006</td><td>Get Pen Classic</td><td>21</td><td>250</td></tr> <tr> <td>2001</td><td>Eraser Small</td><td>22</td><td>220</td></tr> <tr> <td>2004</td><td>Eraser Big</td><td>22</td><td>110</td></tr> <tr> <td>2009</td><td>Ball Pen 0.5</td><td>21</td><td>180</td></tr> </tbody> </table> | ItemNo | ItemName | Scode | Quantity | 2005 | Sharpener Classic | 23 | 60 | 2003 | Ball Pen 0.25 | 22 | 50 | 2002 | Get Pen Premium | 21 | 150 | 2006 | Get Pen Classic | 21 | 250 | 2001 | Eraser Small | 22 | 220 | 2004 | Eraser Big | 22 | 110 | 2009 | Ball Pen 0.5 | 21 | 180 |  |
|--------|--|--------|----------|-------|----------|------|-------------------|----|----|------|---------------|----|----|------|-----------------|----|-----|------|-----------------|----|-----|------|--------------|----|-----|------|------------|----|-----|------|--------------|----|-----|--|
| ItemNo | ItemName   | Scode  | Quantity |       |          |      |                   |    |    |      |               |    |    |      |                 |    |     |      |                 |    |     |      |              |    |     |      |            |    |     |      |              |    |     |  |
| 2005   | Sharpener Classic  | 23     | 60       |       |          |      |                   |    |    |      |               |    |    |      |                 |    |     |      |                 |    |     |      |              |    |     |      |            |    |     |      |              |    |     |  |
| 2003   | Ball Pen 0.25  | 22     | 50       |       |          |      |                   |    |    |      |               |    |    |      |                 |    |     |      |                 |    |     |      |              |    |     |      |            |    |     |      |              |    |     |  |
| 2002   | Get Pen Premium  | 21     | 150      |       |          |      |                   |    |    |      |               |    |    |      |                 |    |     |      |                 |    |     |      |              |    |     |      |            |    |     |      |              |    |     |  |
| 2006   | Get Pen Classic  | 21     | 250      |       |          |      |                   |    |    |      |               |    |    |      |                 |    |     |      |                 |    |     |      |              |    |     |      |            |    |     |      |              |    |     |  |
| 2001   | Eraser Small   | 22     | 220      |       |          |      |                   |    |    |      |               |    |    |      |                 |    |     |      |                 |    |     |      |              |    |     |      |            |    |     |      |              |    |     |  |
| 2004   | Eraser Big   | 22     | 110      |       |          |      |                   |    |    |      |               |    |    |      |                 |    |     |      |                 |    |     |      |              |    |     |      |            |    |     |      |              |    |     |  |
| 2009   | Ball Pen 0.5   | 21     | 180      |       |          |      |                   |    |    |      |               |    |    |      |                 |    |     |      |                 |    |     |      |              |    |     |      |            |    |     |      |              |    |     |  |
|        | (a) Identify the attribute best suitable to be declared as a primary key,  | 1      |          |       |          |      |                   |    |    |      |               |    |    |      |                 |    |     |      |                 |    |     |      |              |    |     |      |            |    |     |      |              |    |     |  |
|        | (b) Write the degree and cardinality of the table STORE.   | 1      |          |       |          |      |                   |    |    |      |               |    |    |      |                 |    |     |      |                 |    |     |      |              |    |     |      |            |    |     |      |              |    |     |  |
|        | (c) Insert the following data into the attributes ItemNo, ItemName and SCode respectively in the given table STORE.<br><br>ItemNo = 2010, ItemName = "Note Book" and Scode = 25  | 1      |          |       |          |      |                   |    |    |      |               |    |    |      |                 |    |     |      |                 |    |     |      |              |    |     |      |            |    |     |      |              |    |     |  |
|        | (d) Abhay want to remove the table STORE from the database MyStore.<br><br>Which command will he use from the following:<br><br>a) DELETE FROM store;<br>b) DROP TABLE store;<br>c) DROP DATABASE mystore;<br>d) DELETE store FROM mystore;  | 1      |          |       |          |      |                   |    |    |      |               |    |    |      |                 |    |     |      |                 |    |     |      |              |    |     |      |            |    |     |      |              |    |     |  |
|        | (e) Now Abhay wants to display the structure of the table STORE, i.e., name of the attributes and their respective data types that he has used in the table. Write the query to display the same.  | 1      |          |       |          |      |                   |    |    |      |               |    |    |      |                 |    |     |      |                 |    |     |      |              |    |     |      |            |    |     |      |              |    |     |  |
| 23     | <p>Ranjan Kumar of class 12 is writing a program to create a CSV file "user.csv" which will contain user name and password for some entries. He has written the following code. As a programmer, help him to successfully execute the given task.</p> <pre>import _____ # Line 1  def addCsvFile(UserName,PassWord):      # to write / add data into the CSV file f=open(' user.csv','_____')           # Line 2</pre>   |        |          |       |          |      |                   |    |    |      |               |    |    |      |                 |    |     |      |                 |    |     |      |              |    |     |      |            |    |     |      |              |    |     |  |

```

newFileWriter = csv.writer(f)
newFileWriter.writerow([UserName,PassWord])
f.close()

#csv file reading code
def readCsvFile():           # to read data from CSV file
    with open(' user.csv','r') as newFile:
        newFileReader = csv._____ (newFile)          # Line 3
        for row in newFileReader:
            print (row[0],row[1])
        newFile._____                                # Line 4

addCsvFile("Arjun","123@456")
addCsvFile("Arunima","aru@nima")
addCsvFile("Frieda","myname@FRD")
readCsvFile()                      #Line 5

```

- |  |   |
|--|---|
| (a) Name the module he should import in Line 1.                          | 1 |
| (b) In which mode, Ranjan should open the file to add data into the file | 1 |
| (c) Fill in the blank in Line 3 to read the data from a csv file.        | 1 |
| (d) Fill in the blank in Line 4 to close the file.                       | 1 |
| (e) Write the output he will obtain while executing Line 5.              | 1 |

### Part – B

#### Section-I

|    |  |   |
|----|--|---|
| 24 | Evaluate the following expressions:<br>a) $6 * 3 + 4^{**2} // 5 - 8$<br>b) $10 > 5$ and $7 > 12$ or not $18 > 3$   | 2 |
| 25 | Differentiate between Viruses and Worms in context of networking and data communication threats.<br><br><b>OR</b><br>Differentiate between Web server and web browser. Write any two popular web browsers. | 2 |
| 26 | Expand the following terms:<br>a. SMTP    b. XML    c. LAN    d. IPR   | 2 |

|    |   |   |
|----|---|---|
| 27 | <p>Differentiate between actual parameter(s) and a formal parameter(s) with a suitable example for each.</p> <p style="text-align: center;"><b>OR</b></p> <p>Explain the use of global key word used in a function with the help of a suitable example.</p>   | 2 |
| 28 | <p>Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code.</p> <pre> Value=30 for VAL in range(0,Value)     If val%4==0:         print (VAL*4)     Elseif val%5==0:         print (VAL+3)     else         print(VAL+10) </pre>  | 2 |
| 29 | <p>What possible outputs(s) are expected to be displayed on screen at the time of execution of the program from the following code? Also specify the maximum values that can be assigned to each of the variables Lower and Upper.</p> <pre> import random AR=[20,30,40,50,60,70]; Lower =random.randint(1,3) Upper =random.randint(2,4) for K in range(Lower, Upper +1):     print (AR[K],end="#") </pre> <p>(i) 10#40#70#               (ii) 30#40#50#               (iii) 50#60#70#               (iv)<br/>40#50#70#</p> | 2 |
| 30 | <p>What do you understand by Candidate Keys in a table? Give a suitable example of Candidate Keys from a table containing some meaningful data.</p>   | 2 |

|                    |  |   |
|--------------------|--|---|
| 31                 | Differentiate between <i>fetchone()</i> and <i>fetchall()</i> methods with suitable examples for each.   | 2 |
| 32                 | Write the full forms of DDL and DML. Write any two commands of DML in SQL.   | 2 |
| 33                 | <p>Find and write the output of the following Python code:</p> <pre>def Display(str):     m=""     for i in range(0,len(str)):         if(str[i].isupper()):             m=m+str[i].lower()         elif str[i].islower():             m=m+str[i].upper()         else:             if i%2==0:                 m=m+str[i-1]             else:                 m=m+"#"     print(m)  Display('Fun@Python3.0')</pre> | 2 |
| <b>Section- II</b> |  |   |
| 34                 | <p>Write a function LShift(<i>Arr,n</i>) in Python, which accepts a list <i>Arr</i> of numbers and <i>n</i> is a numeric value by which all elements of the list are shifted to left.</p> <p>Sample Input Data of the list<br/> <i>Arr= [ 10,20,30,40,12,11], n=2</i></p> <p>Output<br/> <i>Arr = [30,40,12,11,10,20]</i></p>  | 3 |
| 35                 | <p>Write a function in Python that counts the number of “Me” or “My” words present in a text file “STORY.TXT”.</p> <p>If the “STORY.TXT” contents are as follows:</p> <p>My first book<br/> was Me and</p>   | 3 |

|                 | <p>My Family. It<br/>gave me<br/>chance to be<br/>Known to the<br/>world.</p> <p>The output of the function should be:<br/>Count of Me/My in file: 4</p> <p style="text-align: center;"><b>OR</b></p> <p>Write a function AMCount() in Python, which should read each character of a text file STORY.TXT, should count and display the occurrence of alphabets A and M (including small cases a and m too).</p> <p>Example:<br/>If the file content is as follows:</p> <p style="padding-left: 40px;">Updated information<br/>As simplified by official websites.</p> <p>The EUCount() function should display the output as:<br/>A or a:4<br/>M or m :2</p>  |                 |             |              |        |        |  |  |      |      |     |            |              |        |        |   |       |    |             |            |       |   |   |          |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |         |            |       |   |   |        |    |             |            |       |   |   |       |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |             |            |       |   |   |
|-----------------|---|-----------------|-------------|--------------|--------|--------|--|--|------|------|-----|------------|--------------|--------|--------|---|-------|----|-------------|------------|-------|---|---|----------|----|---------|------------|-------|---|---|---------|----|-------------|------------|-------|---|---|----------|----|---------|------------|-------|---|---|--------|----|-------------|------------|-------|---|---|-------|----|---------|------------|-------|---|---|---------|----|-------------|------------|-------|---|---|----------|----|-------------|------------|-------|---|---|
| 36              | <p>Write the outputs of the SQL queries (i) to (iii) based on the relations Teacher and Posting given below:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="7">Table : Teacher</th> </tr> <tr> <th>T_ID</th><th>Name</th><th>Age</th><th>Department</th><th>Date_of_join</th><th>Salary</th><th>Gender</th></tr> </thead> <tbody> <tr> <td>1</td><td>Jugal</td><td>34</td><td>Computer Sc</td><td>10/01/2017</td><td>12000</td><td>M</td></tr> <tr> <td>2</td><td>Sharmila</td><td>31</td><td>History</td><td>24/03/2008</td><td>20000</td><td>F</td></tr> <tr> <td>3</td><td>Sandeep</td><td>32</td><td>Mathematics</td><td>12/12/2016</td><td>30000</td><td>M</td></tr> <tr> <td>4</td><td>Sangeeta</td><td>35</td><td>History</td><td>01/07/2015</td><td>40000</td><td>F</td></tr> <tr> <td>5</td><td>Rakesh</td><td>42</td><td>Mathematics</td><td>05/09/2007</td><td>25000</td><td>M</td></tr> <tr> <td>6</td><td>Shyam</td><td>50</td><td>History</td><td>27/06/2008</td><td>30000</td><td>M</td></tr> <tr> <td>7</td><td>Shiv Om</td><td>44</td><td>Computer Sc</td><td>25/02/2017</td><td>21000</td><td>M</td></tr> <tr> <td>8</td><td>Shalakha</td><td>33</td><td>Mathematics</td><td>31/07/2018</td><td>20000</td><td>F</td></tr> </tbody> </table> | Table : Teacher |             |              |        |        |  |  | T_ID | Name | Age | Department | Date_of_join | Salary | Gender | 1 | Jugal | 34 | Computer Sc | 10/01/2017 | 12000 | M | 2 | Sharmila | 31 | History | 24/03/2008 | 20000 | F | 3 | Sandeep | 32 | Mathematics | 12/12/2016 | 30000 | M | 4 | Sangeeta | 35 | History | 01/07/2015 | 40000 | F | 5 | Rakesh | 42 | Mathematics | 05/09/2007 | 25000 | M | 6 | Shyam | 50 | History | 27/06/2008 | 30000 | M | 7 | Shiv Om | 44 | Computer Sc | 25/02/2017 | 21000 | M | 8 | Shalakha | 33 | Mathematics | 31/07/2018 | 20000 | F | 3 |
| Table : Teacher |   |                 |             |              |        |        |  |  |      |      |     |            |              |        |        |   |       |    |             |            |       |   |   |          |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |         |            |       |   |   |        |    |             |            |       |   |   |       |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |             |            |       |   |   |
| T_ID            | Name  | Age             | Department  | Date_of_join | Salary | Gender |  |  |      |      |     |            |              |        |        |   |       |    |             |            |       |   |   |          |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |         |            |       |   |   |        |    |             |            |       |   |   |       |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |             |            |       |   |   |
| 1               | Jugal   | 34              | Computer Sc | 10/01/2017   | 12000  | M      |  |  |      |      |     |            |              |        |        |   |       |    |             |            |       |   |   |          |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |         |            |       |   |   |        |    |             |            |       |   |   |       |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |             |            |       |   |   |
| 2               | Sharmila  | 31              | History     | 24/03/2008   | 20000  | F      |  |  |      |      |     |            |              |        |        |   |       |    |             |            |       |   |   |          |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |         |            |       |   |   |        |    |             |            |       |   |   |       |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |             |            |       |   |   |
| 3               | Sandeep   | 32              | Mathematics | 12/12/2016   | 30000  | M      |  |  |      |      |     |            |              |        |        |   |       |    |             |            |       |   |   |          |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |         |            |       |   |   |        |    |             |            |       |   |   |       |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |             |            |       |   |   |
| 4               | Sangeeta  | 35              | History     | 01/07/2015   | 40000  | F      |  |  |      |      |     |            |              |        |        |   |       |    |             |            |       |   |   |          |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |         |            |       |   |   |        |    |             |            |       |   |   |       |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |             |            |       |   |   |
| 5               | Rakesh  | 42              | Mathematics | 05/09/2007   | 25000  | M      |  |  |      |      |     |            |              |        |        |   |       |    |             |            |       |   |   |          |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |         |            |       |   |   |        |    |             |            |       |   |   |       |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |             |            |       |   |   |
| 6               | Shyam   | 50              | History     | 27/06/2008   | 30000  | M      |  |  |      |      |     |            |              |        |        |   |       |    |             |            |       |   |   |          |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |         |            |       |   |   |        |    |             |            |       |   |   |       |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |             |            |       |   |   |
| 7               | Shiv Om   | 44              | Computer Sc | 25/02/2017   | 21000  | M      |  |  |      |      |     |            |              |        |        |   |       |    |             |            |       |   |   |          |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |         |            |       |   |   |        |    |             |            |       |   |   |       |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |             |            |       |   |   |
| 8               | Shalakha  | 33              | Mathematics | 31/07/2018   | 20000  | F      |  |  |      |      |     |            |              |        |        |   |       |    |             |            |       |   |   |          |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |         |            |       |   |   |        |    |             |            |       |   |   |       |    |         |            |       |   |   |         |    |             |            |       |   |   |          |    |             |            |       |   |   |

| Table : Posting |                  |        |
|-----------------|------------------|--------|
| P_ID            | Department       | Place  |
| 1               | History          | Agra   |
| 2               | Mathematics      | Raipur |
| 3               | Computer Science | Delhi  |

- i.     SELECT Department, count(\*) FROM Teacher  
GROUP BY Department;
- ii.    SELECT Max(Date\_of\_Join),Min(Date\_of\_Join)  
FROM Teacher;
- iii.   SELECT Teacher.name,Teacher.Department,  
Posting.Place FROM Teachr, Posting WHERE  
Teacher.Department = Posting.Department AND  
Posting.Place="Delhi";

|                    |   |   |
|--------------------|---|---|
| 37                 | <p>Write a function in Python PUSH(Arr), where Arr is a list of numbers. From this list push all numbers divisible by 5 into a stack implemented by using a list. Display the stack if it has at least one element, otherwise display appropriate error message.</p> <p style="text-align: center;"><b>OR</b></p> <p>Write a function in Python POP(Arr), where Arr is a stack implemented by a list of numbers. The function returns the value deleted from the stack.</p> | 3 |
| <b>Section-III</b> |   |   |
| 38                 | <p>MyPace University is setting up its academic blocks at Naya Raipur and is planning to set up a network. The University has 3 academic blocks and one Human Resource Center as shown in the diagram below:</p> <p>Center to Center distances between various blocks/center is as follows:</p>   | 5 |

|                                    |      |
|------------------------------------|------|
| Law Block to business Block        | 40m  |
| Law block to Technology Block      | 80m  |
| Law Block to HR center             | 105m |
| Business Block to technology Block | 30m  |
| Business Block to HR Center        | 35m  |
| Technology block to HR center      | 15m  |

Number of computers in each of the blocks/Center is as follows:

|                  |     |
|------------------|-----|
| Law Block        | 15  |
| Technology Block | 40  |
| HR center        | 115 |
| Business Block   | 25  |

- a) Suggest the most suitable place (i.e., Block/Center) to install the server of this University with a suitable reason.
- b) Suggest an ideal layout for connecting these blocks/centers for a wired connectivity.
- c) Which device will you suggest to be placed/installed in each of these blocks/centers to efficiently connect all the computers within these blocks/centers.
- d) Suggest the placement of a Repeater in the network with justification.
- e) The university is planning to connect its admission office in Delhi, which is more than 1250km from university. Which type of network out of LAN, MAN, or WAN will be formed?  
Justify your answer.

