Competency Based Question Bank

CLASS XII

Computer Science (083)

तत् त्वं पूषन् अपावृणु
केन्द्रीय विद्यालय संगठन

SESSION 2025-26

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Python Revision Tour of Class XI

1	Which of the following expressions generate an Error? a. int("23") b. int("23.5") c. float("23") d. float("23.5")	1
2	Which of the following can not be used as normal identifiers: a. Pass b. pass c. int d. eval	1

3	What will be the output of the given below program: -
	if 1+3==7:
	      print("Hello")
	else :
	      print("Know Program")
	a. Hello b. Know Program
	c. Compiled successfully, no output d. Error
		1

4	Which statement will check if a is equal to b ? a. if a = b : b. if a == b : c. if a === b d. if a == b	1
5	The _____ statement prematurely ends the execution of the current while / for loop. a. break b. continue c. pass d. None of these	1

6	What will the following code snippet produce :
	for i in range(1,5):
	   print(i,end=" ")
	   if i==3:
	     break
	a. 123 b. 1234 c. 12 d. 12345
		1

7	Which of the following methods removes all items from a list? a. remove() b. delete() c. clear() d. pop()	1
8	Which of the following is a correct way to define a single-element tuple? a. t = (10) b. t = 10, c. t = (10,) d. Both b and c	1
9	Which of the following is correct with respect to Python Code given below? Coins={"Five":10,"Ten":100} a. one dictionary named Coins is created. b. "Five" and "Ten" are the keys of dictionary named Coins c. 10 and 100 are the values of dictionary named Coins d. All of these	1
10	Consider the code below and choose the correct output from the given options: customer = {"city": "Prayagraj", "State": "Uttar Pradesh", "capital": "Lucknow"} print(customer.items()) a. dict_items([{'city', 'Prayagraj'), ('State', 'Uttar Pradesh'), ('capital', 'Lucknow'}]) b. dict_items([('city', 'Prayagraj'), ('State', 'Uttar Pradesh'), ('capital', 'Lucknow')]) c. dict_items((['city', 'Prayagraj'], ['State', 'Uttar Pradesh'], ['capital', 'Lucknow'])) d. None of the Above	1
11	S = "Python Programming" The output of statement print(S[::-1][::2]) is_____.	1

12	Which of the following methods will convert "PYTHON" to "python"? a. lower("PYTHON") b. "PYTHON".tolower() c. "PYTHON".lower() d. "PYTHON".lowerto()	1

13	State whether the following given statement is True or False : Statements which are start with # ,never executed by the interpreter.	1
14	State whether the following given statement is True or False : The '=' operator is used for comparison in python.	1
15	State whether the following given statement is True or False : The if...else is an extension of the simple if statement.	1
16	State whether the following given statement is True or False : We use if-elif-else statement when the multipath decisions are involved.	1
17	State whether the following given statement is True or False : Iterative construct is used to execute the statement multiple times.	1
18	State whether the following given statement is True or False : There are three types of iterative statements in python.	1
19	State whether the following given statement is True or False : The list method pop() removes the first element of the list.	1
20	State whether the following given statement is True or False : (10,) and (10) are the same in Python.	1
21	State whether the following given statement is True or False : Python Dictionary contains mappings comprising of Key Value Pairs.	1
22	State whether the following given statement is True or False : Python dictionary is in fact Ordered Collection of Key Value pairs in latest python versions.	1
23	State whether the following given statement is True or False : The replace ( ) function modifies the Original string.	1
24	State whether the following given statement is True or False : The in operator can be used to check if a substring exists within a string.	1

ASSERTION (A) REASON (R) BASED QUESTIONS

	Assertion (A) and Reason (R) based questions.
	
	  a. Both A and R are true, and R is the correct explanation of A.
	  b. Both A and R are true, but R is not the correct explanation of A.
	  c. A is true, but R is false.
	  d. A is false, but R is true.	

