

Sample Question Paper (Theory)

Time allowed: 3 Hours

Maximum Marks: 70

General Instructions:

- Please check this question paper contains 35 questions.
- The paper is divided into 4 Sections- A, B, C, D and E.
- Section A, consists of 18 questions (1 to 18). Each question carries 1 Mark.
- Section B, consists of 7 questions (19 to 25). Each question carries 2 Marks.
- Section C, consists of 5 questions (26 to 30). Each question carries 3 Marks.
- Section D, consists of 2 questions (31 to 32). Each question carries 4 Marks.
- Section E, consists of 3 questions (33 to 35). Each question carries 5 Marks.
- All programming questions are to be answered using Python Language only.

Que s No	Question	Marks
<u>SECTION A</u>		
1	State True or False: “In a Python program, if a <code>break</code> statement is given in a nested loop, it terminates the execution of all loops in one go.”	1
2	In a table in MYSQL database, an attribute A of datatype <code>varchar (20)</code> has the value “Keshav”. The attribute B of datatype <code>char (20)</code> has value “Meenakshi”. How many characters are occupied by attribute A and attribute B? a. 20,6 b. 6,20 c. 9,6 d. 6,9	1
3	What will be the output of the following statement: <code>print (3-2**2**3+99/11)</code> a. 244 b. 244.0 c. -244.0 d. Error	1
4	Select the correct output of the code:	1

	<pre>s = "Python is fun" l = s.split() s_new = "-".join([l[0].upper(), l[1], l[2].capitalize()]) print(s_new)</pre> Options: a. PYTHON-IS-Fun b. PYTHON-is-Fun c. Python-is-fun d. PYTHON-Is -Fun	
5	In MYSQL database, if a table, Alpha has degree 5 and cardinality 3, and another table, Beta has degree 3 and cardinality 5, what will be the degree and cardinality of the Cartesian product of Alpha and Beta? a. 5,3 b. 8,15 c. 3,5 d. 15,8	1
6	Riya wants to transfer pictures from her mobile phone to her laptop. She uses Bluetooth Technology to connect two devices. Which type of network will be formed in this case? a. PAN b. LAN c. MAN d. WAN	1
7	Which of the following will delete key-value pair for key = "Red" from a dictionary D1? a. delete D1("Red") b. del D1["Red"] c. del.D1["Red"] d. D1.del["Red"]	1
8	Consider the statements given below and then choose the correct output from the given options: <pre>pride="#G20 Presidency" print(pride[-2:2:-2])</pre>	1

	Options: a. ndsr b. ceieP0 c. ceieP d. yndsr	
9	Which of the following statement(s) would give an error during execution of the following code? <pre>tup = (20,30,40,50,80,79) print(tup) #Statement 1 print(tup[3]+50) #Statement 2 print(max(tup)) #Statement 3 tup[4]=80 #Statement 4</pre> Options: a. Statement 1 b. Statement 2 c. Statement 3 d. Statement 4	1
10	What possible outputs(s) will be obtained when the following code is executed? <pre>import random myNumber=random.randint(0,3) COLOR=["YELLOW","WHITE","BLACK","RED"] for I in range(1,myNumber): print(COLOR[I],end="*") print()</pre> Options: a.	1

	RED* WHITE* BLACK* b. WHITE* BLACK* c. WHITE* WHITE* BLACK* BLACK* d. YELLOW* WHITE*WHITE* BLACK* BLACK* BLACK*	
11	Fill in the blank: The modem at the sender's computer end acts as a _____. a. Model b. Modulator c. Demodulator d. Convertor	1
12	Consider the code given below: <pre> b=100 def test(a) : _____ # missing statement b=b+a print(a,b) test(10) print(b) </pre>	1