39

Write SQL commands for the following queries (i) to (v) based on the relations Teacher and Posting given below:

Table : Teacher

| T_ID | Name     | Age | Department  | Date_of_join | Salary | Gender |
|------|----------|-----|-------------|--------------|--------|--------|
| 1    | Jugal    | 34  | Computer Sc | 10/01/2017   | 12000  | M      |
| 2    | Sharmila | 31  | History     | 24/03/2008   | 20000  | F      |

5

|   |          |    |             |            |       |   |
|---|----------|----|-------------|------------|-------|---|
| 3 | Sandeep  | 32 | Mathematics | 12/12/2016 | 30000 | M |
| 4 | Sangeeta | 35 | History     | 01/07/2015 | 40000 | F |
| 5 | Rakesh   | 42 | Mathematics | 05/09/2007 | 25000 | M |
| 6 | Shyam    | 50 | History     | 27/06/2008 | 30000 | M |
| 7 | Shiv Om  | 44 | Computer Sc | 25/02/2017 | 21000 | M |
| 8 | Shalakha | 33 | Mathematics | 31/07/2018 | 20000 | F |

Table : Posting

| P_ID | Department       | Place  |
|------|------------------|--------|
| 1    | History          | Agra   |
| 2    | Mathematics      | Raipur |
| 3    | Computer Science | Delhi  |

- i. To show all information about the teacher of History department.
- ii. To list the names of female teachers who are in Mathematics department.
- iii. To list the names of all teachers with their date of joining in ascending order.
- iv. To display teacher's name, salary, age for male teachers only.
- v. To display name, bonus for each teacher where bonus is 10% of salary.

40

A binary file “Book.dat” has structure [BookNo, Book\_Name, Author, Price].

- i. Write a user defined function *CreateFile()* to input data for a record and add to Book.dat .
- ii. 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”

**OR**

A binary file “STUDENT.DAT” has structure (admission\_number, Name, Percentage). Write a function *countrec()* in Python that would read contents of the file “STUDENT.DAT” and display the details of those students whose percentage is above 75. Also display number of students scoring above 75%

5

**Sample Question Paper - 2021**

**Computer Science – 083**

**MARKING SCHEME**

**Maximum Marks: 70**

**Time Allowed: 3 hours**

| <b>Part – A</b>     |   |
|---------------------|---|
| <b>Section - I</b>  |   |
| 1                   | b) True   |
| 2                   | [6,82,5]  |
| 3                   | Comma Separated Value   |
| 4                   | c) **   |
| 5                   | b) T[2]= -29 (as tuple is immutable)  |
| 6                   | Day={1:'monday',2:'tuesday',3:'wednesday'}                                  |
| 7                   | 30  |
| 8                   | abs()   |
| 9                   | SMTP  |
| 10                  | Cyber Stalking  |
| 11                  | ORDER BY  |
| 12                  | To check if the column has null value / no value                            |
| 13                  | SUM / AVG / COUNT / MAX / MIN   |
| 14                  | b) ALTER  |
| 15                  | Microwave / Radio wave  |
| 16                  | d. List   |
| 17                  | puterSc   |
| 18                  | SHOW TABLES   |
| 19                  | Wireless Fidelity   |
| 20                  | (c) Primary Key   |
| 21                  | Bps, Kbps, Mbps, Gbps, Tbps   |
| <b>Part – A</b>     |   |
| <b>Section - II</b> |   |
| 22                  | (a) ItemNo  |
|                     | (b) Degree = 4 Cardinality = 7  |
|                     | (c) INSERT INTO store (ItemNo,ItemName,Scode) VALUES(2010, "Note Book",25); |
|                     | (d) DROP TABLE store;   |
|                     | (e) Describe Store;   |
| 23                  | (a) Line 1 : csv  |
|                     | (b) Line 2 : a  |
|                     | (c) Line 3 : reader   |
|                     | (d) Line 4 : close()  |

|    |   |   |
|----|---|---|
|    | (e) Line 5 : Arjun 123@456<br>Arunima aru@nima<br>Frieda myname@FRD   | 1 |
|    | <b>Part – B</b>   |   |
| 24 | a) 13<br>b) False   | 2 |
| 25 | <p>Viruses require an active host program or an already-infected and active operating system in order for viruses to run, cause damage and infect other executable files or documents</p> <p>Worms are stand-alone malicious programs that can self-replicate.</p> <p style="text-align: center;"><b>OR</b></p> <p><b>Web Browser</b> : A web browser is a software application for accessing information on the World Wide Web. When a user requests a web page from a particular website, the web browser retrieves the necessary content from a web server and then displays the page on the user's device.</p> <p><b>Web Server</b> : A web server is a computer that runs websites. The basic objective of the web server is to store, process and deliver web pages to the users. This intercommunication is done using Hypertext Transfer Protocol (HTTP).</p> <p>Popular web browsers : Google Chrome, Mozilla Firefox, Internet Explorer etc</p> | 2 |
| 26 | <p>a. SMTP - Simple Mail Transfer Protocol</p> <p>b. XML - eXtensible Markup Language</p> <p>c. LAN – Local Area Network</p> <p>d. IPR – Intellectual Property Rights</p>   | 2 |
| 27 | <p>The list of identifiers used in a function call is called actual parameter(s) whereas the list of parameters used in the function definition is called formal parameter(s).</p> <p>Actual parameter may be value / variable or expression.</p> <p>Formal parameter is an identifier.</p> <p>Example:</p> <pre>def area(side):      # line 1     return side*side;  print(area(5))      # line 2</pre> <p>In line 1, side is the formal parameter and in line 2, while invoking area() function, the value 5 is the actual parameter.</p>   | 2 |

|    |   |   |
|----|---|---|
|    | <p>A formal parameter, i.e. a parameter, is in the <i>function definition</i>. An actual parameter, i.e. an argument, is in a <i>function call</i>.</p> <p style="text-align: center;"><b>OR</b></p> <p>Use of global key word:</p> <p>In Python, global keyword allows the programmer to modify the variable outside the current scope. It is used to create a global variable and make changes to the variable in local context. A variable declared inside a function is by default local and a variable declared outside the function is global by default. The keyword global is written inside the function to use its global value. Outside the function, global keyword has no effect.</p> <p>Example</p> <pre>c = 10 # global variable def add():     global c     c = c + 2    # global value of c is incremented by 2     print("Inside add():", c)  add() c=15 print("In main:", c)</pre> <p>output:</p> <pre>Inside add() : 12 In main: 15</pre> |   |
| 28 | <p><b>CORRECTED CODE:</b></p> <pre>Value=30 for VAL in range(0,Value):     if val%4==0:                      # Error 1         print (VAL*4)     elif val%5==0:                     # Error 2         print (VAL+3)     else:                             # Error 3         print(VAL+10)</pre>   | 2 |
| 29 | <p><b>OUTPUT: (ii)</b></p> <p>Maximum value of Lower: 3</p> <p>Maximum value of Upper: 4</p>  | 2 |
| 30 | <p>A table may have more than one such attribute/group of attributes that identifies a tuple uniquely, all such attribute(s) are known as Candidate Keys.</p>   | 2 |

|     | <p>Table:Item</p> <table border="1"> <thead> <tr> <th>INo</th><th>Item</th><th>Qty</th></tr> </thead> <tbody> <tr> <td>I01</td><td>Pen</td><td>500</td></tr> <tr> <td>I02</td><td>Pencil</td><td>700</td></tr> <tr> <td>I04</td><td>CD</td><td>500</td></tr> <tr> <td>I09</td><td></td><td>700</td></tr> <tr> <td>I05</td><td>Eraser</td><td>300</td></tr> <tr> <td>I03</td><td>Duster</td><td>200</td></tr> </tbody> </table> <p>In the above table Item, ItemNo can be a candidate key</p> | INo | Item | Qty | I01 | Pen | 500 | I02 | Pencil | 700 | I04 | CD | 500 | I09 |  | 700 | I05 | Eraser | 300 | I03 | Duster | 200 |  |
|-----|--|-----|------|-----|-----|-----|-----|-----|--------|-----|-----|----|-----|-----|--|-----|-----|--------|-----|-----|--------|-----|--|
| INo | Item   | Qty |      |     |     |     |     |     |        |     |     |    |     |     |  |     |     |        |     |     |        |     |  |
| I01 | Pen  | 500 |      |     |     |     |     |     |        |     |     |    |     |     |  |     |     |        |     |     |        |     |  |
| I02 | Pencil   | 700 |      |     |     |     |     |     |        |     |     |    |     |     |  |     |     |        |     |     |        |     |  |
| I04 | CD   | 500 |      |     |     |     |     |     |        |     |     |    |     |     |  |     |     |        |     |     |        |     |  |
| I09 |  | 700 |      |     |     |     |     |     |        |     |     |    |     |     |  |     |     |        |     |     |        |     |  |
| I05 | Eraser   | 300 |      |     |     |     |     |     |        |     |     |    |     |     |  |     |     |        |     |     |        |     |  |
| I03 | Duster   | 200 |      |     |     |     |     |     |        |     |     |    |     |     |  |     |     |        |     |     |        |     |  |
| 31  | <p>fetchall() fetches all the rows of a query result. An empty list is returned if there is no record to fetch the cursor.</p> <p>fetchone() method returns one row or a single record at a time. It will return None if no more rows / records are available.</p> <p>Any example.</p>   | 2   |      |     |     |     |     |     |        |     |     |    |     |     |  |     |     |        |     |     |        |     |  |
| 32  | <p>DDL – Data Definition Language</p> <p>DML – Data Manipulation Language</p> <p>Any two out of INSERT, DELETE, UPDATE</p>   | 2   |      |     |     |     |     |     |        |     |     |    |     |     |  |     |     |        |     |     |        |     |  |
| 33  | OUTPUT : fUNnpYTHON  | 2   |      |     |     |     |     |     |        |     |     |    |     |     |  |     |     |        |     |     |        |     |  |
| 34  | <pre>def LShift(Arr,n):     L=len(Arr)     for x in range(0,n):         y=Arr[0]         for i in range(0,L-1):             Arr[i]=Arr[i+1]         Arr[L-1]=y     print(Arr)</pre> <p><b>Note : Using of any correct code giving the same result is also accepted.</b></p>  | 3   |      |     |     |     |     |     |        |     |     |    |     |     |  |     |     |        |     |     |        |     |  |
| 35  | <pre>def displayMeMy():     num=0     f=open("story.txt","rt")     N=f.read()     M=N.split()     for x in M:         if x=="Me" or x=="My":             print(x)             num=num+1     f.close()     print("Count of Me/My in file:",num)</pre>   | 3   |      |     |     |     |     |     |        |     |     |    |     |     |  |     |     |        |     |     |        |     |  |

**OR**

```
def count_A_M():
    f=open("story.txt","r")
    A,M=0,0
    r=f.read()
    for x in r:
        if x[0]=="A" or x[0]=="a" :
            A=A+1
        elif x[0]=="M" or x[0]=="m":
            M=M+1
    f.close()
    print("A or a: ",A)
    print("M or m: ",M)
```

**Note : Using of any correct code giving the same result is also accepted.**

| 36          | <b>OUTPUT:</b><br>i.<br><table border="1"><thead><tr><th>Department</th><th>Count(*)</th></tr></thead><tbody><tr><td>History</td><td>3</td></tr><tr><td>Computer Sc</td><td>2</td></tr><tr><td>Mathematics</td><td>3</td></tr></tbody></table><br>ii. Max - 31/07/2018 or 2018-07-31 Min- 05/09/2007 or 2007-09-05<br>iii.<br><table border="1"><thead><tr><th>name</th><th>Department</th><th>Place</th></tr></thead><tbody><tr><td>Jugal</td><td>Computer Sc</td><td>Delhi</td></tr><tr><td>Shiv Om</td><td>Computer Sc</td><td>Delhi</td></tr></tbody></table> | Department | Count(*) | History | 3 | Computer Sc | 2 | Mathematics | 3 | name | Department | Place | Jugal | Computer Sc | Delhi | Shiv Om | Computer Sc | Delhi | 3 |
|-------------|---|------------|----------|---------|---|-------------|---|-------------|---|------|------------|-------|-------|-------------|-------|---------|-------------|-------|---|
| Department  | Count(*)  |            |          |         |   |             |   |             |   |      |            |       |       |             |       |         |             |       |   |
| History     | 3   |            |          |         |   |             |   |             |   |      |            |       |       |             |       |         |             |       |   |
| Computer Sc | 2   |            |          |         |   |             |   |             |   |      |            |       |       |             |       |         |             |       |   |
| Mathematics | 3   |            |          |         |   |             |   |             |   |      |            |       |       |             |       |         |             |       |   |
| name        | Department  | Place      |          |         |   |             |   |             |   |      |            |       |       |             |       |         |             |       |   |
| Jugal       | Computer Sc   | Delhi      |          |         |   |             |   |             |   |      |            |       |       |             |       |         |             |       |   |
| Shiv Om     | Computer Sc   | Delhi      |          |         |   |             |   |             |   |      |            |       |       |             |       |         |             |       |   |

|    |  |   |
|----|--|---|
| 37 | <b>ANSWER: (Using of any correct code giving the same result is also accepted.)</b><br><pre>def PUSH(Arr,value):     s=[]     for x in range(0,len(Arr)):         if Arr[x]%5==0:             s.append(Arr[x])     if len(s)==0:</pre> | 3 |
|----|--|---|

```

print("Empty Stack")
else:
    print(s)

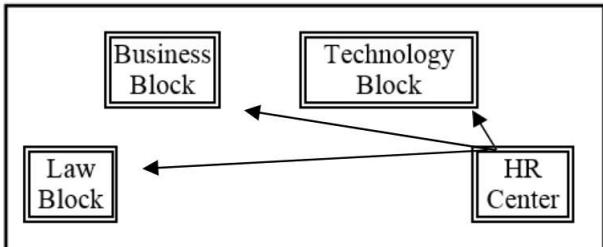
```

**OR**

```

def popStack(st) :
    # If stack is empty
    if len(st)==0:
        print("Underflow")
    else:
        L = len(st)
        val=st[L-1]
        print(val)
        st.pop(L-1)

```

|    |   |   |
|----|---|---|
| 38 | <p>a. Most suitable place to install the server is HR center, as this center has maximum number of computers.</p>   | 5 |
| 39 | <p>b.</p>  <p>c. Switch</p> <p>d. Repeater may be placed when the distance between 2 buildings is more than 70 meter.</p> <p>e. WAN, as the given distance is more than the range of LAN and MAN.</p>  |   |
|    | <p>i. SELECT * FROM teacher WHERE department= "History";</p> <p>ii. SELECT name FROM teacher WHERE department= "Mathematics" AND gender= "F";</p> <p>iii. SELECT name FROM teacher ORDER BY date_of_join;</p> <p>iv. SELECT name, salary, age FROM teacher WHERE gender='M';</p> <p>v. SELECT name, salary*0.1 AS Bonus FROM teacher;</p> | 5 |

|    |  |   |
|----|--|---|
| 40 | <b>ANSWER: (Using of any correct code giving the same result is also accepted.)</b><br><pre> import pickle def createFile():     fobj=open("Book.dat","ab")     BookNo=int(input("Book Number : "))     Book_name=input("Name :")     Author = input("Author: ")     Price = int(input("Price : "))     rec=[BookNo,Book_Name,Author,Price]     pickle.dump(rec,fobj)     fobj.close()  def CountRec(Author):     fobj=open("Book.dat","rb")     num = 0     try:         while True:             rec=pickle.load(fobj)             if Author==rec[2]:                 num = num + 1     except:         fobj.close()     return num </pre> <p style="text-align: center;"><b>OR</b></p> <pre> import pickle def CountRec():     fobj=open("STUDENT.DAT","rb")     num = 0     try:         while True:             rec=pickle.load(fobj)             if rec[2] &gt; 75:                 print(rec[0],rec[1],rec[2],sep="\t")                 num = num + 1     except:         fobj.close()     return num </pre> | 5 |
|----|--|---|

# **Sample Question Paper**

**2**

**Solved**

**General Instructions :**

- (i) This question paper contains two parts A and B. Each part is compulsory.
- (ii) Both Part A and Part B have choices.
- (iii) Part-A has 2 sections :
  - (a) Section-I is short answer questions, to be answered in one word or one line.
  - (b) Section-II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.
- (iv) Part-B is Descriptive Paper.
- (v) Part-B has three sections.
  - (a) Section-I is short answer questions of 2 marks each in which two questions have internal options.
  - (b) Section-II is long answer questions of 3 marks each in which two questions have internal options.
  - (c) Section-III is very long answer questions of 5 marks each in which one question has internal option.
- (vi) All programming questions are to be answered using Python Language only.

## **PART-A**

### **Section-I**

Select the most appropriate option out of the options given for each question. Attempt any 15 questions from question no 1 to 21.