25	Assertion (A) : In python, implicit type conversion automatically converts a lower data type to a higher data type during expression evaluation Reason (R) : Python allows conversion from float to int automatically if both are used in an expression.	1

26	Assertion (A) : Keywords can not be used as normal identifiers. Reason (R) : Keywords are reserved for special purposes.	1
27	Assertion (A) : In an if-else statement, the if block checks the true part whereas else checks for the false part. Reasoning (R) : In a conditional construct, the else block is mandatory.	1
28	Assertion (A) : In an if-else statement, the if block checks the true part whereas else checks for the false part. Reasoning (R) : In a conditional construct, the else block is mandatory.	1
29	Assertion (A) : break Statement is used to terminate the loop. Reason (R) : break is a jump statement which is used to move the control to the starting point of the loop.	1
30	Assertion (A) : while loop is an entry controlled loop. Reason (R) : In while loop, the condition is checked first before entering the body of the loop.	1
31	Assertion (A) : Lists in Python are mutable. Reason (R) : You can change, add, or delete elements from a list.	1
32	Assertion (A) : Tuples are more memory efficient than lists. Reason (R) : Tuples are immutable, while lists are mutable.	1
33	Assertion (A) : Dictionaries in Python are mutable. Reasoning (R) : The values present in key value pairs cannot be changed.	1
34	Assertion (A) : Dictionaries are mutable but their keys are immutable. Reason (R) : The values of a dictionary can change but keys of the dictionary cannot be changed because through them data is hashed.	1
35	Assertion (A) : Strings in Python are immutable. Reason (R) : In Python, once a string is created, the characters in it can not be changed individually using indexing.	1
36	Assertion (A) : "Hello World".split() returns a list with one element:"Hello World" Reason (R) : The split() method breaks a string into parts using the specified separator.	1
ERROR FINDING BASED QUESTIONS		
37	Correct the given statement : x y z = 10, 20, 30	1
38	Correct the given python statement(s) : term1 = input("Enter term 1 marks") term2 = input("Enter term 2 marks") total = term1+term2 print("You are " + total + " years old")	2

39	Observe the following code carefully and rewrite it after removing all syntactical errors. Underline all the corrections made.
	def 1func():
	    a=input("Enter a number"))
	    if a>=33
	       print("Promoted to next class")
	    ELSE:
	       print("Repeat")
		2

40	Amit, a Python programmer, is working on a project in which he wants to write a function to count the number of even and odd values in the list. He has written the following code but his code is having errors. Rewrite the correct code and underline the corrections made.
	
	``python
	define EOCOUNT(L):
	    even_no = odd_no = 0
	    for i in range(0,len(L))
	        if L[i]%2=0:
	            even_no+=1
	        else:
	            odd_no+=1
	    print(even_no, odd_no)
	``
		2

41	Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.
	
	``python
	250 = Num
	while Num <= 1000:
	    if Num => 750:
	        print Num
	    Num = Num + 100
	    else
	        print Num*3
	        Num= Num+ 150
	``
		2

42	Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.
	
	``python
	while x>0
	    if a%2=0
	        print(a%2)
	    elseif a%3=0 then
	        print(a%3)
	``
		2

43	Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.
	
	``python
	fruits = ['apple', 'banana' 'cherry']
	t = (1, 2, 3)
	t[1] = 100
	k = (5,)
	Print(k[0])
	print(t)
	print(fruits)
	``
		3

44	Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.
	
	``python
	colors =list ["red", "green", "blue",]
	colors.remove["green"]
	my_tuple = (10, 20, 30
	tuple1 = (1, 2)
	tuple2 = (3, 4)
	result = tuple1 + tuple2[]
	print(my_tuple)
	print(colors)
	``
		3

45	The following python code contains an error. Rewrite the correct code and underline the corrections made by you.
	
	``python
	details= {"city": ["Prayagraj", "Patna"], "State": "Uttar Pradesh", "Bihar"]}
	``
		2

46	The following python code contains error(s). Rewrite the correct code and underline the corrections made by you. info = {"country": "India", "State": "Kerala", "Language":"Malayalam"} print(values().info)	2

47	The following python code is trying to print all vowel characters in a given string. Rewrite the correct code and underline the corrections made by you.
	sub1="computer science"
	sub2=""
	for i in range(sub1):
	  if i ='aeiou':
	    sub2=sub2+str(i)
	
	print(sub2)
		2

48	The following python code contains error(s).Underline the error in code: s1 = 'Python world" s1[8] = 'W' print(upper(s1)) print(isupper(s1))	2
	FINDING OUTPUT(s) BASED QUESTIONS	