	Which of the following statements should be given in the blank for #Missing Statement, if the output produced is 110? Options: a. <code>global a</code> b. <code>global b=100</code> c. <code>global b</code> d. <code>global a=100</code>	
13	State whether the following statement is True or False: An exception may be raised even if the program is syntactically correct.	1
14	Which of the following statements is FALSE about keys in a relational database? a. Any candidate key is eligible to become a primary key. b. A primary key uniquely identifies the tuples in a relation. c. A candidate key that is not a primary key is a foreign key. d. A foreign key is an attribute whose value is derived from the primary key of another relation.	1
15	Fill in the blank: In case of _____ switching, before a communication starts, a dedicated path is identified between the sender and the receiver.	1
16	Which of the following functions changes the position of file pointer and returns its new position? a. <code>flush()</code> b. <code>tell()</code> c. <code>seek()</code> d. <code>offset()</code>	1
	Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as (a) Both A and R are true and R is the correct explanation for A (b) Both A and R are true and R is not the correct explanation for A	

	(c) A is True but R is False (d) A is false but R is True	
17	Assertion(A): List is an immutable data type Reasoning(R): When an attempt is made to update the value of an immutable variable, the old variable is destroyed and a new variable is created by the same name in memory.	1
18	Assertion(A): Python Standard Library consists of various modules. Reasoning(R): A function in a module is used to simplify the code and avoids repetition.	1
<u>SECTION B</u>		
19	(i) Expand the following terms: POP3 , URL (ii) Give one difference between XML and HTML. OR (i) Define the term bandwidth with respect to networks. (ii) How is http different from https?	1+1= 2
20	The code given below accepts a number as an argument and returns the reverse number. Observe the following code carefully and rewrite it after removing all syntax and logical errors. Underline all the corrections made. <pre> define revNumber(num) : rev = 0 rem = 0 While num > 0: rem ==num %10 rev = rev*10 + rem num = num//10 return rev print(revNumber(1234)) </pre>	2

21	Write a function <code>countNow (PLACES)</code> in Python, that takes the dictionary, <code>PLACES</code> as an argument and displays the names (in uppercase) of the places whose names are longer than 5 characters. For example, Consider the following dictionary <pre>PLACES={1:"Delhi",2:"London",3:"Paris",4:"New York",5:"Doha"}</pre> The output should be: LONDON NEW YORK OR Write a function, <code>lenWords (STRING)</code>, that takes a string as an argument and returns a tuple containing length of each word of a string. For example, if the string is "Come let us have some fun", the tuple will have (4, 3, 2, 4, 4, 3)	2
22	Predict the output of the following code: <pre>S = "LOST" L = [10,21,33,4] D={} for I in range(len(S)): if I%2==0: D[L.pop()] = S[I] else: D[L.pop()] = I+3 for K,V in D.items(): print(K,V,sep="*")</pre>	2
23	Write the Python statement for each of the following tasks using BUILT-IN functions/methods only: (i) To insert an element 200 at the third position, in the list <code>L1</code>. (ii) To check whether a string named, <code>message</code> ends with a full stop / period or not.	1+1=2

	OR A list named <code>studentAge</code> stores age of students of a class. Write the Python command to import the required module and (using built-in function) to display the most common age value from the given list.	
24	Ms. Shalini has just created a table named “Employee” containing columns <code>Ename</code>, <code>Department</code> and <code>Salary</code>. After creating the table, she realized that she has forgotten to add a primary key column in the table. Help her in writing an SQL command to add a primary key column <code>EmpId</code> of integer type to the table <code>Employee</code>. Thereafter, write the command to insert the following record in the table: <code>EmpId- 999</code> <code>Ename- Shweta</code> <code>Department: Production</code> <code>Salary: 26900</code> OR Zack is working in a database named <code>SPORT</code>, in which he has created a table named “Sports” containing columns <code>SportId</code>, <code>SportName</code>, <code>no_of_players</code>, and <code>category</code>. After creating the table, he realized that the attribute, <code>category</code> has to be deleted from the table and a new attribute <code>TypeSport</code> of data type string has to be added. This attribute <code>TypeSport</code> cannot be left blank. Help Zack write the commands to complete both the tasks.	2
25	Predict the output of the following code:	2