**Question 1.**

Which one of the following is a valid Python if statement :

- (a) if a>=2 :
- (b) if (a > = 2)
- (c) if (a => 22)
- (d) if a > = 22

**Question 2.**

**Q** Differentiate between round() and floor() functions with the help of suitable example.

**Question 3.**

Find and write the output of the following python code:

```
a=10
def call():
    global a
    a=15
    b=20
    print(a)
call()
```

1

1

1

**Question 4.**

**[AI]** Differentiate between file modes r+ and rb+ with respect to Python.

1

**Question 5.**

What will be the output of the following code ?

```
fn = file ("poen.txt", "r")
size = len (fn.read ())
print (fn.read (5))
```

1

**Question 6.**

Predict the output of the following code:

```
a = [5, 9, 7, 6, -9, -7, 0, 3, 5]
print (a [: : 2])
```

1

**Question 7.**

Which topology is based on a central which act as a hub ?

- |                   |                     |
|-------------------|---------------------|
| (a) Star topology | (b) Bus topology    |
| (c) Tree topology | (d) Hybrid topology |

1

**Question 8.**

Which of the following is not a server side script?

- |         |               |
|---------|---------------|
| (a) ASP | (b) JSP       |
| (c) PHP | (d) VB Script |

1

**Question 9.**

**[AI]** In python  $\sim x=-(x+1)$  then, what does  $\sim\sim\sim\sim 5$  evaluate to?

- |         |         |
|---------|---------|
| (a) +5  | (b) -11 |
| (c) +11 | (d) -5  |

1

**Question 10.**

Which of the following is a valid for loop in Python?

- |                         |                           |
|-------------------------|---------------------------|
| (a) for(i=0; i<n; i++)  | (b) for i in range(0,5) : |
| (c) for i in range(0,5) | (d) for i in range(5)     |

1

**Question 11.**

What is the difference between objects stored in list and dictionaries?

1

**Question 12.**

**[AI]** What is the difference between arguments and parameters?

1

**Question 13.**

What is a file handle?

1

**Question 14.**

How can you find extension of a given file name?

1

**Question 15.**

Which of the following Python codes will result in an error?

- object = 'a'
- |  |                                  |
|--|----------------------------------|
| (a) >>> pickle.dumps (object)          | (b) >>> pickle.dumps (object, 3) |
| (c) >>> pickle.dumps (object, 3, True) | (d) >>> pickle.dumps ('a', 2)    |

1

**Question 16.**

If we have a package called Pkt1 with a module named module1. How can we access module1's function func1() ?

1

**Question 17.**

Which of the following was the first network database?

- |                    |                  |
|--------------------|------------------|
| (a) SYSTEM 2000    | (b) DBTG Codasyl |
| (c) SYSTEM Codasyl | (d) DBTG 2000    |

1

**Question 18.**

Which clause is used to remove the duplicating rows of the table?

1

**Question 19.**

Which command is used to modify the records of the table?

1

**Question 20.**

What is a cursor?

1

**Question 21.**

Which method of cursor class is used to execute database function or stored procedure in Python?

- (a) cursor.callprocedure('procedureName', [parameters,])
- (b) cursor.callproc('procedureName', [parameters,])
- (c) cursor.callfunc('procedureName', [parameters,])
- (d) cursor.callfunction('procedureName', [parameters,])

1

**Section-II**

Both the Case study based questions are compulsory. Attempt any 4 sub parts from each question. Each question carries 1 mark.

**Question 22.**

**Q1** Meerut school in Meerut is starting up the network between its different wings. There are four buildings named as S, J, A and H. The distance between various buildings is as follows:

|        |       |
|--------|-------|
| A to S | 200 m |
| A to J | 150 m |
| A to H | 50 m  |
| S to J | 250 m |
| S to H | 350 m |
| J to H | 350 m |

Numbers of computers in each Buildings

|   |     |
|---|-----|
| S | 130 |
| J | 80  |
| A | 160 |
| H | 50  |

- (i) Suggest the cable layout of connections between the buildings.
- (ii) Suggest the most suitable place (i.e building) to house the server of this school, provide a suitable reason.
- (iii) Suggest the placement of the following devices with justification
  - Hub/Switch
  - Repeater
- (iv) The organization has also inquiry office in another city in about 50-60 km away in hilly region. Suggest the suitable transmission media to interconnect to school and inquiry office out of the following:
  - Fibre optic cable
  - Radio wave
  - Microwave
- (v) Which of the following device will be suggested by you to connect each computer in each of the buildings?
  - Switch
  - Modem
  - Gateway

**Question 23.**

Write SQL queries for (i) to (iv) and find output for SQL query (v) which are based on the tables.

Table : CUSTOMER

| CNO | CNAME        | ADDRESS   |
|-----|--------------|-----------|
| 101 | Richa Jain   | Delhi     |
| 102 | Surbhi Sinha | Chennai   |
| 103 | Lisa Thomas  | Bangalore |
| 104 | Imran Ali    | Delhi     |
| 105 | Roshan Singh | Chennai   |

Table: TRANSACTION

| TRNO | CNO | AMOUNT | TYPE   | DOT        |
|------|-----|--------|--------|------------|
| T001 | 101 | 1500   | Credit | 2017-11-23 |
| T002 | 103 | 2000   | Debit  | 2017-05-12 |
| T003 | 102 | 3000   | Credit | 2017-06-10 |

|      |     |       |        |            |
|------|-----|-------|--------|------------|
| T004 | 103 | 12000 | Credit | 2017-09-12 |
| T005 | 101 | 1000  | Debit  | 2017-09-05 |

- (i) To display details of all transactions of TYPE Credit from table TRANSACTION. 1
- (ii) To display the CNO and AMOUNT of all Transactions done in the month of September 2017 from table TRANSACTION. 1
- (iii) To display the last date of transaction (DOT) from the table TRANSACTION for the customer having CNO as 103. 1
- (iv) To display all CNO, CNAME and DOT (date of transaction) of those CUSTOMERS from tables CUSTOMER and TRANSACTION who have done transactions more than or equal to 2000. 1
- (v) SELECT COUNT(\*), AVG (AMOUNT) FROM TRANSACTION WHERE DOT >= '2017-06-01'; 1

## PART-B

### Section-I

#### Question 24.

**AI** Out of the following find those identifiers, which can not be used for naming Variables or Functions in a Python Program :

Days \* Rent, For, A\_price, Grand Total, do, 2Clients, Participant1, \_Mycity

2

#### Question 25.

What is bubble sort?

2

OR

Consider the following list

95 79 19 43 52 3

Write the passes of bubble sort for sorting the list in ascending order till the 3rd iteration.

2

#### Question 26.

**AI** Rewrite the following Python code after removing all syntax error(s). Underline the corrections done.  
def main():

```
r = input('enter any radius : ')
a = pi * math.pow(r,2)
print (" Area = " + a)
```

2

#### Question 27.

**AI** What is a default parameter? How is it specified?

2

OR

Is indentation required in Python?

2

#### Question 28.

**AI** Differentiate between a Text File and a Binary File.

2

#### Question 29.

What happens when in a module we describe \_all\_ list and omit some of the objects for e.g. a class called marks from it?

2

#### Question 30.

**AI** Evaluate following postfix expression using a stack : 30, 5, 2, \*, 12, 6, 1, +, -, 3, +, -, /

2

#### Question 31.

How is 4G different from 3G?

2

#### Question 32.

What is worm? How is it removed?

2

#### Question 33.

Differentiate between the primary key and alternate key of a table with the help of an example.

2

Section-II**Question 34.**

Write a Python code to insert following records into table Orders as follows

Database → Sales  
 userid → salesman1  
 password → sale1  
 table → orders

| ORDNUMB | CUSTNO | ORDDTE   |
|---------|--------|----------|
| 12489   | 124    | 01-03-98 |
| 12491   | 311    | 10-03-98 |
| 12495   | 315    | 31-03-98 |
| 12498   | 522    | 10-04-98 |

3

**Question 35.**

Write a Python program to enter two lists and merge them. Also display merged list.

OR

Write an algorithm to implement pop operation.

3

3

**Question 36.**

Given a pickled log.dat file, containing list of strings. Write a python function that reads the file and looks for a line of the form

Xerror : 0.2395

whenever such line is encountered, extract the floating point value and compute the total of these error values. When you reach end of file print total number of such error lines and average of error value.

3

**Question 37.**

Write a program that prompts for a phone number of 10 digits and two dashes with dashes after the area code and the next three numbers. e.g. 017-555-1212 is a legal input. Display if the phone number entered is valid format or not and display if the phone number is valid or not.

OR

3

Find errors in the following codes and write the correct codes. Underline correction in each case.

(i) `a=10`

```
while (a<100):
    print (a)
    print ("Over!")
```

(ii) `while x<10:`

```
print (x)
x=x+2
```

(iii) `for p in range (3)`

```
for q in range (3)
    print (p*q)
```

`else:`

```
print ("outer loop ends")
```

3

Section-III**Question 38.**

Software Development Company has set up its new center at Raipur for its office and web based activities. It has 4 blocks of buildings named Block A, Block B, Block C, Block D.

Number of computers

|         |     |
|---------|-----|
| Block A | 25  |
| Block B | 50  |
| Block C | 125 |
| Block D | 10  |

25

50

125

10

Shortest distance between various Blocks in meters:

|                    |    |
|--------------------|----|
| Block A to Block B | 60 |
| Block B to Block C | 40 |
| Block C to Block A | 30 |
| Block D to Block C | 50 |

- (i) Name the most suitable block where the server should be installed.
- (ii) Suggest the type of network to connect all the blocks.
- (iii) The company is planning to link all the blocks through secure and high-speed wired medium. Suggest a way to connect all the blocks.
- (iv) Suggest the most suitable wired medium for efficiently connecting each computer installed in every block.
- (v) Which of the following device will be suggested by you to connect each computer in each of the buildings?
- Switch
  - Modem
  - Gateway

Question 39.

5

A list contains Item\_code, Item\_name, qty and price. Sort the list :

- (i) In ascending order of qty using Bubble sort.  
(ii) In descending order of price using Insertion sort.

Question 40.

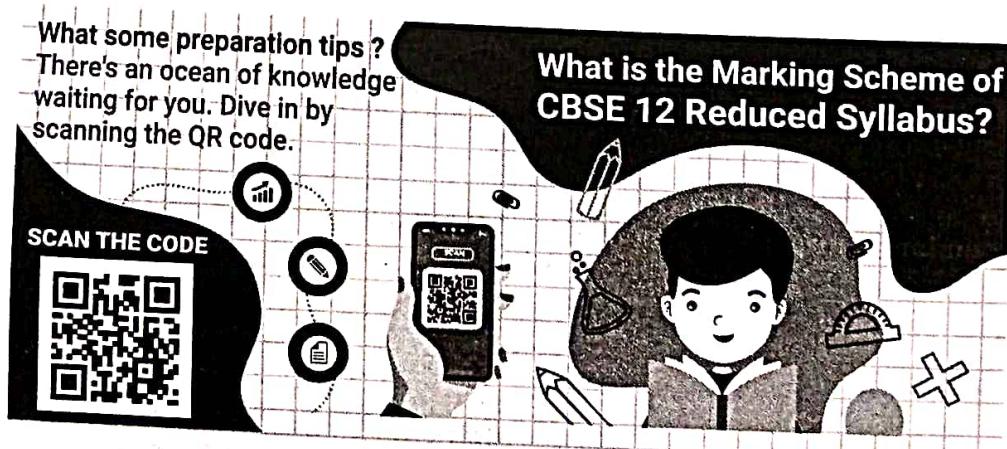
5

A Write a program to implement a stack for these book details (bookno, bookname). That is, now each item node of the stack contains two types of information – a bookno and its name. Just implement push and display operations.

OR

B Write a function to push any student's information to stack.

5



# Solutions of Question Paper

2

## PART-A Section-I

**Answer. 1.**

(a) if  $a >= 2$ :

(1 mark for correct answer)

**Answer. 2.**

The function round() is used to convert a fractional number into whole as the nearest next whereas the function floor() is used to convert to the nearest lower whole number. e.g.,

round (5.8) = 6, round (4.1) = 5

and

floor (6.9) = 6, floor (5.01) = 5

(½ mark for difference)

(½ mark for example)

**Answer. 3.**

15

(1 mark for correct answer)

**Answer. 4.**

r+ → opens text files in read & write mode.

rb+ → opens binary files in read & write mode.

(½ mark for each correct differentiation)

**Answer. 5.**

This will give no output as read () function will place the pointer at EOF. Now there will be no more lines to be read by read (5) function.

(1 mark for each correct output)

**Answer. 6.**

Output : [5, 7, -9, 0, 5]

(1 mark for each correct answer)

**Answer. 7.**

(a) Star topology

(1 mark for each correct answer)

**Answer. 8.**

(d) VB Script

(1 mark for each correct answer)

**Answer. 9.**

(a) +5

(1 mark for each correct answer)

**Answer. 10.**

(b) for i in range(0,5):

(1 mark for each correct answer)

**Answer. 11.**

Objects stored in list are ordered while those in dictionaries are unordered.

(1 mark for each correct answer)

**Answer. 12.**

Value that are being passed are called arguments and values that are received are called parameters.

(1 mark for each correct difference)

**Answer. 13.**

A file handle or a file\_object serves as a link to a file residing on the computer. These are used to read and write relay to a file on disk.

(1 mark for each correct answer)

**Answer. 14.**

Extension of a given file name can be found by using the function os.path.splitext, that returns a two-element tuples. Now extension is the element indexed as 1.

(1 mark for each correct answer)

**Answer. 15.**

(c) >>>pickle.dumps(object, 3, True)

(1 mark for each correct answer)

**Answer. 16.**

```
import Pkt1.module1
Pkt1.module1.funcl()
```

(1 mark for each correct answer)

**Answer. 17.**

(b) DBTG Codasyl

(1 mark for each correct answer)

**Answer. 18.**

DISTINCT clause

(1 mark for each correct answer)

**Answer. 19.**

UPDATE

(1 mark for each correct answer)

**Answer. 20.**

A cursor is a Python object that enables you to work with the database. In dataset terms, the cursor is positioned at a particular location within a table or tables in a database.

(1 mark for each correct answer)

**Answer. 21.**

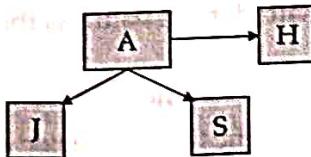
(b) cursor.callproc(procedureName,[parameters,])

(1 mark for each correct answer)

## Section-II

**Answer. 22.**

(i)



- (ii) Server can be placed in the A building as it has the maximum number of computers.
- (iii) Repeater can be placed between A and S building as the distance is more than 110 m.
- (iv) Radio waves can be used in hilly region as they can travel through obstacles.
- (v) Switch

(1 mark for any four correct points each)

**Answer. 23.**

- (i) SELECT \* FROM TRANSACTION WHERE TYPE ="Credit";
- (ii) SELECT CNO,AMOUNT FROM TRANSACTION WHERE (MONTH (DOT)="September" AND YEAR(DOT)=2017);
- (iii) SELECT MAX (DOT) FROM TRANSACTION WHERE CNO="103":
- (iv) SELECT CNO, CNAME, DOT FROM CUSTOMER C, TRANSACTION T WHERE C.CNO=T.CNO AND AMOUNT>=2000;
- (v)

| Count(*) | AVG (AMOUNT) |
|----------|--------------|
| 4        | 4375         |

(1 mark for any correct points each)

**PART-B****Section-I****Answer 24.**

Illegal variables or functions name are as below:

Days \* Rent, do, Grant Total, 2Clients

Because of being either keyword or including space or operator or starting with integer.

(½ mark for each correct identifier)

**Answer 25.**

Bubble sort is a simple sorting technique that works by repeatedly stepping through the list to be sorted, comparing each pair of adjacent items and swapping them if they are in the wrong order. The pass through the list is repeated until no swaps are needed, which indicates that the list is sorted. The algorithm gets its name from the way smaller elements "bubble" to the top of the list. Because it only uses comparisons to operate on elements, it is also called a comparison sort.

(2 marks for correct definition)

**OR**

[79, 19, 43, 52, 3, 95] - Pass 1

[19, 43, 52, 3, 79, 95] - Pass 2

[19, 43, 3, 52, 79, 95] - Pass 3

(2 marks for each correct answer)

**Answer 26.**

```
def main():
    r = input('enter any radius : ')
    a = math.pi * math.pow(r, 2)
    print (" Area = ", a)
```

(2 marks for correct code)

**Answer 27.**

A parameter having default value in the function header is known as a default parameter. A parameter can be specified as default only if all the parameters on its right are specified as default. To specify a default parameters syntax is :

```
def<function header> (arg1, arg2---argx=<value>):
```

argx will now be a default parameter with default value as the value specified.

(2 marks for correct answer)

**OR**

Indentation is necessary for Python. It specifies a block of code. All code within loops, classes, functions, etc is specified within an indented block. It is usually done using four space characters. If your code is not indented necessarily, it will not execute accurately and will throw errors as well.

(2 marks for correct answer)

**Answer 28.**

| Text File  | Binary File  |
|--|--|
| It stores information in ASCII or Unicode characters.  | It stores information just in the form as is stored in the memory. |
| In text file, each line of text is terminated with a special character known as EOL (End of Line). | In binary files, there is no delimiter for lines.                  |

(2 marks for each correct answer)

**Answer 29.**

When a module is imported with from <module\_name> import \*statement then all the objects mentioned in \_\_all\_\_ list are imported. If some of the objects, say for eg. a -class called marks, is omitted from the list then it won't be imported and we will get the following error. Traceback (most recent call last): NameError : name 'marks' is not defined.