49	Evaluate the following expression:
	  a) 15 % 11 + 2 ** 3 ** 2 * 2
	  b) Not True and False or True
		2

50	What will be the output of the following ………………. float("7.5" + "7")	1

51	Predict the output of the following code:
	m="Fun@Python3.0"
	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)
		3

52	Predict the output of the following code:
	F1="WoNdERFUL"
	F2="StuDenTS"
	F3=""
	for I in range(0,len(F2)+1):
	  if F1[I]>='A' and F1[I]<='F':
	    F3=F3+F1[I]
	  elif F1[I]>='N' and F1[I]<='Z':
	    F3=F3+F2[I]
	  else:
	    F3=F3+"*"
	print(F3)
		3

53	Predict the output of the following code:
	``python
	a=[1,2,3,4,5]
	for i in range(1,5):
	    a[i-1] = a[i]
	for i in range(0,5):
	    print(a[i], end=" ")
	``
	
	a. 55123 b. 51234 c. 23451 d. 23455
		1

54	Predict the output of the following code:
	``python
	for x in range (10,20):
	    if x%2==0:
	        continue
	print(x)
	``
	a. 15 b. 10 c. 19 d. 20
		1

55	What is the output of the following code ?
	``python
	a = [1, 2, 3]
	a.append([4, 5])
	print(a)
	``
		1

56	What is the output of the following code ?
	``python
	t = (1, 2, [3, 4])
	t[2][0] = 99
	print(t)
	``
		1

57	Consider the code below and choose the correct output from the given options:
	``python
	customer = {"cname": "Shiv Prasoon", "country": "India", "mobile": "9956789876"}
	print(customer['cname'], " :: ", customer.get('mobile'))
	``
	a. Shiv Prasoon 9956789876 b. Shiv Prasoon :: 9956789888
	c. Shiv Prasoon :: 9956789876 d. Error
		1

58	Consider the code below and choose the correct output from the given options:
	``python
	customer = {"city": "Prayagraj", "State": "Uttar Pradesh", "capital": "Lucknow"}
	print(len(customer))
	``
	a. 3 b. 6 c. 7 d. None of the Above
		1

59	Consider the code below and write the correct output :
	``python
	s="EXAM2025@cbse.com"
	l = len(s)
	m=""
	for i in range(0,l):
	    if s[i].isupper():
	        m=m+s[i].lower()
	    elif s[i].isalpha():
	        m=m+s[i].upper()
	    elif s[i].isdigit():
	        m=m+"$"
	    else:
	        m=m+"*"
	print(m)
	``
		3

60	Consider the code below and choose the correct output :
	``python
	Msg="CompuTer"
	Msg1=""
	for i in range(0, len(Msg)):
	    if Msg[i].isupper():
	``
		3

