

Maximum Marks: 70

Time Allowed: 3 hours

**General Instructions:**

1. This question paper contains total 40 questions divided into 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 subparts. **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

Q. No.	Part-A	Marks
	<b>Section- I</b>	
	Select the most appropriate option out of the options given for each question. <b>Attempt any 15 questions from question no 1 to 21.</b>	
1	Find the invalid identifier from the following a) KVS_Jpr    b) false    c) 3rdPlace    d) _rank	1
2	Given the lists L=[13,23,56,2,55,87,1,32] , write the output of print(L[3:7])	1
3	Name the module/library should be imported in program for Binary file operation.	1
4	Identify the Invalid relational operator in Python from the following. a) <=    b) >    c) ==    d) <>	1

5	<p>Assume that a List L is declared as L = [5,10, 15, 20, 25], which of the following will produce output 25?</p> <p>a) print(L[1])  b) print(L[-1])  c) print(L[2])  d) print(L[-2])</p>	1
6	<p>Write a statement in Python to declare a dictionary of 3 items, whose keys are "Country name" and respective values are "their Capital".</p>	1
7	<p>A tuple is declared as  Name = ('Sumit', 'Anil', 'Rahul' )  What will be the value of min(Name)?</p>	1
8	<p>Name the built-in String function / method which is used to "Convert the first character to upper case" of the specified String.</p>	1
9	<p>Name the protocol that is used to send emails.</p>	1
10	<p>..... is a type of cybercrime where the criminal uses online means to harass a person or an organization?</p>	1
11	<p>In SQL, name the clause that is used to display unique values of a column.</p>	1
12	<p>What is the use of BETWEEN command in context to SQL?</p>	1
13	<p>Name any two aggregate functions used in SQL.</p>	1
14	<p>Which of the following is a DML command?  a) INSERT b) ALTER c) CREATE d) DROP</p>	1
15	<p>Name the transmission media best suitable for connecting to hilly areas.</p>	1
16	<p>Identify the valid declaration of T:  T = ["Computer', '23000', 'Mobile', '15000', 'Printer', '10000']"  a. dictionary b. string c. tuple d. list</p>	1

17	Find output of the following code? <pre>progL="Python Java Visual Basic" print(progL[-5:])</pre>	1																																
18	Write SQL query to display the “no of records” present in EMP table.	1																																
19	Expand/Give full form of URL.	1																																
20	How many primary keys can exist on a table? a) One b) Two c) Three d) Four	1																																
21	Rearrange the following terms in increasing order of data transfer rates. Mbps, Tbps, Kbps, bps, Gbps	1																																
	<b>Section-II</b> <b>Both the Case study based questions are compulsory. Attempt any 4 sub parts from each question. Each question carries 1 mark</b>																																	
22	<p>City Hospital is considering to maintain their inventory using SQL to store the data. As a database administrator, Nitin has decided that :</p> <ul style="list-style-type: none"> <li>Name of the database - CH</li> <li>Name of the table - CHStore</li> <li>The attributes of CHStore are as follows:  ItemNo - numeric  ItemName – character of size 20  Scode - numeric  Quantity – numeric</li> </ul> <p style="text-align: center;">Table : CHStore</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>ItemNo</th> <th>ItemName</th> <th>Scode</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>15423</td> <td>Clamps</td> <td>14</td> <td>124</td> </tr> <tr> <td>11229</td> <td>Arthroscope</td> <td>18</td> <td>24</td> </tr> <tr> <td>10353</td> <td>Robotic Arm</td> <td>24</td> <td>45</td> </tr> <tr> <td>26021</td> <td>Veress Needle</td> <td>87</td> <td>78</td> </tr> <tr> <td>11268</td> <td>Forceps</td> <td>11</td> <td>245</td> </tr> <tr> <td>23434</td> <td>Bone Saw</td> <td>19</td> <td>241</td> </tr> <tr> <td>46745</td> <td>Scissors</td> <td>54</td> <td>654</td> </tr> </tbody> </table>	ItemNo	ItemName	Scode	Quantity	15423	Clamps	14	124	11229	Arthroscope	18	24	10353	Robotic Arm	24	45	26021	Veress Needle	87	78	11268	Forceps	11	245	23434	Bone Saw	19	241	46745	Scissors	54	654	
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	(a) Identify the attribute best suitable to be declared as a primary key.	1																																