(2 marks for correct answer)

**Answer. 30.**

Result = 15

**Answer. 31.**

3G technology adds multimedia facilities such as video, audio and graphics applications whereas 4G will provide better than TV quality images and video links. (2 marks for correct answer)

**Answer, 32.**

A worm is a self-replicating computer program. It uses a network to send copies of itself to other computers on the network and it may do so without any user intervention. Most of the common antivirus (anti-worm) remove worm. (2 marks for correct answer)

**Answer. 33.**

A primary key is a value that can be used to identify a unique row in a table. While an alternate key is any candidate key which is not selected to be the primary key.

Example : Consider table PERSON

| Name    | Bank A/C Num | Aadhar Num |
|---------|--------------|------------|
| Rahul   | 1290889909   | 1800991222 |
| Gopal   | 1909090909   | 1908909090 |
| Bhavish | 1902090909   | 8298291282 |

So, Bank A/C Num and Aadhar Num are the candidate keys for the table.

Primary key: Aadhar Num

Alternate key: Bank A/C Num

(2 marks for correct answer)

## **Section-II**

**Answer. 34.**

```
import MySQLdb
db=MySQLdb.connect('localhost','salesman1','sale1','Sales')
cursor=db.cursor(prepared=True)
sql_query="""INSERT INTO Orders (ORDNUMB, CUSTNO, ORDDTE) VALUES
('%s','%s','%s')"""
rec_inst=[('12489', '124', '01-03-98'), ('12491', '311', '10-03-98'),
('12495', '315', '31-03-98'), ('12498', '522', '10-04-98')]
try:
    cursor.executemany(sql_query,rec_inst)
    print(cursor.rowcount,"Records inserted successfully")
    db.commit()
except:
    db.rollback()
    cursor.close()
db.close()
```

(1 mark for correct db value)

(1 mark for correct sqol\_query)

(1 mark for correct try & except)

**Answer. 35.**

```

list1 = []
num = int (input("Number of elements in list"))
for n in range (num):
    numbers = int (input ("Enter number"))
    list1.append (numbers)
list2 = []
num1 = int (input("How many number in list:"))
for n in range (num1):
    numbers = int (input ("Enter number"))
    list2.append (numbers)
merged_list = list1 + list2
print ("Merged list with elements from both lists:",merged_list)

```

(3 marks for correct program)

**OR****Step 1 Start****Step 2 If the value of top is -1 go to step 3 else goto step 4****Step 3 Print "Stack Empty" and go to step 7****Step 4 Deleted item = Stack[top]****Step 5 Decrement top by 1****Step 6 print "Item Deleted"****Step 7 Stop**

(½ mark for each correct step except last one)

**Answer. 36.**

```

import pickle
file=open ("log.dat", 'rb')
try:
    while True:
        y=load(file)
        #print y
        X=str.find('Xerror' :)
        if X != -1:
            count++
            y.split()
            n=y.lstrip('Xerror.')
            m=int(n)
            sum=sum+m
    print ("No of error lines",count)
    print ("Error",sum)
except:
    print ('Error')

```

(½ mark for opening the file correctly)

(1 mark for correct sum of error values)

(1 mark for total number of error values)

(½ mark for correct average of error value)

**Answer. 37.**

```

phone_no=input ("Enter phone number with area code:")
check=0
for a in range (len(phone_no)):

```

```

if a==3 or a==7 :
    if phone_no [a] != '-':
        print("invalid input")
        break
    else:
        if not ((phone_no[a]>='A' and phone_no[a]<='Z') or (phone_no[a]>='a' and phone_no[a]<='z')):
            print("Valid Input")
            break
    else:
        print("Valid phone no", phone_no)

```

**OR**

- (i) The giving loop is infinite loop as the value of a is not changing. There can be lots of possible corrections, one is given below:

```

a=10
while (a<100):
    print (a)
    a+=10
    print ("Over!")

```

- (ii) The given code is wrong as value of x is not initialized. There can be lots of possible corrections, one is given below:

```

x=0
while x<10:
    print (x)
    x=x+2

```

- (iii) ':' is missing in for statements

```

for p in range (3):
    for q in range (3):
        print (p*q)
else:
    print ("outer loop ends")

```

(1 mark for each correct error underlined)

### Section-III

**Answer. 38.**

- (i) Block C, It has maximum number of computers.

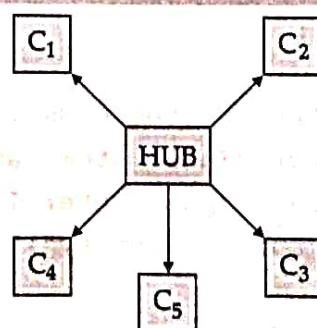
(1 mark for correct answer)

[CBSE Marking Scheme, 2020]

- (ii) LAN

(1 mark for correct answer)

[CBSE Marking Scheme, 2020]



- (iii) Star topology

(1 mark for correct answer)

- (iv) Ethernet Cable

(1 mark for correct answer)

- (v) Switch.

(1 mark for correct answer)

**Answer. 39.**

```
(i) def bubble_sort(DATA_LIST):
    i=0
    j=0
    l=len(DATA_LIST)
    for i in range(l):
        print ("Bubble Sort Iterations - Asc order of quantity")
        for j in range(i+1,l):
            if data list[i][3]> data list[j][3]:
                if DATA_LIST[j][3]:
                    # swapping
                    DATA_LIST[i][0], DATA_LIST[j]
                    [0]=DATA_LIST[j][0], DATA_LIST[i][0]
                    DATA_LIST[i][1], DATA_LIST[j]
                    [1]=DATA_LIST[j][1], DATA_LIST[i][1]
                    DATA_LIST[i][2], DATA_LIST[j]
                    [2]= DATA_LIST[j][2], DATA_LIST[i][2]
                    DATA_LIST[i][3], DATA_LIST[j]
                    [3]=DATA_LIST[j][3], DATA_LIST[i][3]
            print (DATA_LIST)

(ii) def insertion_sort(DATA_LIST):
    for K in range(1, len(DATA_LIST)):
        temp =DATA_LIST[K][2]
        ptr=K-1
        print (insertion Sort Iterations - Desc Order of price)
        While (ptr >= 0 and) DATA LIST_ [ptr][2] <temp:
            DATA LIST[ptr +1][0]=DATA_LIST[ptr][0]
            DATA LIST[ptr +1][1]=DATA_LIST[ptr][1]
            DATA LIST[ptr +1][2]=DATA_LIST[ptr][2]
            DATA LIST[ptr +1][3]=DATA_LIST[ptr][3]
            ptr=ptr-1
        DATA_LIST[ptr+1][2]=temp
    print (DATA_LIST)
    maxrange = input("Enter Number of Items")
    Items=[]
    for i in range(maxrange):
        Details=[]
        Details.append(input("Enter Item Code"))
        Details.append(raw_input("Enter Item name"))
        Details.append(float(raw_input("Enter Item price")))
        Details.append(input("Enter Quantity"))
        Item.append (Details)
    print ("BEFORE SORTING", Items)
    bubble_sort(Items)
    insertion_sort(Items)
```

(2 & ½ marks for each correct sorting program)

**Answer. 40.**

```

def isEmpty(stk):
    if stk==[]:
        return True
    else:
        return False
def pushbook(stk,item):
    stk.append(item)
    top=len(stk)-1
def displaybook(stk):
    if isEmpty(stk):
        print ("Stack Empty")
    else:
        top = len(stk)-1
        print ("Book No----- Book Name")
        for a in range (top,-1, -1)
            print (stk[a].split())
#main
stk=[]
top=None
while True:
    print ("Books")
    print ("1. Add a book")
    print ("2. Display list")
    print ("3. Exit")
    if ch==int (input("Enter your choice 1-3:"))
        if ch==1
            bno=input("Enter Book No.")
            bname=input("Enter Book Name")
            item=[bno, bname]
            pushbook(item, stk)
            input()
        elif ch==3:
            displaybook(stk)
            input()
        elif ch==3:
            break
        else:
            print ("Invalid choice!")
input()
```

(1 & ½ mark for each correct 1st & 2nd function definition)

(2 marks for correct 3rd function definition)

**OR**

```

def push (stack):
    s=[]
    print ("STACK BEFORE PUSH")
    display(stack)
    s.append(input("Enter student rollno:"))
    s.append(input("Enter student name:"))
```

```

s.append(input("Enter student grade:"))
stack.append(s)
def display(stack):
    l=len(stack)
    print("STACK CONTENTS")
    for i in range(l-1, -1, -1):
        print stack[i]
stack=[]
print ("Creating Stack")
n=input("Enter the number of students")
for i in range(len(n)):
    student=[]
    student.append (input("Enter student rollno:"))
    student.append (input("Enter student name:"))
    student.append (input("Enter student grade:"))
    stack.append(student)
push(stack)
display(stack)

```

(2 and ½ marks for each correct function definition)



Q. 2. Write a program to store information of students in a stack. The information will consist of the student's roll number, name and grade. The stack will contain the list of students.

# Sample Question Paper

3

Solved

**General Instructions :**

- (i) This question paper contains two parts A and B. Each part is compulsory.
- (ii) Both Part A and Part B have choices.
- (iii) Part-A has 2 sections :
  - (a) Section-I is short answer questions, to be answered in one word or one line.
  - (b) Section-II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.
- (iv) Part-B is Descriptive Paper.
- (v) Part-B has three sections.
  - (a) Section-I is short answer questions of 2 marks each in which two questions have internal options.
  - (b) Section-II is long answer questions of 3 marks each in which two questions have internal options.
  - (c) Section-III is very long answer questions of 5 marks each in which one question has internal option.
- (vi) All programming questions are to be answered using Python Language only.

## PART-A

### Section-I

Select the most appropriate option out of the options given for each question. Attempt any 15 questions from question no 1 to 21.

Question 1.

Which of the following is valid arithmetic operator in Python?

- (a) //
- (b) ?
- (c) <
- (d) and

Question 2.

Q1 Write the type of tokens from the following:

- (i) if
- (ii) roll\_no

Question 3.

Find and write the output of the following python code:  
x = "abcdef"

1

1

```
i = "a"
while i in x:
    print(i, end = " ")
```

1

**Question 4.**

Name any two compile time error.

1

**Question 5.**

What is the output of the following piece of code when executed in the Python shell?

```
a={1,2,3}
a.intersection_update({2,3,4,5})
print (a)
(a) {2,3}
(b) Error, duplicate item present in list
(c) Error, no method called intersection_update for set data type
(d) {1,4,5}
```

1

**Question 6.**

Which function calculates middle value of the arithmetic data in iterative order?

- (a) median()
- (b) mode()
- (c) mean()
- (d) None of these

1

**Question 7.**

**A1** Trace the flow of execution for following program.

```
1 def power (b,p):
2     r = b**p
3     return r
4
5 def calcsquare(a):
6     a= power(a,2)
7     return a
8
9 n=5
10 result = calcsquare(n)
11 print(result)
```

1

**Question 8.**

**A1** What does the following code do ?

```
def simpleFunction():
    "This is a simple function that returns 1"
    return 1
    print(simpleFunction_doc_[10:4])
```

1

**Question 9.**

What is the use of flush() method?

1

**Question 10.**

What will be the result of following statement with following hierarchical structure of package Welcome?

Welcome

```
↳ init_.py
↳ mod1
↳ mod2
↳ mod3
```

module mod1 has functions prints (), ticket()  
 module mod2 has functions quick (), seats ()  
 and variable  
 The statement is  
 import Welcome.mod1.prints().

**Question 11.**

**A1** Consider the following operation performed on a stack of size 5.

```
Push(1);
Pop();
Push(2);
Push(3);
Pop();
Push(4);
Pop();
Pop();
Push(5);
```

After the completion of all operation, the number of elements present in stack are

- |       |       |
|-------|-------|
| (a) 1 | (b) 2 |
| (c) 3 | (d) 4 |

**Question 12.**

Write two advantages of using an optical fibre cable over an ethernet cable to connect two service stations, which are 200m away from each other.

**Question 13.**

What is the difference between video conferencing and chat?

**Question 14.**

Which device is used to connect all computers inside a lab?

**Question 15.**

Explain the degree of table.

**Question 16.**

Character data can be stored as \_\_\_\_\_.

**Question 17.**

**A1** What is the default port for MySQL Server?

**Question 18.**

Which method is used to retrieve the executed database function or stored procedure result in Python?

- |                             |                           |
|-----------------------------|---------------------------|
| (a) cursor.stored_results() | (b) cursor.get_results()  |
| (c) cursor.fetch_results()  | (d) cursor.show_results() |

**Question 19.**

**A1** If  $a = [5,4,3,2,2,2,1]$ , evaluate the following expressions:

- (a)  $a[-1]$  (b)  $a[a[a[a[a[2]+1]]]]$

**Question 20.**

Give the output of the following statements:

```
>>> str='Hello Python'
>>> print(str.lstrip("Hel"))
```

**Question 21.**

What are the various types of function arguments?

### Section-II

Both the Case study based questions are compulsory. Attempt any 4 sub parts from each question. Each question carries 1 mark.

**Question 22.**

**AQ** Write SQL queries for (i) to (iii) and find outputs for SQL queries (iv) & (v), which are based on the tables

**TABLE : ACCOUNT**

| ANO | ANAME        | ADDRESS    |
|-----|--------------|------------|
| 101 | Nirja Singh  | Bangalore  |
| 102 | Rohan Gupta  | Chennai    |
| 103 | Ali Reza     | Hyderabad  |
| 104 | Rishabh Jain | Chennai    |
| 105 | Simran Kaur  | Chandigarh |

**TABLE : TRANSACT**

| TNO  | ANO | AMOUNT | TYPE     | DOT        |
|------|-----|--------|----------|------------|
| T001 | 101 | 2500   | Withdraw | 2017-12-21 |
| T002 | 103 | 3000   | Deposit  | 2017-06-01 |
| T003 | 102 | 2000   | Withdraw | 2017-06-12 |
| T004 | 103 | 1000   | Deposit  | 2017-10-22 |
| T005 | 101 | 12000  | Deposit  | 2017-11-06 |

- (i) To display details of all transactions of TYPE Deposit from Table TRANSACT
- (ii) To display the ANO and AMOUNT of all Deposits and Withdrawals done in the month of October 2017 from table TRANSACT
- (iii) To display the last date of transaction (DOT) from the table TRANSACT for the Accounts having ANO as 103.
- (iv) SELECT ANO, COUNT (\*), MIN (AMOUNT) FROM TRANSACT GROUP BY ANO HAVING COUNT (\*) > 1;
- (v) SELECT COUNT (\*), SUM (AMOUNT) FROM TRANSACT WHERE DOT <= '2017-06-12';      4

**Question 23.**

**AQ** Uplifting Skills Hub India is a knowledge and skill community which has an aim to uplift the standard of knowledge and skills in the society. It is planning to setup its training centres in multiple towns and villages in India with its head offices in the nearest cities. They have created a model of their network with a city, a town and three villages as follows.

As a network consultant, you have to suggest the best network related solutions for their issues/problems raised in (i) to (iv) keeping in mind the distance between various locations and given parameters.

VILLAGE 1

VILLAGE 2

VILLAGE 3

B\_TOWN

Shortest distance between various location:

|                             |        |
|-----------------------------|--------|
| VILLAGE 1 to B_Town         | 2 KM   |
| VILLAGE 2 to B_Town         | 1.0 KM |
| VILLAGE 3 to B_Town         | 1.5 KM |
| VILLAGE 1 to VILLAGE 2      | 3.5 KM |
| VILLAGE 1 to VILLAGE 3      | 4.5 KM |
| VILLAGE 2 to VILLAGE 3      | 2.5 KM |
| A_CITY Head Office to B_HUB | 25 KM  |

Number of Computers installed at various locations are as follows:

|                    |     |
|--------------------|-----|
| B_TOWN             | 120 |
| VILLAGE 1          | 15  |
| VILLAGE 2          | 10  |
| VILLAGE 3          | 15  |
| A_CITY Head OFFICE | 6   |

**Note :**

- In Villages, there are community centres, in which one room has been given as training centre to this organization to install computers.
  - The organization has got financial support from the government and top IT companies.
- (i) Suggest the most appropriate location of the SERVER in the B\_HUB (out of the 4 locations), to get the best and effective connectivity. Justify your answer.
- (ii) Suggest the best wired medium to efficiently connect various locations within the B\_HUB.
- (iii) Which hardware device will you suggest to connect all the computers within each location of B\_HUB ?
- (iv) Which service/protocol will be most helpful to conduct live interactions of Experts from Head Office and people at all locations of B\_HUB ?
- (v) Suggest the topology & the best cable layout (location to location) to efficiently connect various locations within the B\_HUB.

4

## **PART-B**

### **Section-I**

**Question 24.**

State when only first argument is evaluated and when both in following expressions if  $a = 12$ ,  $b = 26$ ,  $c = 12$ ,  $d = 0$ :

- |  |                               |
|--|-------------------------------|
| (i) $b > c$ and $c > d$                  | (ii) $a \leq b$ or $c \leq d$ |
| (iii) $(b + c) \leq a$ and not $(c < a)$ | (iv) $b < d$ and $d < a$      |

2

**Question 25.**

Write a single loop to display all the contents of a text file c:\poem.txt after removing leading and trailing white spaces.

2

**OR**

- (AI) A text file "PARA.txt" contains a paragraph. Write a function that searches for a given character and reports the number of occurrence of the character in the file.

2

**Question 26.**

Write a Python script that passes through an input string and prints its characters in different lines-two characters per line.