| ```
        Msg1=Msg1+Msg[i].lower()
    elif i%2==0:
        Msg1=Msg1+'*'
    else:
        Msg1=Msg1+Msg[i].upper()
print(Msg1)
``` | 1 |

Python Functions

	MULTIPLE CHOICE BASED QUESTIONS	
1	Which one of the following is an incorrect way of importing the randint() function from the random module? a. import random b. from random import randint c. import random.randint d. from random import *	1
2	The function which is defined by programmer and not available already in program is : a. Library Function b. Customised Function c. User Defined function d. Predefined Function	1
3	What will be the output of the following code? def hello(name, message="Welcome"): print(name, message) hello("Anjali") a. Anjali b. Anjali Welcome c. Welcome Anjali d. Error due to missing parameter	1
4	Which of the following function calls is incorrect if the function is defined as: def calculate(a, b=2, c=3): return a + b + c a. calculate(1) b. calculate(1, 4) c. calculate(1, c=4) d. calculate(b=3, 1, c=2)	1

5	What will be the output of the following code?
	def greet():
	   name = "Python"
	   return name
	print(greet())
	a. Python b. greet c. name d. Error
		1

6	Which of the following is a correct example of a function with default parameters? a. def add (x, y=5): b. def add (x=5, y): c. def add (x y=5): d. def add (default x, y):	1
	TRUE / FALSE BASED QUESTIONS	
7	State whether the following given statement is True or False : A Python function does not reduce the code redundancy.	1
8	State whether the following given statement is True or False : random() function never returns an integer value.	1
9	State whether the following given statement is True or False : In Python, keyword arguments must follow positional arguments in a function call.	1
10	State whether the following given statement is True or False : A function must always be called with all parameters provided, even if some have default values.	1

11	State whether the following given statement is True or False : A variable declared inside a function is called a global variable.	1
12	State whether the following given statement is True or False : The keyword return is used to send a value back to the function caller.	1

ASSERTION (A) REASON (R) BASED QUESTIONS		

Assertion (A) and Reason (R) based questions.
    a. Both A and R are true, and R is the correct explanation of A.
    b. Both A and R are true, but R is not the correct explanation of A.
    c. A is true, but R is false.
    d. A is false, but R is true.		

13	Assertion (A) : A function is a building block of functions. Reason (R) : Library functions are to import and use.	1
14	Assertion (A) : Importing a module with * makes the size of the program bigger. Reason (R) : Python interpreter imports the module function code in the program before execution.	1
15	Assertion (A) : In a Python function call, you can mix positional and keyword arguments. Reason (R) : Python allows keyword arguments to be passed before positional arguments.	1
16	Assertion (A) : Default arguments in a function must be placed after all non-default arguments. Reason (R) : Python uses left-to-right evaluation for function arguments.	1
17	Assertion (A) : A function can return multiple values in Python. Reason (R) : Python allows returning a tuple from a function.	1
18	Assertion (A) : Global variables can be accessed inside functions. Reason (R) : Any variable inside a function is considered global by default.	1

ERROR FINDING BASED QUESTIONS		

19	Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.
	<pre>DEF calculate_sum(numbers)
	    sum = 0
	    for number in numbers:
	        sum = number
	    return Sum
	print(call calculate_sum([1, 2, 3, 4, 5]))</pre>
		2

20	Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code.
	<pre>def greet(name)
	    message = "Hello, " + name
	    return message
	def farewell(name):
	    return "Goodbye " + name
	print(greet(123)
	print(farewell(456)
	greet("John"</pre>
		2

21	Identify the error in the following function definition or call: def show(msg="Hello", name):	1

	print(name, msg) show("Ravi")	
22	Identify the error in the function call: def display(name, age=18): print(name, age) display(age=20, "Karan")	1
23	The following python code contains error(s). Rewrite the correct code and underline the corrections made by you def fun(a, b=3, c) : Return a + b + c x = fun (10, 20) print(x)	2

24	The following python code contains error(s). Rewrite the correct code and underline the corrections made by you
	DEF test ( ) :
	   x = x + 1
	return x
	    print(x)
	test ( )
		2

FINDING OUTPUT(s) BASED QUESTIONS	

25	What will be the output of the following code ?
	def calculate_total(price, quantity=1, discount=0):
	   total = price * quantity
	   total -= total * (discount / 100)
	   return total
	print(calculate_total(100))
	print(calculate_total(100, 2))
	print(calculate_total(100, 2, 10))
		3

26	Predict the output :
	def combine(a, b, sep=" "):
	   return str(a) + sep + str(b)
	def wrapper():
	   print(combine("Hello", "World"))
	   print(combine("Python", "Programming", sep=" - "))
	   print(combine(10, 20, sep=":"))
	wrapper()
		3

27	What will be the output of the following code? def info(name, grade="A", city="Delhi"): print(name, grade, city) info("Nina", city="Mumbai")	1
28	What will be printed ? def func(x, y=5, z=10): print("x:", x, "y:", y, "z:", z) func(3, z=20)	1

FILE HANDLING

	1 Mark Question	

1.	A CSV file named students.csv contains the following data:
	RollNo, Name, Class, Marks
	101, Riya, 12, 89
	102, Aarav, 12, 76
	103, Isha, 12, 94
	104, Kabir, 12, 67
	
	A student writes the following code:
	
	import csv
	with open('students.csv', 'r') as f:
	  reader = csv.reader(f)
	  next(reader)
	  for row in reader:
	    if int(row[3]) > 80:
	      print(row[1],end=',')
	
	What will be the output of the code?
	a. Riya, Aarav, Isha,
	b. Riya, Isha,
	c. Isha, Kabir,
	d. Aarav, Kabir,
		1

2.	If row[3] represents marks as a string from a CSV file, which is the correct way to compare it numerically? a. if int(row[3]) > 50: b. if row[3] > 50: c. if float(row) > 50: d. if row > 50:	1
3.	Correct syntax of writing single row in a csv file using writer object a. writer.write(["Pencil","25"]) b. writer.writeline(["Pencil","25"]) c. writer.writerow(["Pencil","25"]) d. writer.append(["Pencil","25"])	1
4.	Predict the output of following code : import csv f = open("students.csv","w",newline="") w = csv.writer(f) w.writerow([11,22,33]) f.close() f = open("students.csv","r") r = csv.reader(f) for x in r: print(x[0]+x[1]) a. 33 b. 55 c. error d. 1122	1
5.	Ms. Priyanka is trying to find out the output of the following code. Help her to find the correct output of the code:	1