	(b) Write the degree and cardinality of the table CHStore.	1
	(c) Insert the following data into the attributes ItemNo, ItemName, SCode and Quantity respectively in the given table CHStore. ItemNo = 21010, ItemName = "Trocars" , Scode = 14 and Quantity=28	1
	(d) Ritika wants to add a column the table CHStore. Which command will she use from the following: a) Insert b) Alter c) Create	1
	(e) Now Ritika wants to display the structure of the table CHStore, i.e, name of the attributes and their respective data types that she has used in the table. Write the query to display the same.	1
23	<p>Suresh is writing a program to create a CSV file "files.csv" which will contain filetypes and file extensions for some records. He has written the following code. As a programmer, help him to successfully execute the given task.</p> <pre> Import ----- # Line 1 def addinFile filetype,extension): # to write /add data into the file     f=open('-----','-----') # Line 2     newFileWriter = csv.writer(f)     newFileWriter.writerow([filetype,extension])     f.close() #csv file reading code def readfile(filename): # to read data     from CSV with open(filename,'r') as nf:     nfr = csv._____(nf) # Line 3     for row in nfr:         print (row[0],row[1])         nf._____ # Line 4  addinFile("C++",".cpp") addinFile("Python",".py") addinFile("Java",".java") addinFile("Microsoft Excel",".xls") readfile(.....) #Line 5 </pre>	
	(a) Name the module he should import in Line 1.	1

	(b) In which mode, Suresh 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) Fill in the blank in Line 5.	1
	<b>Part – B</b>	
	<b>Section-I</b>	
24	Convert the following expressions into Postfix, write steps for stack(Push/Pop): $P - Q * R / ( S + ( T + U ) ) * V$	2
25	Differentiate between Viruses and Trojan horse. <b>OR</b> Differentiate between HTML and XML.	2
26	Expand the following terms: a. https    b. VoIP    c. GPRS    d. IPR	2
27	Differentiate between Keyword argument and positional argument with a suitable example. <b>OR</b> Identify the Local and Global variable in the following code. x=100 def myfunc(a): k=a print(k,a) p=(0,1,2,3,4) myfunc(p) print(x)	2
28	Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code.  x==310 for z in Range(0,x) if z//5==0: print (z**5) else if z%5==0: print (z+300 )	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 and minimum value that can be assigned to pos variable.</p> <pre>import random languages=['Python', 'Java', 'PHP', 'HTML', 'C++'] pos =random.randint(1,4) for c in range(0, pos+1):     print (languages[c],end="&amp;")</pre> <p>(i) Python&amp;Java&amp;PHP&amp;HTML&amp;C++&amp;  (ii) Java&amp;PHP&amp;HTML&amp;C++&amp;  (iii) Python&amp;Java&amp;  (iv) Python&amp;Java&amp;PHP&amp;</p>	2
30	What do you understand by Foreign Key, give an example.	2
31	Differentiate between pickle.load() and pickle.dump() methods with suitable example.	2
32	Write the full forms of DDL and DML. Write any one command of each.	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]+'*'         elif str[i].islower():             m=m+'@'         elif str[i]==' ':             m=m+'#'      print(m) Display('Crack it')</pre>	2

<b>Section- II</b>		
34	<p>Write a function Display(num) in Python, which accepts a list num and prints number which are ending with 0 in first line and remaining numbers in second line.</p> <p>Sample Input Data of the list num num= [ 10,20,32,40,12,110]</p> <p>Output 10 20 40 110 32 12</p>	3
35	<p>Write a function in Python to print those words which contains letter 'S' or 's' anywhere in the word in text file "STORY.txt".</p> <p style="padding-left: 40px;">If the "STORY.txt" contents are as follows: An Old Man is happy today, he doesn't complain about anything, smiles, and even his face is freshened up. The output of the function should be: is doesn't smiles his is freshened</p> <p style="text-align: center;"><b>OR</b></p> <p>Write a function WordCount() in Python to read a text file "Mydiary.txt" and display no of words present in each line.</p> <p>Example: If the file content is as follows: Updated information As simplified by official websites. The function should display the output as: Line No 1 : Words=2 Line No 2 : Words=5</p>	3

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Write the outputs of the SQL queries (i) to (iii) based on the relations **Doctor** and **Place** given below:

3

Table : <b>Doctor</b>						
DID	DName	Age	Department	Date_of_join	Salary	Gender
1	Rakesh	34	General	10/01/2017	120000	M
2	Parveen	31	Ortho	24/03/2008	200000	F
3	Satyajeet	32	ENT	12/12/2016	300000	M
4	Yogita	35	Heart	01/07/2015	400000	F
5	Chirag	42	General	05/09/2007	250000	M
6	Vijay	50	ENT	27/06/2008	300000	M
7	Kamlesh	44	Ortho	25/02/2017	210000	M
8	Seema	33	Heart	31/07/2018	200000	F

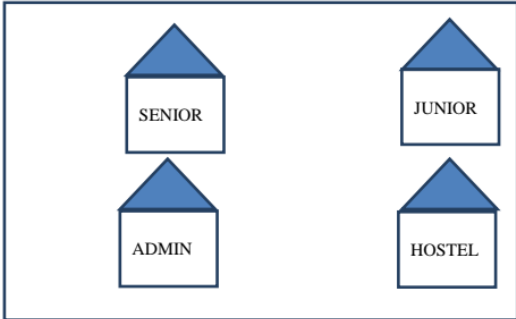
Table : <b>Place</b>		
PID	Department	City
1	General	Ajmer
2	Heart	Udaipur
3	Ortho	Jodhpur
4	ENT	Jaipur