2

**Question 27.**

- (AI) Write a program that reads a number, then converts it into octal, hexadecimal, ASCII and Unicode string using built in functions of Python.

2

**OR**

How can we import a module in Python?

2

**Question 28.**

Write a program to print negative, zero or positive according to whether variable x is less than zero, equal to zero or greater than zero respectively.

2

**Question 29.**

Evaluate the expression  $5, 6, 2, +, *, 12, 4, /, -$  in tabular form showing stack status after every step.

2

**Question 30.**

Write any two difference between twisted pair and coaxial pair cable.

2

**Question 31.**

Define Equi join.

**Question 32.**

Write a code to use parameterized query and prepared statement in Python.

**Question 33.**

Write a program to find the reverse of a number.

2

2

2

## Section-II

**Question 34.**

**A1** In the following list containing integers, sort the list using Insertion sort function. Also show the status of the list after each iteration. 15 -5 20 -10 10

3

**Question 35.**

A file sports.dat contains information in following formal Event Participant. Write a function that would read contents from file sports.dat and creates a file named Athletics. dat copying only those records from sports.dat where the event name is "Athletics"

3

OR

**A1** A file phonebook.dat stores the details in the following format:

|       |          |
|-------|----------|
| Name  | Phone    |
| Jivin | 86666000 |
| Kriti | 101001   |

Write a program to edit the phone numbers of "Arvind" in file. If there is no record for "Arvind" report error.

2

**Question 36.**

A function checkMain() defined in module Allchecks.py is being used in two different programs

In program 1 as

Allchecks.checkMain(3, 'A')

and in program 2 as

checkMain(4, 'Z').

Why are the functions call statements different in each program?

3

**Question 37.**

How does Python know where to look for the modules and packages that are imported ?

3

OR

**A1** Write a python program to demonstrate implementation of stack using lists with proper documentation.

3

## Section-III

**Question 38.**

Write a program to search input any customer name and display customer phone number if the customer name exist in the list.

5

**Question 39.**

**A1** The following array of integers is to be arranged in ascending order using the bubble sort technique: 26, 21, 20, 23, 29, 17.

5

Give the contents of the array at the end of each iteration. Do not write the algorithm.

5

**Question 40.**

What is Join? Also, define the different kinds of SQL Join.

5

OR

Write the Python code to create a record in a table Employee dynamically.

5



# Solutions of Question Paper

3

**PART-A**  
**Section-I**

Answer. 1.

(a) //

(1 mark for correct answer)

[CBSE Marking Scheme, 2020]

Answer. 2.

(i) Keyword

(ii) Identifier.

(1/2 mark for each correct type)

[CBSE Marking Scheme, 2020]

Answer. 3.

aaaaaa---- OR infinite loop

(1 mark for correct answer)

[CBSE Marking Scheme, 2020]

Answer. 4.

Syntax error, Semantic error

(1/2 marks for each)

Answer. 5.

(a) {2,3}

(1 mark for correct answer)

Answer. 6.

(a) median()

(1 mark for correct answer)

Answer. 7. 1 → 5 → 9 → 10 → 5 → 6 → 1 → 2 → 3 → 6 → 7 → 10 → 11

1 → 5 → 9 → 10 → 6 → 2 → 3 → 7 → 11

(1 mark for correct answer)

Answer. 8.

Just returns 1 & prints nothing

(1 mark for correct answer)

Answer. 9.

When using buffered input or output, it may occasionally be useful to use the flush method to ensure that the file's buffer is emptied.

(1 mark for correct answer)

Answer. 10.

This will give an error as while using import syntax the last attribute must be a subpackage or a module.  
It should not be any function or class name.

(1 mark for correct answer)

Answer. 11.

(a) 1

(1 mark for correct answer)

Answer. 12.

Advantages of optical fibre over ethernet cable:

- (i) Faster speed than Ethernet
- (ii) Lower attenuation

(1/2 mark for each advantage)

**Answer. 13.**

In video conference, we can include more than one person and it allows text, video and audio while chat is one to one communication.  
 (1 mark for each correct difference)

**Answer. 14.**

Hub or Switch  
 (1 mark for correct answer)

**Answer. 15.**

The degree of the table denotes the number of columns.  
 (1 mark for correct answer)

**Answer. 16.**

Either fixed or variable length string  
 (1 mark for correct answer)

**Answer. 17.**

The default port for MySQL Server is 3306. Another standard default port is 1433 in TCP/IP for SQL Server.  
 (1 mark for correct answer)

**Answer. 18.**

(a) cursor.stored\_results()  
 (1 mark for correct answer)

**Answer. 19.**

(a) 1 (b) 2  
 (1 mark for correct answer)

**Answer. 20.**

lo Python  
 (1 mark for correct output)

**Answer. 21.**

There are three types of function arguments

- (i) Positional argument
- (ii) Keyword argument
- (iii) Default argument

## Section-II

**Answer. 22.**

- (i) SELECT \* FROM TRANSACT WHERE TYPE = 'Deposit'; (½ mark for Correct Select statement)  
 (½ mark for Correct WHERE clause)
- (ii) SELECT ANO, AMOUNT FROM TRANSACT WHERE DOT >= '2017-10-01' AND DOT <= '2017-10-31';

**OR**

SELECT ANO, AMOUNT FROM TRANSACT WHERE DOT BETWEEN '2017-10-01' AND '2017-10-31';  
 (½ mark for correct SELECT statement)

(½ mark for correct WHERE clause)

**Note:**

- No marks to be deducted if MONTH() is used.

- No marks to be deducted if LIKE clause is used correctly.

- (iii) SELECT DOT FROM TRANSACT WHERE ANO = 103; (½ mark for correct SELECT statement)  
 (½ mark for correct WHERE clause)

- (iv) ANO COUNT(\*) MIN (AMOUNT)

|     |   |      |
|-----|---|------|
| 101 | 2 | 2500 |
| 103 | 2 | 1000 |

(NOTE: Values may be written in any order) (½ mark for correct output)

- (v) COUNT (\*) SUM(AMOUNT)

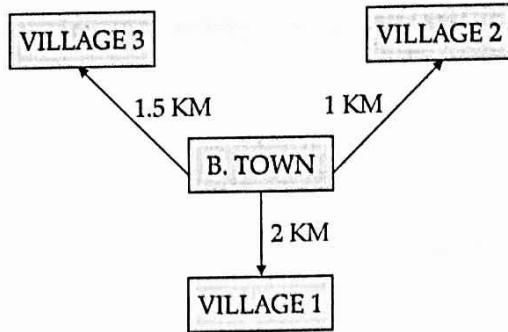
2 1

(½ mark for correct output)

**Answer. 23.**

- (i) B\_Town can house the server as it has the maximum number of computers.  
 (ii) Optical fibre cable will be the best.  
 (iii) Switch  
 (iv) VoIP

(v) Star Topology



**PART-B**  
**Section-I**

**Answer. 24.**

- (i) both cases are true (ii) both cases are true  
 (iii) both cases are false (iv) both cases are false

(2 marks for correct answer)

**Answer. 25.**

```
for line in file ("c:\\poem.txt"):
    print (line.strip ())
```

(2 marks for correct answer)

OR

```
def countchar():
    fname = "PARA.txt"
    count=0
    c = raw_input("Enter the character to be search for")
    with open(fname, 'r') as f:
        for line in f:
            for word in line:
                for char in word:
                    if char.strip()==c.strip():
                        count=count + 1
    print ("No. of occurrences of",c,"=",count)
```

(2 marks for correct function)

**Answer. 26.**

```
str = input ("Enter a string")
for a in range (len(str)):
    if(a%2==0):
        print (str [a],)
    else :
        print (str [a])
```

(1 mark for correct for loop)

(1 mark for correct if &amp; else statement)

**Answer. 27.**

```
# Number system converter
import math
num=int (input("Enter a number:"))
print("Number entered=", num)
octnum=oct(num)
hexnum=hex(num)
uninum=unicode(num)
asciinum=str(num)
```

```

print ("Octal equivalent:", octnum)
print ("Hexadecimal equivalent:", hexnum)
print ("Unicode of number:", uninum)
print ("ASCII code of number:", asciinum)
    
```

(2 marks for correct program)

OR

**1. using import****Syntax:**`import <modulename1>[, <modulename2>, ...<modulename>]`**Example:**`import math, cmath`**2. using from****Syntax:**`from <modulename> import <function1>[,  
<function2>, ...<functionn>]`**Example:**`from fib import fib1, fib2`

(1 mark for each correct method)

**Answer 28.**

```

x = int (input ("Enter a number:"))
if (x > 0):
    print ("positive")
elif (x < 0):
    print ("negative")
else :
    print ("zero")
    
```

(2 marks for correct program)

**Answer 29.**

| Element | Stack   | Intermediate Result |
|---------|---------|---------------------|
| 5       | 5       |                     |
| 6       | 5,6     |                     |
| 2       | 5,6,2   |                     |
| +       | 5,8     | $6 + 2 = 8$         |
| *       | 40      | $5 * 8 = 40$        |
| 12      | 40,12   |                     |
| 4       | 40,12,4 |                     |
| /       | 40,3    | $12/4 = 3$          |
| -       | 37      | $40 - 3 = 37$       |
|         |         | Result = 37         |

(1/2 mark for evaluation till each operator)

OR

(1 mark for only writing the Final answer without showing stack status.)

**Answer 30.**

| Twisted pair cable   | Co-axial cable  |
|--|---|
| (i) Their bandwidth is not as high as coaxial cables.  | (i) It has high bandwidth.  |
| (ii) A twisted pair consists of two copper wire twisted around each other (each has its own insulation around it) like a double helix. | (ii) A coaxial cable consists of a copper wire core covered by an insulating material and a layer of conducting material over that. |

(1 mark for each correct difference)

**Answer. 31.**

Equi join is a simple SQL join condition that uses equal sign as a comparison operator.

**Syntax**

```
SELECT column1, column2, column3
FROM Table1, Table2
WHERE Table1. column1 = Table2. column1;
```

(1 mark for definition)

(1 mark for syntax)

**Answer. 32.**

```
import mysql.connector
connection=mysql.connector.connect(host = 'localhost', database='python_db', user='pynative', password='pynative@#29')
cursor = connection.cursor(prepared=True)
#this will return MySQLCursorPrepared object
```

(1 mark for correct Parameterized query)

(1 mark for correct prepared statement)

**Answer. 33.**

```
n = input("Enter the number")
rev=0
while(n>0):
    a=n%10
    rev=(rev*10)+a
    n=n//10
print ("Reversed number=",rev)
```

(2 marks for correct program)

**Section-II****Answer. 34.**

```
def insertion_sort(DATA_LIST):
    for K in range(1, len(DATA_LIST)):
        temp =DATA_LIST[K]
        ptr=K-1
        While (ptr >= 0) and DATA_LIST[ptr]>temp:
            DATA_LIST[ptr +1]=DATA_LIST[ptr]
            ptr=ptr-1
        DATA_LIST[ptr +1]=temp
        print (DATA_LIST)
DATA_LIST = [15, -5, 20, -10, 10]
print ("LIST BEFORE SORTING", DATA_LIST)
insertion_sort(DATA_LIST)
[15, -5, 20, -10, 10]
[-5, 15, 20, -10, 10] - Pass 1
[-10, -5, 15, 20, 10] - Pass 2
[-10, -5, 10, 15, 20] - Pass 3
```

(1½ mark for correct algorithm)

(1½ mark for correct pass)

**Answer. 35.**

```
def athletics:
    file1 = open ("sports.dat", 'r')
    file2 = open ("Athletics.dat", 'w')
    rec = ""
    while rec! = "":
```

```

rec = file1.readline()
sport = rec.split('n')
if sport[0] == "Athletics":
    file2.write (rec)
    file2.write ('/n')
else:
    pass
file1.close()
file2.close()

return

```

(½ mark for opening both files correctly)

(½ mark for correct loop condition)

(1 mark for reading the file)

(1 mark for writing the file)

**OR**

```

fpl = open ("phonebook.dat", 'W+')
list = ""
while list:
    pos = ftell()
    list = fpl.readline()
    name, phone = list.split()
    if name == "Arvind":
        phone = input ("Enter new number:")
        fpl.seek (pos,0)
        fpl.write (name)
        fpl.write (" ")
        fpl.write (phone)
        fpl.close ()
        break
    else:
        print ("Name\"Arvind\"not found.")

```

(1 mark for opening the file)

(½ mark for correct loop condition)

(1 mark for writing data into file)

(½ mark for correct break condition)

#### Answer. 36.

In program 1, the complete module Allchecks.py must have been imported as import Allchecks  
So a SpaceName is created and we need to specify the module name.

Whereas in program 2, only the function checkMain() must have been imported as from All checks  
import checkMain().

So the checkMain() function is imported into the namespace of the program2 and hence can be used  
independently.

(3 marks for correct answer)

#### Answer. 37.

The built in sys module has a list called sys.path that holds a list of the directories that constitute the Python path. The first directory is the directory that contains the program itself. If the PYTHONPATH environment variable is set, and the find paths are those needed to access Python's standard library – there are set when Python is installed.

(3 marks for correct answer)

**OR**

```

# Python program to
# demonstrate stack implementation
# using list

```

```

stack = []
# append() function to push
# element in the stack
stack.append('a')
stack.append('b')
stack.append('c')
print('Initial stack')
print(stack)
# pop() function to pop
# element from stack in
# LIFO order
print('\nElements popped from stack:')
print(stack.pop())
print(stack.pop())
print(stack.pop())
print('\nStack after elements are popped:')
print(stack)
# uncommenting print(stack.pop())
# will cause an IndexError
# as the stack is now empty

```

(1 mark for correct append function)  
 (1 mark for correct pop function)  
 (1 mark for correct documentation)

### Section-III

#### **Answer 38.**

```

def printlist(s):
    i=0
    for i in range(len(s)):
        print (i,s[i])
    i = 0
phonenumbers = ['9840012345', '9840011111', '9845622222', '9850012345', '98
84412345']
flag=0
number = raw_input("Enter the phone number to be searched")
number = number.strip()
try:
    i = phonenumbers.index(number)
    if i >= 0:
        flag=1
except ValueError:
    pass
if(flag !=0):
    print ("\nphone number found in phonebook at index", i)
else:
    print ("\nphone number not found in phonebook")
    print ("\nPHONEBOOK")
printlist(phonenumbers)

```

(2 marks for correct for loop)  
 (1 mark for correct try & except statement)  
 (2 marks for correct if & else statement)

**Answer. 39.**

|     | 26 | 21 | 20 | 23 | 29 | 17 |
|-----|----|----|----|----|----|----|
| I   | 26 | 20 | 21 | 23 | 17 | 29 |
| II  | 20 | 21 | 23 | 17 | 26 | 29 |
| III | 20 | 21 | 17 | 23 | 26 | 29 |
| IV  | 20 | 17 | 21 | 23 | 26 | 29 |
| V   | 17 | 20 | 21 | 23 | 26 | 29 |

(1 mark for each correct iteration)

**Answer. 40.**

A join is a query that combines rows from two or more tables. In a join query, more than one tables are listed in FROM clause. The function of combining data from multiple tables is called joining.

Joins are used when we have to select data from two or more tables. Joins are used to extract data from two tables, when we need a relationship between certain columns in these tables. There are different kind of SQL joins:

#### 1. Equi-Join

Equi join is a simple SQL join condition that uses equal sign as a comparison operator.

Syntax

```
SELECT column1, column2, column3
FROM Table1, Table2
WHERE Table1 . column1 = Table2.column1
```

#### 2. Self-Join

A self join is a join where we join a particular table to itself. Here in this case, it is necessary to ensure that the join statement defines an ALIAS name for both the copies of the tables to avoid column ambiguity.

#### 3. Non-Equi Join

Non-Equi Join is used to return the result from two or more tables, where exact join is not possible, the SQL non-equi join uses comparison operators instead of, the equal sign like  $>$ ,  $<$ ,  $\geq$ ,  $\leq$  alongwith conditions.

Syntax

```
SELECT* FROM Table1, Table2
WHERE Table1 . column > = Table2.column;
```

#### 4. Natural Join

The natural join is a type of join and is structured in such a way that columns with same name of associated tables will appear once only.

Syntax

```
SELECT* FROM Table1
NATURAL JOIN Table2;
```

(1 mark for correct definition)

(1 mark for each correct type)

OR

```
#!/usr/bin/python
import MySQLdb
# Open database connection
db = MySQLdb.connect("localhost","testuser","test123","TESTDB" )
# prepare a cursor object using cursor() method
cursor = db.cursor()
# Prepare SQL query to INSERT a record into the database.
```

```

sql = "INSERT INTO EMPLOYEE(FIRST_NAME, LAST_NAME, AGE, SEX, INCOME) \ VALUES
      ('%s', '%s', '%d', '%c', '%d' )" % ('Mac', 'Mohan', 20, 'M', 2000)
try:
    # Execute the SQL command
    cursor.execute(sql)
    # Commit your changes in the database
    db.commit()

except:
    # Rollback in case there is any error
    db.rollback()
# disconnect from server
db.close()

```

(1 mark for correct db value)

(1 mark for correct sql query)

(2 marks for correct try &amp; except)

(1 mark for proper documentation)



### Ques 10. Write a program to

insert a record in a table.