```
with open("data.txt", "w") as f:
    f.writelines(["Line1\n", "Line2\n", "Line3\n"])
with open("data.txt") as f:
    print(f.readline())
```

a. Line1   b. ['Line1\n']   c. Line1\n   d. Line2

6.	Consider this code & find the output:
	
	``with open("temp.txt", "w") as f:
	    f.write("ABCDEF")
	
	with open("temp.txt", "r") as f:
	    f.seek(3)
	    print(f.read(2))```
	
	a. AB b. CD c. DE d. EF
		1

7.	What will be the output of following code?
	
	``with open("notes.txt", "w") as f:
	    f.write("Python\nRocks")
	
	with open("notes.txt", "r") as f:
	    for line in f:
	        print(line.strip())```
	
	a. Python b. Python
	   Rocks
	c. Python\nRocks d. ['Python', 'Rocks']
		1

8.	What will be the output of the code below?
	``with open("log.txt", "w") as f:
	    f.write("12345")
	
	with open("log.txt", "r") as f:
	    print(f.read(3))
	    print(f.read(3))```
		1

a. 12345	b. 123 123	c. 123 45	d. 1 2

9.	Which of the following statement opens a binary file record.bin in write mode and writes data from a list
	lst1 = [1,2,3,4]
	
	a. with open('record.bin', 'wb') as myfile:
	          pickle.dump(myfile, lst1)
	b. with open('record.bin', 'wb+') as myfile:
	          pickle.dump(myfile, lst1)
	c. with open('record.bin', 'ab') as myfile:
	          pickle.dump(myfile, lst1)
	d. with open('record.bin', 'wb') as myfile:
	          pickle.dump(lst1 , myfile)
		1

10.	Which of the following commands is used to open a binary file "c:\temp.dat" in append-mode?
	   a. outfile= open("c:/temp. dat", "ab")
	   b. outfile = open("c:\temp. dat", "wb+")
	   c. outfile = open("c:\temp. dat", "ab")
	   d. outfile = open("c:\\temp. dat", "r+b")
		1

11.	What are the binary files used for? a. To store ascii text b. It is used to store data in the form of bytes. c. To look folder good d. None of these	1
12.	Which of the following functions changes the position of file pointer and returns its new position? a.flush() b.tell() c.seek() d.offset()	1
13.	The correct syntax of seek() is: a. file_object.seek(offset [, reference_point]) b. seek(offset [, reference_point]) c. seek(offset, file_object) d. seek.file_object(offset)	1
	Following questions are Assertion (A) and Reason (R) based questions. Mark the correct choice as: **a. Both A and R are true, and R is the correct explanation of A** **b. Both A and R are true, but R is not the correct explanation of A** **c. A is true, but R is false** **d. A is false, but R is true**	
14.	**Assertion (A):** While writing data into a CSV file using csv.writer(), each row must be passed as a list or tuple. **Reason (R):** The writerow() method of csv.writer class takes a single string as input and writes it directly to the CSV file.	
15.	**Assertion (A):** The csv.reader object in Python returns each row of a CSV file as a list. **Reason (R):** Each row read by csv.reader can be accessed using a for loop.	
16.	**Assertion (A):** In Python, a binary file must be opened using mode "rb" and "wb" for reading and writing respectively. **Reason (R):** Binary files store data as text, which is compatible with standard input/output functions like print().	
17.	**Assertion (A):** Opening a file in 'a' mode raises an error if the file does not exist. **Reason (R):** The 'a' mode also allows appending to existing files.	
18.	**Assertion (A):** f.seek(0) can be used to re-read a file from the beginning. **Reason (R):** seek() moves the file pointer to a specified location.	
19.	**Assertion (A):** Binary files store all data in text format. **Reasoning (R):** Binary files data remain in its original type.	
20.	**Assertion (A):** Using the 'with' statement to open a file is considered best practice. **Reason (R):** It ensures the file is automatically closed, even if an error occurs.	

ANSWER KEY XII CS File Handling

1.	b. Riya, Isha,
2.	a. if int(row[3]) > 50:
3.	c. writer.writerow(["Pencil","25"])
4.	d. 1122
5.	a. Line1
6.	c. DE
7.	a. Python Rocks
8.	c. 123 45
9.	d. with open('record.bin', 'wb') as myfile: pickle.dump(lst1 , myfile)
10.	a. outfile = open("c:/temp. dat", "ab")