	<pre>def Changer (P, Q=10) : P=P/Q Q=P%Q return P A=200 B=20 A=Changer (A, B) print (A, B, sep='\$') B=Changer (B) print (A, B, sep='\$', end='###')</pre>	
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SECTION C

26	Predict the output of the Python code given below: <pre>Text1="IND-23" Text2="" I=0 while I<len(Text1): if Text1[I]>="0" and Text1[I]<="9": Val = int(Text1[I]) Val = Val + 1 Text2=Text2 + str(Val) elif Text1[I]>="A" and Text1[I]<="Z": Text2=Text2 + (Text1[I+1]) else: Text2=Text2 + "*" I+=1 print(Text2)</pre>	3														
27	Consider the table CLUB given below and write the output of the SQL queries that follow. <table><tr><th>CID</th><th>CNAME</th><th>AGE</th><th>GENDER</th><th>SPORTS</th><th>PAY</th><th>DOAPP</th></tr><tr><td>5246</td><td>AMRITA</td><td>35</td><td>FEMALE</td><td>CHESS</td><td>900</td><td>2006-03-27</td></tr></table>	CID	CNAME	AGE	GENDER	SPORTS	PAY	DOAPP	5246	AMRITA	35	FEMALE	CHESS	900	2006-03-27	1*3=3
CID	CNAME	AGE	GENDER	SPORTS	PAY	DOAPP										
5246	AMRITA	35	FEMALE	CHESS	900	2006-03-27										

	4687	SHYAM	37	MALE	CRICKET	1300	2004-04-15											
	1245	MEENA	23	FEMALE	VOLLEYBALL	1000	2007-06-18											
	1622	AMRIT	28	MALE	KARATE	1000	2007-09-05											
	1256	AMINA	36	FEMALE	CHESS	1100	2003-08-15											
	1720	MANJU	33	FEMALE	KARATE	1250	2004-04-10											
	2321	VIRAT	35	MALE	CRICKET	1050	2005-04-30											
	(i) SELECT COUNT(DISTINCT SPORTS) FROM CLUB; (ii) SELECT CNAME, SPORTS FROM CLUB WHERE DOAPP<"2006-04-30" AND CNAME LIKE "%NA"; (iii) SELECT CNAME, AGE, PAY FROM CLUB WHERE GENDER = "MALE" AND PAY BETWEEN 1000 AND 1200;																	
28	Write a function in Python to read a text file, Alpha.txt and displays those lines which begin with the word ‘You’. OR Write a function, vowelCount() in Python that counts and displays the number of vowels in the text file named Poem.txt.							3										
29	Consider the table Personal given below: Table: Personal <table><tr><td>P_ID</td><td>Name</td><td>Desig</td><td>Salary</td><td>Allowance</td></tr><tr><td>P01</td><td>Rohit</td><td>Manager</td><td>89000</td><td>4800</td></tr></table>							P_ID	Name	Desig	Salary	Allowance	P01	Rohit	Manager	89000	4800	1*3=3
P_ID	Name	Desig	Salary	Allowance														
P01	Rohit	Manager	89000	4800														