Ans. Python code:

```
import MySQLdb
```

```
db = MySQLdb.connect("localhost","root","password","TESTDB")
```

```
cursor = db.cursor()
```

```
cursor.execute("CREATE TABLE EMPLOYEE(FIRST_NAME, LAST_NAME, AGE, SEX, INCOME)");
```

```
sql = "INSERT INTO EMPLOYEE(FIRST_NAME, LAST_NAME, AGE, SEX, INCOME) \ VALUES
      ('%s', '%s', '%d', '%c', '%d' )" % ('Mac', 'Mohan', 20, 'M', 2000)
```

```
try:
    # Execute the SQL command
```

```
    cursor.execute(sql)
```

```
    # Commit your changes in the database
```

```
    db.commit()
```

```
except:
    # Rollback in case there is any error
```

```
    db.rollback()
```

```
# disconnect from server
```

```
db.close()
```

Output:

MacBook-Pro:~ srujanreddy\$ python insert.py

1 row inserted

MacBook-Pro:~ srujanreddy\$

Ques 11. Write a program to

display all records in a table.

Ans. Python code:

```
import MySQLdb
```

```
db = MySQLdb.connect("localhost","root","password","TESTDB")
```

```
cursor = db.cursor()
```

```
cursor.execute("SELECT * FROM EMPLOYEE");
```

```
results = cursor.fetchall()
```

```
for row in results:
```

```
    print "First Name=%s, Last Name=%s, Age=%d, Sex=%s, Income=%d" % (row[0], row[1], row[2], row[3], row[4])
```

Output:

MacBook-Pro:~ srujanreddy\$ python select.py

First Name=Mac, Last Name=Mohan, Age=20, Sex=M, Income=2000

MacBook-Pro:~ srujanreddy\$

# Sample Question Paper

**4**

## Solved

### General Instructions :

- (i) This question paper contains two parts A and B. Each part is compulsory.
- (ii) Both Part A and Part B have choices.
- (iii) Part-A has 2 sections :
  - (a) Section-I is short answer questions, to be answered in one word or one line.
  - (b) Section-II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.
- (iv) Part-B is Descriptive Paper.
- (v) Part-B has three sections.
  - (a) Section-I is short answer questions of 2 marks each in which two questions have internal options.
  - (b) Section-II is long answer questions of 3 marks each in which two questions have internal options.
  - (c) Section-III is very long answer questions of 5 marks each in which one question has internal option.
- (vi) All programming questions are to be answered using Python Language only.

### PART-A Section-I

Select the most appropriate option out of the options given for each question. Attempt any 15 questions from question no 1 to 21.

#### Question 1.

Which of the following is true for variable names in Python?

- (a) unlimited length
- (b) all private members must have leading and trailing underscores
- (c) underscore and ampersand are the only two special characters allowed
- (d) none of the mentioned

#### Question 2.

Write the output from the following code:

```
t=('a', 'b', 'c', 'A', 'B')
print (max(t))
print (min(t))
```

1

1

**Question 3.**

How are strings internally stored ?

1

**Question 4.**

Suppose list1 is [3, 4, 5, 20, 5, 25, 1, 3], what is list1 after list1.pop(1)?

- (a) [3, 4, 5, 20, 5, 25, 1, 3]
- (b) [1, 3, 3, 4, 5, 5, 20, 25]
- (c) [3, 5, 20, 5, 25, 1, 3]
- (d) [1, 3, 4, 5, 20, 5, 25]

1

**Question 5.**

Find the error in the following codes.

```
def minus(total_decrement)
    output = total_decrement
```

1

**Question 6.**

**Q1** What is dot notation?

1

**Question 7.**

"A module cannot contain a main program". Is this statement true ?

1

**Question 8.**

**Q1** Observe the following code and answer the question that follow :

```
File = open (''Mydata'', 'a')
    _____ #Blank 1
File.close ( )
```

- (i) What type (Text/Binary) of file is Mydata?
- (ii) Fill the Blank 1 with statement to write "ABC" in the file "Mydata".

1

**Question 9.**

In how many ways can end of file be detected?

1

**Question 10.**

Explain seek() method.

1

**Question 11.**

Which of the following is not a web browser ?

- (a) Mozilla Firefox
- (b) Google Chrome
- (c) Apache
- (d) Internet Explorer

1

**Question 12.**

**Q1** How can a module in a package access the global variables ?

1

**Question 13.**

How is module namespace organized in a package ?

1

**Question 14.**

**Q1** Which of the following operator is used to replicate the list in Python?

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

1

**Question 15.**

**Q1** What is underflow situation?

1

**Question 16.**

What is Wi-Fi card?

1

**Question 17.**

Mozilla is a free internet software that includes

- (a) web browser
- (b) email client
- (c) HTML editor
- (d) All of these

1

**Question 18.**

What are all the domain names possible in gender?

1

**Question 19.**

The maximum length of the char column is \_\_\_\_\_.

1

**Question 20.**

Which SQL function returns the sum of values of a column of numeric type ?

- (a) TOTAL()
- (b) ADD()
- (c) SUM()
- (d) All of these

1

**Question 21.**

What is a query result set?

1

**Section-II**

Both the Case study based questions are compulsory. Attempt any 4 sub parts from each question. Each question carries 1 mark.

**Question 22.**

(a) Write SQL queries for (a) to (e) which are based on the tables

TABLE : PRODUCTS

| PID | PNAME              | QTY | PRICE | COMPANY    | SUPCODE |
|-----|--------------------|-----|-------|------------|---------|
| 101 | DIGITAL CAMERA 14X | 120 | 12000 | RENBIX     | S01     |
| 102 | DIGITAL PAD 11i    | 100 | 22000 | DIGIPOP    | S02     |
| 103 | PEN DRIVE 16 GB    | 500 | 1100  | STOREKING  | S01     |
| 104 | LED SCREEN 32      | 70  | 28000 | DISEXPERTS | S02     |
| 105 | CAR GPS SYSTEM     | 60  | 12000 | MOVEON     | S03     |

TABLE : SUPPLIERS

| SUPCODE | SNAME            | CITY    |
|---------|------------------|---------|
| S01     | GET ALL INC      | KOLKATA |
| S02     | EASY MARKET CORP | DELHI   |
| S03     | DIGI BUSY GROUP  | CHENNAI |

- (a) To display details of all the products in ascending order of product names (i.e., PNAME)
- (b) To display product name and price of all those products, whose price is in the range of 10000 and 15000 (both inclusive).
- (c) To display the number of products which are supplied by each supplier. i.e., the expected output should be;
 

|     |   |
|-----|---|
| S01 | 2 |
| S02 | 2 |
| S03 | 1 |
- (d) To display the price, product name and quantity (i.e., qty) of those products which have quantity more than 100.
- (e) To display the names of those suppliers who are either from DELHI or from CHENNAI.

4

**Question 23.**

A function is a block of organised and reusable code that is used to perform a single, related action. Functions provide better modularity for your application and a high degree of code reusability. The function blocks begin with the keyword def followed by the function name and parentheses().

Any input parameters or arguments should be placed within these parentheses. You can also define parameters inside these parentheses.

- (i) Which keyword is used to define function ?
- (ii) Which type of bracket is placed after name of function ?
- (iii) What is function ?
- (iv) Where are parameters define ?
- (v) What is the use of function ?

## PART-B

### Section-I

#### Question 24.

- AI** Identify the types of data from the following set of data:

'Arnav', u'Arnav', False, 'False', ['A', 'r', 'n', 'a', 'v'], ('A', 'r', 'n', 'a', 'v'), (3.7-j), 12L

#### Question 25.

Explain find() function?

OR

Write the output of the following code snippet

```
tup = ('geek',)
n = 5
for i in range(int(n)):
    tup = (tup,)
    print(tup)
```

#### Question 26.

- AI** What are docstrings ? How are they useful ?

#### Question 27.

Write a Python program using functions to calculate area of a triangle after obtaining its three sides.

OR

Write a function CountHisHer() in Python which reads the contents of a text file "Story.txt" and counts the words His and Her (not case sensitive).

#### Question 28.

- AI** Write a void function that receives a 4 digit number and calculates the sum of squares of first two digits of the number and last two digits of the number eg. if 1233 is passed as argument then function should calculate  $(12)^2 + (33)^2$ .

#### Question 29.

A text file "Quotes.txt" has the following data written in it:

Living a life you can be proud of

Doing your best

Spending your time with people and activities that are important to you

Standing up for things that are right even when it's hard

Becoming the best version of you

Write a user defined function to display the total number of words present in the file.

#### Question 30.

- AI** Evaluate the following postfix expression. Show the status of stack after execution of each operation separately:

2, 13, +, 5, -, 6, 3, /, 5, \*, <

**Question 31.**

Identify the type of topology on the basis of the following:

- (i) Since every node is directly connected to the server, a large amount of cable is needed which increases the installation cost of the network.
- (ii) It has a single common data path connecting all the nodes.

2

**Question 32.**

**A1** Define degree and cardinality. Based upon the given table write degree and cardinality.

**PATIENTS**

| PatNo | PatName  | Dept   | DocID |
|-------|----------|--------|-------|
| 1     | Leena    | ENT    | 100   |
| 2     | Supreeth | Ortho  | 200   |
| 3     | Madhu    | ENT    | 100   |
| 4     | Neha     | ENT    | 100   |
| 5     | Deepak   | Orthio | 200   |

2

**Question 33.**

Given a database Inventory, userid- store manager, password - welcometostore123

2

Write Python code to connect to the above database.

**Section-II****Question 34.**

Write a function that takes a sorted list and a number as an argument. Search for the number in the sorted list using binary search.

3

**Question 35.**

**A1** Explain reading from a CSV files with CSV.

3

**OR**

Write definition of a method OddSum(NUMBERS) to add those values in the list of NUMBERS, which are odd.

3

**Question 36.**

Define database management system.

3

**Question 37.**

**A1** Write an algorithm to evaluate postfix expression.

3

**OR**

Consider the following table OrderDetails of database sales

| ORDNUMB | PARTNUMB | NUMBORD | QUOTPRIC |
|---------|----------|---------|----------|
| 12494   | CB03     | 4       | 175.00   |
| 12495   | CX11     | 2       | 57.95    |
| 12498   | AZ52     | 2       | 22.95    |
| 12500   | BT04     | 1       | 402.99   |

Write Python code to increase NUMBORD by 5 if QUOTPRIC is less than 100 or NUMBORD is greater than 3.

3

**Section-III****Question 38.**

Write a Python code to create a table EMPLOYEE.

5

**Question 39.**

**A1** Write SQL queries for (i) to (iv) and find output for SQL query (v), which are based on the tables.

Table : CUSTOMER

| CNO | CNAME        | ADDRESS   |
|-----|--------------|-----------|
| 101 | Richa Jain   | Delhi     |
| 102 | Surbhi Sinha | Chennai   |
| 103 | Lisa Thomas  | Bangalore |
| 104 | Imran Ali    | Delhi     |
| 105 | Roshan Singh | Chennai   |

Table : TRANSACTION

| TRNO | CNO | AMOUNT | TYPE   | DOT        |
|------|-----|--------|--------|------------|
| T001 | 101 | 1500   | Credit | 2017-11-23 |
| T002 | 102 | 2000   | Debit  | 2017-05-12 |
| T003 | 103 | 3000   | Credit | 2017-06-10 |
| T004 | 104 | 12000  | Credit | 2017-09-12 |
| T005 | 105 | 1000   | Debit  | 2017-09-05 |

- (i) To display details of all transactions of TYPE Credit from table TRANSACTION.
- (ii) To display the CNO and AMOUNT of all Transactions done in the month of September 2017 from table TRANSACTION.
- (iii) To display the last date of transaction (DOT) from the table TRANSACTION for the customer having CNO as 103.
- (iv) To display all CNO, CNAME, and DOT (date of transaction) of those CUSTOMERS from tables customer and transaction who have done transactions more than or equal to 2000.
- (v) SELECT COUNT (\*), AVG (AMOUNT) FROM TRANSACTION WHERE DOT >= '2017-06-01'; 5

**Question 40.**

Consider the following unsorted list:

5 10 55 13 3 49 36

Write the position of elements in the list after:

- (i) 5th iteration of bubble sort
- (ii) 7th iteration of insertion sort

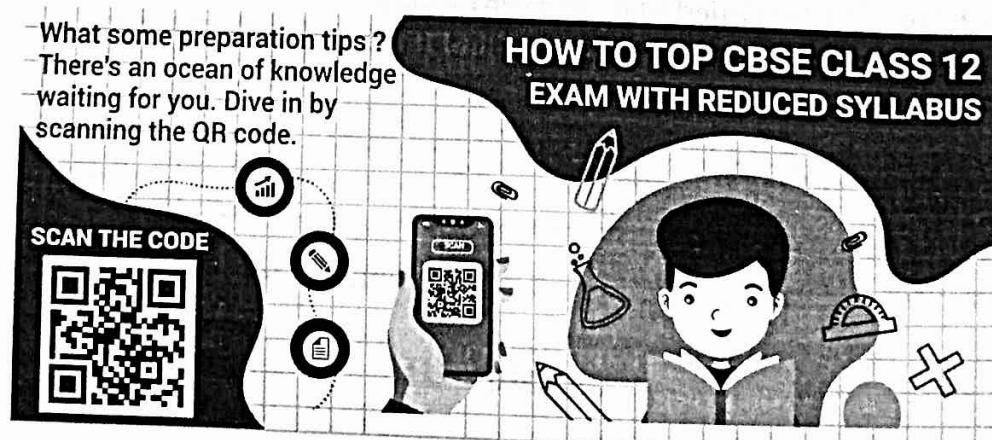
OR

Write a program to input  $n$  numbers and to search any number from the list.

5

5

□□□



# Solutions of Question Paper

**4**

**PART-A**  
**Section-I**

**Answer. 1.**

(a) unlimited length

(1 mark for correct answer)

**Answer. 2.**

c

'A'

(1 mark for correct output)

**Answer. 3.**

Strings are stored as individual characters in contiguous location with two way index for each location.

(1 mark for correct answer)

**Answer. 4.**

(c) [3, 5, 20, 5, 25, 1, 3]

(1 mark for correct answer)

**Answer. 5.**

Colon (:) is missing in function header. It should be def minus(total\_decrement) :

(1 mark for correct answer)

**Answer. 6.**

When a module is import, we can use its functions or constants by specifying the name of the module and of the function, separated by a dot. e.g. <module name>.<function name>() This is called dot notation.

(1 mark for correct answer)

**Answer. 7.**

No this statement is not true

(1 mark for correct answer)

**Answer. 8.**

(i) Text File

(1/2 mark for the correct answer)

(ii) File. write ("ABC")

(1/2 mark for the correct statement)

**Answer. 9.**

There are two ways :

(i) When end of file is reached, readline() will return an empty string.

(ii) try:

```
while True :  
    y = pickle.load(file)  
    -- do something --  
except EOFError :  
    pass
```

(1 mark for correct answer)

**Answer. 10.**

The seek(offset[, from\_what]) method changes the current file pointer position. The offset argument indicates the number of bytes to be moved. The from\_what argument specifies the **reference position** from where the bytes are to be moved. *(1 mark for correct answer)*

**Answer. 11.**

(c) Apache

*(1 mark for correct answer)*

**Answer. 12.**

Whenever a package is imported global variables become accessible. A module in the package can access the global variable by importing it in turn. *(1 mark for correct answer)*

**Answer. 13.**

Module namespace is organized in a hierarchical structure using dot notation.

*(1 mark for correct answer)*

**Answer. 14.**

(b) \*

*(1 mark for correct answer)*

**Answer. 15.**

Underflow occurs in stack when one tries to POP an item from the empty stack.

*(1 mark for correct answer)*

**Answer. 16.**

Wi-Fi cards are small portable cards that allow the computer to connect to the Internet through a wireless network. The transmission is through the use of radio waves. *[1 mark for correct answer]*

**Answer. 17.**

(a) web browser

*(1 mark for correct answer)*

**Answer. 18.**

Male and Female

*[½ mark for each correct name]*

**Answer. 19.**

255 bytes

*(1 mark for correct answer)*

**Answer. 20.**

(c) SUM()

*(1 mark for correct answer)*

**Answer. 21.**

A result set is an object that is returned when a cursor object is used to query a table.

*(1 mark for correct answer)*

## Section-II

**Answer. 22.**

- (a) SELECT \* FROM PRODUCTS ORDER BY PNAME ASC;
- (b) SELECT PNAME, PRICE FROM PRODUCTS WHERE (PRICE => 10000) AND (PRICE <= 15000);
- (c) SELECT SUPCODE, COUNT (PID) FROM PRODUCTS GROUP BY SUPCODE;
- (d) SELECT PRICE, PNAME, QTY FROM PRODUCTS WHERE QTY > 100;
- (e) SELECT SNAME FROM SUPPLIERS WHERE (CITY = "DELHI") OR (CITY = "CHENNAI");

*(1 mark for any five correct points each)*

**Answer. 23.**

- (i) def
- (ii) parentheses ()
- (iii) A function is a block of organised and reusable code.
- (iv) Parameters define inside parentheses.
- (v) Function is used to perform a single related action.

*(1 mark for any five correct points each)*

**PART-B**  
**Section-I**

**Answer. 24.**

- (i) 'Arnav' - ASCII String.
- (ii) u'Arnav' - Unicode string.
- (iii) False-Boolean.
- (iv) 'False' - ASCII String.
- (v) ['A', 'r', 'n', 'a', 'v'] - List.
- (vi) ('A', 'r', 'n', 'a', 'v') - tuple
- (vii) (3.7j) Complex number.
- (viii) 12L - Long integer

(2 marks for correct answer)

**Answer. 25.**

```
find ( sub[,start[,end]])
```

This function is used to search the first occurrence of the substring in the given string. It returns the index at which the substring starts. It returns -1 if the substring doesn't occur in the string.

```
(eg) str = "computer"
      str.find("om")
      Output
      1
```

**Commonly Made Error**

- Some students do not write example and syntax for better explanation.