- i. SELECT Department, count(\*) FROM Doctor GROUP BY Department;
- ii. SELECT Max(Salary),Min(salary),Max(Date\_of\_join ) FROM Doctor;
- iii. SELECT Doctor.Dname, Doctor.Department, Place.city  
FROM Doctor, Place  
WHERE Doctor.Department = Place.Department AND  
Place.city in ("Jaipur","Jodhpur");



37	<p>Write a function in Python <b>PUSH_IN(L)</b>, where L is a list of numbers. From this list, push all even numbers into a stack which is implemented by using another list.</p> <p style="text-align: center;"><b>OR</b></p> <p>Write a function in Python <b>POP_OUT(Stk)</b>, where Stk is a stack implemented by a list of numbers. The function returns the value which is deleted/popped from the stack.</p>	3
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**Section-III**

38	<p>Multipurpose Public School, Bengaluru is Setting up the network between its Different Wings of school campus. There are 4 wings named as SENIOR(S), JUNIOR(J), ADMIN(A) and HOSTEL(H).</p> <div style="text-align: center;">  </div> <p>Distance between various wings are given below:</p> <table style="margin-left: 40px;"> <tr><td>Wing A to Wing S</td><td>100m</td></tr> <tr><td>Wing A to Wing J</td><td>200m</td></tr> <tr><td>Wing A to Wing H</td><td>400m</td></tr> <tr><td>Wing S to Wing J</td><td>300m</td></tr> <tr><td>Wing S to Wing H</td><td>100m</td></tr> <tr><td>Wing J to Wing H</td><td>450m</td></tr> </table> <p>Number of Computers installed at various wings are as follows:</p> <table style="margin-left: 40px;"> <thead> <tr> <th>Wings</th> <th>Number of Computers</th> </tr> </thead> <tbody> <tr><td>Wing A</td><td>20</td></tr> <tr><td>Wing S</td><td>150</td></tr> <tr><td>Wing J</td><td>50</td></tr> <tr><td>Wing H</td><td>25</td></tr> </tbody> </table> <ol style="list-style-type: none"> <li>a. Suggest the best wired medium and draw the cable layout to efficiently connect various wings of Multipurpose Public School, Bengaluru.</li> <li>b. Name the most suitable wing where the Server should be installed. Justify your answer.</li> <li>c. Suggest a device/software and its placement that would provide data security for the entire network of the School.</li> <li>d. Suggest a device and the protocol that shall be needed to provide wireless Internet access to all smartphone/laptop users in the campus of Multipurpose Public School, Bengaluru.</li> <li>e. Name the device which is required for connecting computers in the blocks.</li> </ol>	Wing A to Wing S	100m	Wing A to Wing J	200m	Wing A to Wing H	400m	Wing S to Wing J	300m	Wing S to Wing H	100m	Wing J to Wing H	450m	Wings	Number of Computers	Wing A	20	Wing S	150	Wing J	50	Wing H	25	5
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39	<p>Consider the SQL Tables “Doctor” and “Place” given in Q.No.36 and write SQL queries for the following.</p> <ol style="list-style-type: none"> <li>To show all details about the doctors of ENT department.</li> <li>To list the names of Male doctors who are in general department and getting above 120000 salary.</li> <li>To list the name of all doctors and their date of joining in descending order.</li> <li>To display Doctor’s name, salary, age for female doctors only.</li> <li>To display no. of doctors available in each department.</li> </ol>	5
40	<p>A binary file “Computers.dat” has structure [CNo, Make, Model, Price]. The description is given below:</p> <p>CNo : Computer Number e.g. 278548  Make : Make of PC e.g. HP  Model : Model Number e.g. VXPC126  Price : Price of computer e.g.40258.99</p> <ol style="list-style-type: none"> <li>Write a user defined function CreatePC() to input data for a record and append into Computers.dat .</li> <li>Write a function FindPCs(Price) in Python which accepts the Price as parameter and display only those computer records from Computers.dat which are having less than or equal to given price.</li> </ol> <p style="text-align: center;">OR</p> <p>A binary file “CLUB.DAT” has structure (PNO, PName, Game, Fee). The description is given below:</p> <p>PNo : Player Number e.g. 365478  PName : Player Name e.g. “Rajat”  Game : Game of Player e.g. “Basketball”  Fee : Coaching Fee e.g.12500.00</p> <p>Write a function Player_Count() in Python that would read contents of the file “CLUB.DAT” and display the details of those players whose fee is above 7500. Also display number of players paying fee above 10000</p>	5