	<table><tr><td>P02</td><td>Kashish</td><td>Clerk</td><td>NULL</td><td>1600</td></tr><tr><td>P03</td><td>Mahesh</td><td>Supervisor</td><td>48000</td><td>NULL</td></tr><tr><td>P04</td><td>Salil</td><td>Clerk</td><td>31000</td><td>1900</td></tr><tr><td>P05</td><td>Ravina</td><td>Supervisor</td><td>NULL</td><td>2100</td></tr></table>	P02	Kashish	Clerk	NULL	1600	P03	Mahesh	Supervisor	48000	NULL	P04	Salil	Clerk	31000	1900	P05	Ravina	Supervisor	NULL	2100	
P02	Kashish	Clerk	NULL	1600																		
P03	Mahesh	Supervisor	48000	NULL																		
P04	Salil	Clerk	31000	1900																		
P05	Ravina	Supervisor	NULL	2100																		
	Based on the given table, write SQL queries for the following: (i) Increase the salary by 5% of personals whose allowance is known. (ii) Display Name and Total Salary (sum of Salary and Allowance) of all personals. The column heading ‘Total Salary’ should also be displayed. (iii) Delete the record of personals who have salary greater than 25000																					
30	A list, <code>NList</code> contains following record as list elements: <pre>[City, Country, distance from Delhi]</pre> Each of these records are nested together to form a nested list. Write the following user defined functions in Python to perform the specified operations on the stack named <code>travel</code>. (i) <code>Push_element(NList)</code>: It takes the nested list as an argument and pushes a list object containing name of the city and country, which are not in India and distance is less than 3500 km from Delhi. (ii) <code>Pop_element()</code>: It pops the objects from the stack and displays them. Also, the function should display “Stack Empty” when there are no elements in the stack. For example: If the nested list contains the following data: <pre>NList=[["New York", "U.S.A.", 11734], ["Naypyidaw", "Myanmar", 3219], ["Dubai", "UAE", 2194], ["London", "England", 6693],</pre>	3																				

	<pre>["Gangtok", "India", 1580], ["Columbo", "Sri Lanka", 3405]] The stack should contain: ['Naypyidaw', 'Myanmar'], ['Dubai', 'UAE'], ['Columbo', 'Sri Lanka'] The output should be: ['Columbo', 'Sri Lanka'] ['Dubai', 'UAE'] ['Naypyidaw', 'Myanmar'] Stack Empty</pre>	
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SECTION D

31

Consider the tables PRODUCT and BRAND given below:

1*4=
4

Table: PRODUCT

PCode	PName	UPrice	Rating	BID
P01	Shampoo	120	6	M03
P02	Toothpaste	54	8	M02
P03	Soap	25	7	M03
P04	Toothpaste	65	4	M04
P05	Soap	38	5	M05
P06	Shampoo	245	6	M05

Table: BRAND

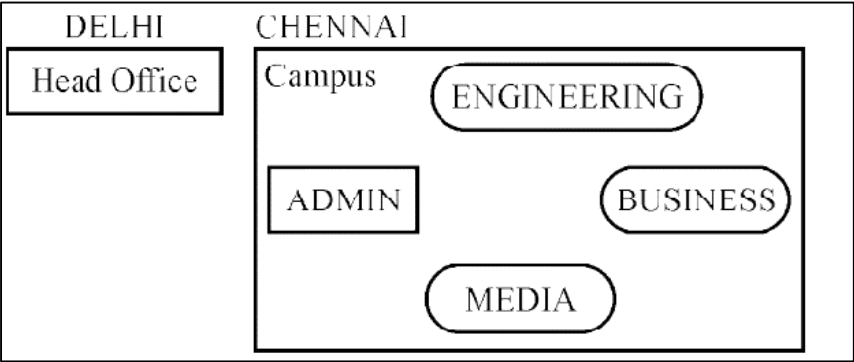
BID	BName
M02	Dant Kanti
M03	Medimix
M04	Pepsodent
M05	Dove