**Answering Tip**

- Syntax and example should be given by students which help to understand the function clearly.

(2 marks for correct answer)

**OR**

```
(('geek',),)
((('geek',),),)
(((('geek',),),),)
((((('geek',),),),),)
((((((('geek',),),),),),))
```

(2 marks for correct answer)

**Answer. 26.**

A docstring is just a regular python triple- quoted string that is the first thing in a function body or a module or a class. When executing a function body the docstring does not do anything like comments, but Python stores it as part of the function documentation. This documentation can later be displayed using help() function. So even though docstrings appear like comments but these are different from comments.

(2 marks for correct answer)

**Answer. 27.**

```
# Program to calculate area of a triangle
import math
def artriangle (a,b,c):
    """This will use Heron's formula."""
    s=(a+b+c)/2
    area=math.sqrt (s*(s-a)*(s-b)*(s-c))
    return area
Fside=float (raw_input ("Enter first side:"))
Sside=float (raw_input ("Enter second side:"))
```

```
Tside=float (raw_input ("Enter Third side:"))
print ("Area of the triangle with sides", Fside, Sside,Tside, "is:", artriangle
(Fside, Sside, Tside))
```

**Commonly Made Error**

- Students use keywords or similar name for identifiers which show error.

**Answering Tip**

- Try to use meaningful name identifiers and do not use keywords or similar name for identifiers.

(2 marks for correct program)

OR

```
def CountHisHer():
    wordlist=[line.strip() for line in open('story.txt')]
    # Searching for a word in file
    count =0
    for word in wordlist:
        words = word.split(" ")
        for word in words:
            # Remove all leading and trailing white spaces
            word=word.strip().lower()
            if word == 'his' or word=='her':
                count = count + 1
    if count==0:
        print ("not found in file")
```

Example : If contents of story.txt is

Pankaj has gone to his friend's house.

His friend's name is Ramya.

Her house is 3km from his house.

Output would be: count=4

(2 marks for correct program)

**Answer 28.**

```
def calcsquareDigits(num):
    sum=((num%100)**2)+(int((num/100))**2)
    print ("sum of squares of first two and last two digits is", sum)
    return
```

(2 marks for correct answer)

**Answer 29.**

```
def countwords():
    s=open ("Quotes.txt", "r")
    f = s.read()
    z = f.split()
    fair i in z:
        count=count+1
print ("Total number of words",count)
```

(1 marks for reading the file using read)

(1 marks for correctly using split())

**Answer. 30.**

## Stack Contents

**Result:** 0

**Answer. 31.**



Answer. 32.

Degree is the n

### **(ii) Bus Topology**

(1 mark for each answer)

**s**wer. 32.

Degree is

## Cardinality is (

(2 marks for correct answer)

### Answer 33

```
import MySQLdb
```

try;

```
db=MySQLdb.connect('localhost','store manager','welcometostore123','Inventory')
print ("connected to the database")
except:
    print ("unable to connect to the database")
```

Section-II

**Answer. 34.**

```
def binary_search(SORTEDLIST, number):
    low=0
    high=len(SORTEDLIST)
    found=False
    while(low<high) and found==False:
        mid=(int)(low+high/2)
        if SORTEDLIST[mid]==number:
            print ("Number found at",mid)
            found=True
            break
        elif SORTEDLIST[mid]<number:
            low=mid+1
        else:
            high=mid-1
        if low >= high:
            print ("Number not found")
    maxrange = input("Enter count of numbers")
    numlist = []
    for i in range(0, maxrange):
```

```

        numlist.append(input(" "))
        numlist.sort()
        print ("Sorted list",numlist)
        number = input("Enter the number")
        binary_search(numlist, number)
    
```

(3 marks for correct answer)

**Answer. 35.**

Reading function from a CSV file is done using the reader object. The CSV file is opened as a text file with Python's built in open(), which returns a file object. This is then passed to the reader, which does the heavy lifting.

```

import CSV
with open ("Employee.txt") as CSV_file:
    CSV_reader = CSV.reader (CSV_file, delimiter = ',')
    line_count = 0
    for row in CSV_reader:
        if line_count == 0:
            print (f'column names are {",".join(row)}')
            line_count += 1
        else:
            print(f'\t{row[0]} works in the {row[1]} department, and was born
            in {row [2]}.')
            line_count += 1
    print (f 'Processed {line_count} lines.')

```

(1 mark for explanation & 2 marks for coding)

**OR**

```

def OddSum (NUMBERS) :
    sum = 0
    for i in range (len (NUMBERS)):
        if (NUMBERS [i] % 2 != 0):
            sum = sum + NUMBERS [i]
    print (sum)

```

(3 marks for correct answer)

**Answer. 36.**

A database management system (DBMS) is a set of programs that enables the users to define, create and maintain the database and provides controlled access to this database.

The primary goal of DBMS is to provide a way to store and retrieve database information that is both convenient and efficient. Data in a database can be added, deleted, changed, sorted, searched, etc., using a DBMS, e.g. MySQL Ingres, MS-Access, Oracle, etc.

The purpose of a DBMS is to bridge the gap between the information and data. The data stored in memory or on a disk must be converted to usable information.

**Answer. 37.**

**Step 1:** Start

**Step 2:** repeat steps 3 & 4 for each of the symbol of expression until all symbols are over.

(i) If the symbol is an operand, push it into

(ii) If the symbol is an operator then :

(a) apply an operator in between them.

(b) Evaluate the expression

**Step 3:** Set result equal to top element of the stack

**Step 4:** Stop

(2 marks for correct step 2)

(1 mark for correct step 3)

OR

```

import MySQLdb
db=MySQLdb.connect('localhost', "Admin", 'SalA345', 'sales')
cursor=db.cursor()
sql="""UPDATE OrderDetails
NUMBORD=NUMBORD+5 WHERE QUOTPRIC
<%d' OR NUMBORD>
check_value = (100,3)
try:
    db.execute(sql, check_value)
    db.commit()
except:
    db.rollback()
db.close()

```

(1 mark for correct db value)  
(1 mark for correct insert\_query)  
(1 mark for correct try & except)

### Section-III

**Answer. 38.**

```

#!/usr/bin/python
import MySQLdb
# Open database connection
db = MySQLdb.connect("localhost","testuser","test123","TESTDB" )
# prepare a cursor object using cursor() method
cursor = db.cursor()
# Drop table if it already exist using execute() method.
cursor.execute("DROP TABLE IF EXIST EMPLOYEE")
# Create table as per requirement
sql = """CREATE TABLE EMPLOYEE (FIRST_NAME CHAR(20) NOT NULL, LAST_NAME
CHAR(20), AGE INT, SEX CHAR(1), INCOME FLOAT )"""
cursor.execute(sql)
# disconnect from server
db.close()

```

(1 mark for correct db value)

(1 mark for correct cursor.execute)

(2 marks for correct sql query)

(1 mark for proper documentation)

**Answer. 39.**

- SELECT \* FROM TRANSACTION WHERE TYPE ="Credit";
- SELECT CNO,AMOUNT FROM TRANSACTION WHERE (MONTH (DOT)="September" AND YEAR(DOT)=2017);
- SELECT MAX (DOT) FROM TRANSACTION WHERE CNO="103";
- SELECT CNO, CNAME, DOT FROM CUSTOMER C, TRANSACTION T Where C.CNO=T.CNO AND AMOUNT>=2000;
- 4 4375

[1 mark for each correct point]

**Answer. 40.**

Given list 5, 10, 55, 13, 3, 49, 36

## Working

| Bubble Sort          | Insertion Sort       |
|----------------------|----------------------|
| [5,10,13,3,49,36,55] | [5,10,55,13,3,49,36] |
| [5,10,13,3,36,49,55] | [5,10,13,55,3,49,36] |
| [5,10,3,13,36,49,55] | [3,5,10,13,55,49,36] |
| [5,10,3,13,36,49,55] | [3,5,10,13,49,55,36] |
| [5,3,10,13,36,49,55] | [3,5,10,13,36,49,55] |

(i) 5th iteration of bubble sort: [5,3,10,13,36,49,55]

(ii) 7th iteration of insertion sort: It doesn't have 7th iteration.

(2 marks for each correct point & 1 mark for correct table)

OR

```
n=input("Enter no. of values")
num=[]
flag=0
for i in range(n):
    number=input("Enter the number")
    num.append(number)
search = input("Enter number to be searched")
for i in range(n):
    if num[i]==search:
        print (search,"found at position",i)
        flag=1
if flag==0:
    print (search,"not found in list")
```

(1 & ½ mark for each correct loop)

(1 mark for each correct if statement)



5

# Sample Question Paper

## Solved

### General Instructions :

- (i) This question paper contains two parts A and B. Each part is compulsory.
- (ii) Both Part A and Part B have choices.
- (iii) Part-A has 2 sections :
  - (a) Section-I is short answer questions, to be answered in one word or one line.
  - (b) Section-II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.
- (iv) Part-B is Descriptive Paper.
- (v) Part-B has three sections.
  - (a) Section-I is short answer questions of 2 marks each in which two questions have internal options.
  - (b) Section-II is long answer questions of 3 marks each in which two questions have internal options.
  - (c) Section-III is very long answer questions of 5 marks each in which one question has internal option.
- (vi) All programming questions are to be answered using Python Language only.

### PART-A Section-I

Select the most appropriate option out of the options given for each question. Attempt any 15 questions from question no 1 to 21.

#### Question 1.

What are the following operators used for?

- (i) // (ii) \*\*

#### Question 2.

What is the difference between '/' and '//' ?

#### Question 3.

Which type of error occurs when rules of programming language are misused?

- |                    |                    |
|--------------------|--------------------|
| (a) Syntax error   | (b) Semantic error |
| (c) Run time error | (d) Logical error  |

#### Question 4.

Why can't we apply slicing and concatenation on dictionaries?

1

1

1

1

**Question 5.**

Write the method to perform the following.

(a) Delete a given element from the list.

(b) Get all the keys in a dictionary.

1

**Question 6.**

What is the output of the following?

```
print('*', "abcdef".center(7), '*')
```

1

**Question 7.**

Why do we define a function ?

1

**Question 8.**

What are docstrings?

1

**Question 9.**

You need to open a file hello.text stored at c:\users\ myown. Write ways in which you can specify the file's name in open() function.

1

**Question 10.**

**Q1** How is r+ file mode different from rb+ mode?

1

**Question 11.**

How can we find the names that are defined inside the current module ?

1

**Question 12.**

What is list?

1

**Question 13.**

**Q1** The postfix form of the expression  $(A + B)^*(C * DE)^*F / G$  is?

(a) AB+CD\*E-FG/\*\*

(b) AB+CD\*E-F\*\*G/

(c) AB+CD\*E-\*F\*G/

(d) AB+CDE\*-\*F\*G/

1

**Question 14.**

XYZ company is planning to connect all computers, each spread over a distance of 50 metres. Suggest an economic cable type having high speed data transfer to connect these computers.

1

**Question 15.**

What is Trojan horse?

1

**Question 16.**

What will be the result of following statement with hierarchical structure of package Pkt1

```
Pkt1
└─_init_.py
└─module1
└─module2
└─module3
```

module1 has functions - hello (), printme ()

module2 has functions - countme(), printit()

module3 has functions - this(), that()

```
import Pkt1
```

```
module1.hello ()
```

Give reasons for your answers.

1

**Question 17.**

What will be the output of the following Python code?

```
f = None
for i in range (5):
    with open("data.txt", "w") as f:
        if i > 2:
```

break

print(f.closed)

- (a) True  
(c) None

Question 18.

- (b) False  
(d) Error

1

Which declaration represents that "character data will consume the same number of bytes as declared and is right padded"?

1

Question 19.

What is the use of DB-API?

1

Question 20.

When can we execute a function?

1

Question 21.

What is the use of remove() function?

1

## Section-II

Both the Case study based questions are compulsory. Attempt any 4 sub parts from each question. Each question carries 1 mark.

Question 22.

ABC is professional consultancy company. The company is planning to set up their new offices in India with its hub at Bengaluru. As a network adviser, you have to understand their requirements and suggest them the best available solutions. Their queries are mentioned as (i) to (v) below: Physical Locations of the blocks of ABC.

Human Resource

Conference

Finance

Block to Block Distances (int Mtr):

| Block (From)   | Block (To) | Distance |
|----------------|------------|----------|
| Human Resource | Conference | 110      |
| Human Resource | Finance    | 40       |
| Conference     | Finance    | 80       |

Expected number of computers to be installed in each block:

| Block          | Computers |
|----------------|-----------|
| Human Resource | 25        |
| Finance        | 120       |
| Conference     | 90        |

- (i) What will be the most appropriate block, where ABC should plan to install their server?
- (ii) Draw a block diagram showing cable layout to connect all the buildings in the most appropriate manner for efficient communication.
- (iii) What will be the best possible connectivity out of the following you will suggest to connect the new setup of offices in Chennai with its London based office.
  - Satellite Link
  - Infrared
  - Ethernet Cable
- (iv) Which of the following device will be suggested by you to connect each computer in each of the buildings?
  - Modem
  - Gateway
- (v) Suggest the placement of repeater with justification.

4

**Question 23.**

**(A)** Write SQL queries for (i) to (iv) and find output for SQL query (v) which are based on the tables TRANSPORT and TRIP.

**TABLE : TRANSPORT**

| TCODE | TTYPE         | PERKM |
|-------|---------------|-------|
| 103   | ORDINARY BUS  | 90    |
| 105   | SUV           | 40    |
| 104   | CAR           | 20    |
| 103   | ORDINARY BUS  | 90    |
| 101   | VOLVO BUS     | 160   |
| 102   | AC DELUXE BUS | 140   |

**Note:**

- PERKM is Freight Charges per kilometre.
- TTYPE is Transport Vehicle Type.

**TABLE : TRIP**

| NO | NAME         | TDATE      | KM  | TCODE | NOP |
|----|--------------|------------|-----|-------|-----|
| 11 | Tanish Khan  | 2015-12-13 | 200 | 101   | 32  |
| 13 | Danish Sahaf | 2016-06-21 | 100 | 103   | 45  |
| 15 | Ram Kumar    | 2016-02-23 | 350 | 102   | 42  |
| 12 | Fen Shen     | 2016-01-13 | 90  | 102   | 40  |
| 17 | Aan Kumar    | 2015-02-10 | 75  | 104   | 2   |
| 14 | Veena        | 2016-06-28 | 80  | 105   | 4   |
| 16 | Rajpal Kirti | 2016-06-06 | 200 | 101   | 25  |

**Note:**

- NO is Driver Number
  - KM is Kilometre travelled
  - NOP is number of travellers travelled in vehicle
  - TDATE is Trip Datee
- To display NO, NAME, TDATE from the table TRIP in descending order of NO.
  - To display the NAME of the drivers from the table TRIP who are travelling by transport vehicle with code 101 or 103.
  - To display the NO and NAME of those drivers from the table TRIP, who travelled between '2015-02-10' and '2015-04-01'.
  - To display all the details from table TRIP in which the distance travelled is more than 100 KM in ascending order of NOP.
  - SELECT A.TCODE, NAME, TTYPE  
FROM TRIP A, TRANSPORT B  
WHERE A.TCODE=B.TCODE AND KM<90;

**PART-B****Section-I****Question 24.**

Which of the following can be used as valid variable identifier(s) in Python?

- total
- >selute
- Que\$tion
- great

**Question 25.**

**(A)** Write a program that prints a list of the integers from 1 to 20 and their squares. The output should look like this

1---1  
2---4  
-----  
20---400

2

OR

Find and write the output of the following Python code :

```
TXT = ["20", "50", "30", "40"]
CNT = 3
TOTAL = 0
for C in [7,5,4,6] :
    T = TXT[CNT]
    TOTAL = float (T) + C
    print (TOTAL)
    CNT-=1
```

2

Question 26.

Find the errors from the following codes:

```
c=dict()
n=input("Enter total number")
i=1
while i<=n
    a=input("enter place")
    b=input("enter number")
    c[a]=b
    i=i+1
print ("place","\t","number")
for i in c:
    print (i," \t",c[a[i]])
```

2

Question 27.

**A** What is web hosting?

OR

**A** What is the difference between E-mail and chat?

2

Question 28.

**A** What is median() method?

2

Question 29.

Write a function that:

- (i) Asks the user to input a diameter of circle in inches.
- (ii) Sets a variable called radius to one half of that number.
- (iii) Calculate the area of circle.
- (iv) Print the area of circle with appropriate unit.
- (v) Return this same amount as the output of the function.

2

Question 30.

Write a function in Python to count the number of blank spaces in a text file names "STORY.txt".

2

Question 31.

Write a Python program to check if a string is a palindrome or not.

2

Question 32.

**A** Find errors in the following code and reunite the correct code

- (i) myTuple1=(1,2,3) myTuple1.append(4) print (myTuple1)
- (ii) myDictionary2 ={10:1, 20:2, 30:3} print (myDictionary2[1])

2

**Question. 33.**

Observe the table CLUB given below:

| Member_ID | Member_Name | Address   | Age | Fee  |
|-----------|-------------|-----------|-----|------|
| M0001     | Sumit       | New Delhi | 20  | 2000 |
| M0002     | Nisha       | Gurgaon   | 19  | 3500 |
| M0003     | Niharika    | New Delhi | 21  | 2100 |
| M0004     | Sachin      | Faridabad | 18  | 3500 |

- (i) What is the cardinality and degree of the given table?  
(ii) If a new column ContactNo has been added and three more members have joined the CLUB then how these changes will affect the degree and cardinality of the table.

2

**Question. 34.**

Write a python program to do the following :

A student will not be allowed to sit in exam if his/her attendance is less than 75%.

Take following input from user

Number of classes held

Number of classes attended.

And print

percentage of class attended

Is student allowed to sit in exam or not?

**Question. 35.**

- (a) Write a function called removeFirst that accepts a list as a parameter. It should remove the value at index 0 from the list. Note that it should not return anything (returnsNone). Note that this function must actually modify the list passed in, and not just create a second list when the first item is removed. You may assume the list you are given will have at least one element.

OR

Write a function CountYouMe() in Python which reads the contents of a text file Notes.txt and counts the words You and Me (not case sensitive).

3

**Question. 36.**

Create following table using Python code.

Table Name = Customer

Database = xyzcorp

Userid = Adminxyz

Password = Axydm12

3

| CUSTNUMB | CUSTNAME      | ADDRESS                                  | BALANCE   | CREDLIM | SLSRNUMB |
|----------|---------------|--|-----------|---------|----------|
| 124      | TINA ADAMS    | 481 Tilak lane,<br>CP, Delhi             | 41800.75  | 50,000  | 3        |
| 256      | R VENKAT      | 215 Mylapore,<br>Chennai                 | 100000.75 | 80,000  | 6        |
| 567      | BHUVNA BALAJI | 808, Bala Nagar,<br>Hyderabad            | 57000.75  | 50,000  | 6        |
| 622      | PRATHAM JAIN  | 149, Plot 182,<br>sec-9 Dwarka,<br>Delhi | 57500.75  | 80,000  | 12       |

3

**Question. 37.**

- (b) Write output of the following codes.

- (i) a=8

```

while (a>0):
    print ("Gotcha")
    a=a-3
    if a=5:
        break
    else:
        print ("Going out!")

(ii) i = 0
while<6:
    j = 0
    while j < i:
        print ("**")
        j = j + 1
    i = i + 1
print ()

(iii) score = 40
while score > 1:
    score = (score/2)-1
    print (score)

```

3

OR

What will be the status of the following list after the First, Second and Third pass of the bubble sort method used for arranging the following elements in ascending order ?

Note : Show the status of all the elements after each pass very clearly underlining the changes.

3

52, 42, -10, 60, 90, 20

### Section-III

#### Question 38.

Write SQL queries for (i) to (iii) and find outputs for SQL queries (iv) to (v) which are based on the tables:

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 | 2016-06-12 |

- (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 the TYPE and number of books in each TYPE from the table BOOK.
- (iv) SELECT DISTINCT TYPE FROM BOOK;
- (v) SELECT A.CODE, BNAME, MNO, MNAME FROM BOOK A, MEMBER B WHERE A.CODE=B.

5

#### Question 39.

Consider the following table Emp

| EmpNo | EmpName  | Job           | Mgr  | Hiredate | Sal  | DeptNo |
|-------|----------|---------------|------|----------|------|--------|
| 7839  | Mahesh   | President     | 7872 | 17/11/01 | 5000 | 10     |
| 7698  | Krishna  | Manager       | 7839 | 01/5/81  | 2600 | 25     |
| 7872  | Anubhav  | Manager       | 7839 | 31/3/83  | 2700 | 30     |
| 7566  | Siddhant | Manager       | 7839 | 23/6/82  | 2650 | 15     |
| 7564  | Arnav    | Asst. Manager | 7698 | 18/7/81  | 1000 | 25     |
| 7560  | Khyati   | Receptionist  | 7872 | 21/2/84  | 1000 | 30     |

Write Python code to insert 2 records with suitable data in the above table taking system date as Hiredate.

#### Question. 40.

A) Predict the output of the following codes. (Each part carries 1 mark)

(a) num=1  
 def myfunc():  
     return num  
 print (num)  
 print (myfunc ())  
 print (num)

(b) num=1  
 def myfunc():  
     num=10  
     return num  
 print (num)  
 print (myfunc())  
 print (num)

(c) num=1  
 def myfunc():  
     globalnum  
     num=10  
     return num  
 print (num)  
 print (myfunc())  
 print (num)

(d) a=10  
 y=5  
 def myfunc():  
     y=a  
     a=2  
     print ("y=", y, "a=", a)  
     print ("a+y=", a+y)  
     return a+y  
 print ("y=", y, "a=", a)  
 print (myfunc())  
 print ("y=", y, "a=", a)

(e) def multiply (num1, num2):  
 ans=num1\* num2  
 print(num1, "times", num2, "=", ans)  
 return(ans)  
 multiply (5,5)

OR

Consider the following key set : 42, 29, 74, 11, 65, 58 use insertion sort to sort the data in ascending order and indicate the sequences of steps required.



# Solutions of Question Paper

5

## PART-A

### Section-I

Answer. 1.

- (i) // is Floor division that divides and truncates the fractional part from the result. e.g. 8.5//5 gives 1.0  
(ii) \*\* is Exponentiation that returns base raised to power exponent. e.g. 5\*\*3 gives 125.

Answer. 2.

// is Integer or Floor division whereas / is normal division  
(eg)  $7.0 // 2 = 3.0$

$$7.0 / 2 = 3.5$$

(1/2 mark for each correct explanation of operator)

#### Commonly Made Error

- Some students get confused in between floor division and normal division.

#### Answering Tip

- Students should learn all the operators with an example.

Answer. 3.

(1 mark for correct answer)

- (a) Syntax error

Answer. 4.

(1 mark for correct answer)

Slicing and concatenation operations depend on a specific order while dictionaries are unordered.

Answer. 5.

(1 mark for correct answer)

- (a) remove() (b) keys()

Answer. 6.

(1 mark for correct answer)

\* abcdef \*

Answer. 7.

(1 mark for correct answer)

- Decomposing complex problems into simpler process
- Reducing duplication of code

Answer. 8.

(1 mark for correct answer)

The docstrings are triple quoted strings in a Python module program which are displayed as document when help (<module or program name>) command is issued.

(1 mark for correct answer)

Answer. 9.

- (i) "c:\\users\\myown\\hello.txt"  
(ii) "c:\\users\\myown\\hello.txt", "r"

(1 mark for correct answer)

**Answer. 10.**

r+ is used to read a normal ASCII or Unicode file whereas rb+ mode is used to read a binary file.

(1 mark for correct answer)

**Answer. 11.**

The names defined inside a current module can be found by using dir( ) function .

(1 mark for correct answer)

**Answer. 12.**

List is a type of container in data structure, which is used to store multiple data at the same time.

(1 mark for correct answer)

**Answer. 13.**

(c) AB + CD\* E - \*F \*G /

(1 mark for correct answer)

**Answer. 14.**

Optical Fibre Cable

(1 mark for correct answer)

**Answer. 15.**

A Trojan horse is code hidden in a program that looks safe but has hidden side effects typically causing loss or theft of data and possible system harm.

(1 mark for correct answer)

**Answer. 16.**

This will give an error as importing a packet does not place any of modules into local namespace.

(1 mark for correct answer)

**Answer. 17.**

(a) True

(1 mark for correct answer)

**Answer. 18.**

Char.

(1 mark for correct answer)

**Answer. 19.**

The DB-API provides a minimal standard for working with databases using Python structures and syntax wherever possible. It includes the following

(i) Importing the API module

(1 mark for correct answer)

(ii) Acquiring a connection with the database

(iii) Issuing SQL statements and procedures.

(iv) Closing the connection.

**Answer. 20.**

Once the basic structure of a function is finalized, we can execute it.

(1 mark for correct answer)

**Answer. 21.**

The remove() method is used to delete files by supplying the name of the file to be deleted as the argument.

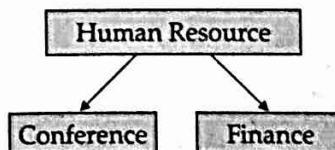
(1 mark for correct answer)

## Section-II

**Answer. 22.**

(i) Finance block because it has maximum number of computers.

(ii)



(iii) Satellite link

(iv) Switch

(v) Repeater should be placed between Human Resource and Conference block.

(1 mark for any four correct point each)

**Answer. 23.**

(i) SELECT NO, NAME, TDATE FROM TRIP ORDER BY NO DESC;

- (ii) SELECT NAME FROM TRIP  
WHERE TCODE = 101 OR TCODE = 103;
- (iii) SELECT NO, NAME FROM TRIP  
WHERE '2015-02-10' < TDATE < '2015-04-01';
- (iv) SELECT\*FROM TRIP  
WHERE KM >100 ORDER BY NOP;
- (v) 104 Aan Kumar CAR  
105 Veena SUV

**Commonly Made Error**

- Some students do not write the ASC and DESC for increasing and decreasing order.

**Answering Tip**

- Remember to mention the order in which to order a field i.e. Ascending/Descending.

(1 mark for any four correct point each)

**PART-B****Section-I****Answer. 24.**

(i) and (iv) are valid.

**Answer. 25.**

```
i=1
while i < =20:
    print i, "-----", i ** 2
    i += 1
```

47.0

35.0

54.0

26.0

**OR**

(2 marks for correct answer)

(2 marks for correct program)

**Answer. 26.**

```
c=dict()
n=input("Enter total number")
i=1
while i<=n :
    a=input("enter place")
    b=input("enter number")
    c[a]=b
    i=i+1
print ("place","\t","number")
for i in c:
    print (i,"\t",c[i])
```

(2 marks for correct output)

**Answer. 27.**

Web hosting is the service that makes our website available to be viewed by others on the Internet. A web host provides space on its server, so that other computers around the world can access our website by means of a network or modem

(1 mark for each error)

(2 marks for correct answer)

OR

| Chat  | Email   |
|---|---|
| (i) Chat occurs in near real time.<br>(ii) Chat is a 2-way communication which requires the permission of both parties. | (i) E-mail does not.<br>(ii) E-mail is one way communication. |
|   |   |

(1 mark for each correct difference)

Answer. 28.

median() method calculates middle value of the arithmetic data in iterative order. If there are an odd number of values, median() returns the middle value. If there are an even number of values it returns an average of two middle values.

(2 marks for correct answer)

**Commonly Made Error**

- Few students write about mean () method instead of median ().

**Answering Tip**

- Students should learn all the functions with their syntax and example.

Answer. 29.

```
def area_circle():
    import math
    diameter= float (raw_input ("Enter the diameter in Inches"))
    radius = diameter/2
    area_circle_inches = (math.pi) * (radius * * 2)
    print ("The area of circle", area_circle_inches,"sq inch")
    return (area_circle_inches)
```

(2 marks for correct answer)

Answer. 30.

```
def countblankspace():
    fname = "story.txt"
    count=0
    with open(fname, 'r') as f:
        for line in f:
            for word in line:
                for char in word:
                    if char.isspace():
                        count=count + 1
    print ("No. of spaces =",count)
```

(2 marks for correct function)

Answer. 31.

```
def pushstack(stack, ch):
    stack.append(ch)
    top=len(stack)-1
    return
def popstack(stack):
    ch=stack.pop()
    if len(stack)==0:
        top=None
    else:
        top=len(stack)-1
    return ch
def cmp(stack, str):
```

```

for i in range (len(str)):
    if str[i]!=popstack(stack):
        return False
return True
#-----main-----
stack=[]
top=None
str=input ("Enter a string")
for i in range len(str):
    pushstack(stack, str[i])
    check=cmp(stack, str)
if check:
    print ("string is a palindrome")
else:
    print ("string is not a palindrome")

```

( $\frac{1}{2}$  mark for each correct function)  
(1 mark for correct main part)

#### Answer. 32.

- (i) Tuples are immutable so can't be appended.

```

myTuple1=(1, 2, 3)
myTuple2=(4, )
myTuple3 = myTuple1 + myTuple2
print (myTuple3)

```

- (ii) It will give an error myDictionary2 keyError:1

The correct code will be.

```

my(Dictionary2)= {10:1, 20:2, 30:3}
print (myDictionary2[10])

```

(1 marks for each correct ans)

#### Answer. 33.

- (i) Cardinality :4

Degree :5

- (ii) Cardinality :7

Degree :6

(1 mark for each correct point)

## Section-II

#### Answer. 34.

```

print ("Number of classes held")
noh = input()
print ("Number of classes attended")
noa = input()
atten = (noa/float(noh))*100
print ("Attendance is", atten)
if atten>= 75:
    print ("You are allowed to sit in exam")
else:
    print ("Sorry, you are not allowed. Attend more classes from next time.")

```

(3 marks for correct program)

#### Answer. 35.

```

def removeFirst (list1):
    """This will remove first item of the list"""
    list1.pop(0)
    return

```

(3 marks for correct answer)

## OR

```

def CountYouMe():
    wordlist = [line.strip() for line in open('notes.txt')]
    # Searching for a word in a file
    count = 0
    for word in wordlist:
        words = word.split(" ")
        for word in words:
            # Remove all leading and trailing
            # white spaces
            word = word.strip().lower()
            if word == 'you' or word=='me':
                count = count + 1
    if count == 0:
        print ("not found in file")
    else:
        print ("count=",count)

```

Example: If the file contains

You are my best friend  
You and me make a good team.

Output would be: count=3

(3 marks for correct answer)

Answer. 36.

```

import MySQLdb
db=MySQLdb.connect("localhost", "Adminxyz", "Axydm12", "xyzcorp")
cursor=db.cursor()
cursor.execute("DROP TABLE IF EXISTS CUSTOMER")
sql="""Create table customer (CUSTNUMB CHAR(3) NOT NULL, CUSTNAME CHAR(60)
NOT NULL, ADDRESS CHAR(100), BALANCE Float, CREDLIM Float, SLSRNUMB CHAR(2)
NOT NULL)"""
cursor.execute(sql)
cursor.close()
rec_ins=[('124', "TINA ADAMS", '481 Tilak lane, CP, Delhi', 41800.75,
50000, '3'),
        ('256', 'R VENKAT', '215 Mylapore, Chennai', 100000.75, 80000,'6'),
        ('567', 'BHUVNA BALAJI', '808 BalaNagar Hyderabad', 57000.75, 50000,
        '6'),
        ('622', 'PRATHAM JAIN', '149 Plot 182, sec-9 Dwarka, Delhi', 57500.75,
        80000, '12')]
sql_insert="""INSERT INTO Customer (CUSTNUMB, CUSTNAME, ADDRESS, BALANCE,
CREDLIM, SLSRNUMB), (VALUES ('%s','%s','%s','%f','%f','%s'),)"""
cursor=db.cursor(prepared=True)
try:
    cursor.executemany(sql_insert, rec_ins)
    print(cursor.rowcount,"Records inserted sucessfully")
    db.commit()
except:
    db.rollback()
cursor.close()
db.close()

```

(1 mark for correct db value)

(1 mark for correct sql\_insert value)

(1 mark for correct try & except)

**Answer. 37.**

(i) Gotcha!

(ii)

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

\* \* \* \* \*

(iii) 19.0

8.5

3.25

(1 mark for each correct output)

OR

Original list : 52 42 -10 60 90 20

I. pass -10 42 52 60 90 20

II. pass -10 20 52 60 90 42

III. pass -10 20 42 60 90 52

(1 mark for each correct pass)

### Section-III

**Answer. 38.**

(i) SELECT \* FROM MEMBER ORDER BY ISSUEDATE DESC;

(ii) SELECT CODE, BNAME FROM BOOK WHERE TYPE='Fiction';

(iii) SELECT COUNT(\*), TYPE FROM BOOK GROUP BY TYPE;

(iv) DISTINCT (TYPE)

Fiction

Literature

Comic

(v) CODE

BNAME

MNO

MNAME

L102

German Easy

M101

RAGHAV SINHA

F102

Untold Story

M103

SARTHAK JOHN

C101

Tarzan in the  
lost World

M102

ANISHA KHAN

(1 mark for each correct point)

**Answer. 39.**

```
import MySQLdb
db =MySQLdb.connect('localhost', 'HRMAN', 'Admin@pwd', 'cosmetics')
cursor = db.cursor(prepared = TRUE)
sql = """Insert into emp('EmpNo', 'EmpName', 'Job', 'Mgr', 'Hiredate',
'Sal', "DeptNo.") values('%s', '%s', '%s', '%s', '%s', '%f', '%s')"""
current_date = datetime.now()
Form_date = current_date.strftime('%d-%m-%y')
insert_value = [('7369', 'Smith', 'Clerk', '7839', current_date, 8000, NULL),
('7788', 'Scott', 'Analyst', '7566', current_date, 3000, 15)]
try:
    cursor.executemany(sql, insert_value)
    print(cursor.rowcount, "Records inserted")
    db.commit()
except:
    db.rollback()
    cursor.close()
db.close()
```

(1 mark for correct db value)

(2 marks for correct sql query)

(2 marks for correct try & except)

Answer 40.

(a) 1  
None

1

(b) 1

10

1

(c) 1

10

10

(d) Local variable name 'a' not defined.

(e)  $5 \times 5 = 25$ 

(1 mark for each correct point)

OR

42,29,74,11,65,58 – Original list.

29,42,74,11,65,58 – Ist iteration

29,42,74,11,65,58 – IInd iteration

11,29,42,74,65,58 – IIIrd iteration

11,29,42,65,74,58 – IVth iteration

11,29,42,58,65,74 – Vth iteration

(1 mark for each correct iteration)



Ques Paper