	Write SQL queries for the following: (i) Display product name and brand name from the tables PRODUCT and BRAND. (ii) Display the structure of the table PRODUCT. (iii) Display the average rating of Medimix and Dove brands (iv) Display the name, price, and rating of products in descending order of rating.	
32	Vedansh is a Python programmer working in a school. For the Annual Sports Event, he has created a csv file named <code>Result.csv</code>, to store the results of students in different sports events. The structure of <code>Result.csv</code> is : <pre>[St_Id, St_Name, Game_Name, Result]</pre> Where <code>St_Id</code> is Student ID (integer) <code>ST_name</code> is Student Name (string) <code>Game_Name</code> is name of game in which student is participating(string) <code>Result</code> is result of the game whose value can be either 'Won', 'Lost' or 'Tie' For efficiently maintaining data of the event, Vedansh wants to write the following user defined functions: <code>Accept()</code> – to accept a record from the user and add it to the file <code>Result.csv</code>. The column headings should also be added on top of the csv file. <code>wonCount()</code> – to count the number of students who have won any event. As a Python expert, help him complete the task.	4
	<u>SECTION E</u>	

33

Meticulous EduServe is an educational organization. It is planning to setup its India campus at Chennai with its head office at Delhi. The Chennai campus has 4 main buildings – ADMIN, ENGINEERING, BUSINESS and MEDIA

1*5=5



Block to Block distances (in Mtrs.)

From	To	Distance
ADMIN	ENGINEERING	55 m
ADMIN	BUSINESS	90 m
ADMIN	MEDIA	50 m
ENGINEERING	BUSINESS	55 m
ENGINEERING	MEDIA	50 m
BUSINESS	MEDIA	45 m
DELHI HEAD OFFICE	CHENNAI CAMPUS	2175 km

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

ADMIN	110
ENGINEERING	75
BUSINESS	40
MEDIA	12
DELHI HEAD	20

a) Suggest and draw the cable layout to efficiently connect various blocks of buildings within the CHENNAI campus for connecting the digital devices.

	b) Which network device will be used to connect computers in each block to form a local area network? c) Which block, in Chennai Campus should be made the server? Justify your answer. d) Which fast and very effective wireless transmission medium should preferably be used to connect the head office at DELHI with the campus in CHENNAI? e) Is there a requirement of a repeater in the given cable layout? Why/Why not?	
34	(i) Differentiate between r+ and w+ file modes in Python. (ii) Consider a file, <code>SPORT.DAT</code>, containing records of the following structure: <pre>[SportName, TeamName, No_Players]</pre> Write a function, <code>copyData()</code>, that reads contents from the file <code>SPORT.DAT</code> and copies the records with Sport name as “Basket Ball” to the file named <code>BASKET.DAT</code>. The function should return the total number of records copied to the file <code>BASKET.DAT</code>. OR (i) How are text files different from binary files? (ii) A Binary file, <code>CINEMA.DAT</code> has the following structure: <pre>{MNO: [MNAME, MTYPE]}</pre> Where MNO – Movie Number MNAME – Movie Name MTYPE is Movie Type Write a user defined function, <code>findType(mtype)</code>, that accepts <code>mtype</code> as parameter and displays all the records from the binary file <code>CINEMA.DAT</code>, that have the value of Movie Type as <code>mtype</code>.	2+3=5
35	(i) Define the term Domain with respect to RDBMS. Give one example to support your answer.	1+4=5

(ii) Kabir wants to write a program in Python to insert the following record in the table named `Student` in `MYSQL` database, `SCHOOL`:

- `rno`(Roll number)- integer
- `name`(Name) - string
- `DOB` (Date of birth) – Date
- `Fee` – float

Note the following to establish connectivity between Python and MySQL:

- Username - `root`
- Password - `tiger`
- Host - `localhost`

The values of fields `rno`, `name`, `DOB` and `fee` has to be accepted from the user. Help Kabir to write the program in Python.

OR

(i) Give one difference between alternate key and candidate key.

(ii) Sartaj has created a table named `Student` in `MYSQL` database, `SCHOOL`:

- `rno`(Roll number)- integer
- `name`(Name) - string
- `DOB` (Date of birth) – Date
- `Fee` – float

Note the following to establish connectivity between Python and MySQL:

- Username - `root`
- Password - `tiger`
- Host - `localhost`

	Sartaj, now wants to display the records of students whose fee is more than 5000. Help Sartaj to write the program in Python.	
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