11.	b. It is used to store data in the form of bytes.
12.	c.seek()
13.	a. file_object.seek(offset [, reference_point])
14.	**c. A is true, but R is false**
15.	a. Both A and R are true, and R is the correct explanation of A
16.	a. Both A and R are true, and R is the correct explanation of A
17.	d. A is false, but R is true
18.	a. Both A and R are true, and R is the correct explanation of A
19.	d. A is false, but R is true
20.	a. Both A and R are true, and R is the correct explanation of A

File Handling (Part B)

	2 Marks Question	
1.	Differentiate between rb+ and wb+ file modes in Python.	2
2.	How are text files different from binary files in case of delimiter ?	2

3.	Following code is written to display the total number of words present in the file from a text file "Quotes.Txt". Write statement 1 and 2 to complete the code.
	
	def countwords():
	   s = open("Quotes.txt","r")
	   f = s.read()
	   _____statement 1
	   count = 0
	   _____statement 2
	   count = count + 1
	   print ("Total number of words:", count)
		2

4.	Write a function to display those lines which start with the letter "G" from the text file "MyNotes.txt" Write statement 1 and statement 2 to complete the code.
	
	def count_lines( ):
	    c = 0
	    _____statement 1
	    line = f.readlines()
	    for w in line:
	    _____statement 2
	    print(w)
	    f.close()
		2

5.	Fill in the blank : a) _____ is a process of storing data into files and allows to performs various tasks such as read, write, append, search and modify in files. b) The transfer of data from program to memory (RAM) to permanent storage device (hard disk) and vice versa are known as _____.	2
6.	Write a Python program to create a CSV file named students.csv and store data of 3 students (Name, Age, Class).	2
7.	Write a program to read students.csv using DictReader and print names only.	2
8.	Differentiate between writerow() and writerows()?	2
9.	Differentiate between CSV file and Text file in case retrieval of records from output file?	2
	3 Marks Question	
10.	Write a function that counts and display the number of 5 letter words in a text file "Sample.txt"	3
11.	Write a program to count the number of students in students.csv (excluding header).	3

12.	Write a program to read students.csv and display students older than 17.	3
13.	Write a program to search for a student by name in students.csv?	3
14.	A Binary file, CINEMA.DAT has the following structure: {MNO:[MNAME, MTYPE]} Where MNO – Movie Number MNAME – Movie Name MTYPE is Movie Type Write a user defined function, findType(mtype), that accepts mtype as parameter and displays all the records from the binary file CINEMA.DAT, that have the value of Movie Type as mtype.	3
15.	Write a method/function COUNTLINES_ET() in python to read lines from a text file REPORT.TXT, and COUNT those lines which are starting either with 'E' and starting with 'T' respectively. And display the Total count separately.	3
4 Marks Question		
16.	Consider a file, SPORT.DAT, containing records of the following structure: [SportName, TeamName, No_Players] Write a function, CountRecord(),that count the number of records in the file. Write a function, copyData(), that reads contents from the file SPORT.DAT and copies the records with Sport name as "Cricket"to the file named CRICKET.DAT, The function should return the total number of records copied to the file CRICKET.DAT.	4

17.	Aman is a Python programmer. He has written a code and created a binary file record.dat with employeeid, ename and salary. The file contains 10 records.He now has to update a record based on the employee id entered by the user and update the salary. The updated record is then to be written in the file temp.dat. The records which are not to be updated also have to be written to the file temp.dat. If the employee id is not found, an appropriate message should to be displayed. As a Python expert, help him to complete the following code based on the requirement given above:
	import _____ #Statement 1
	def update_data():
	    rec={}
	    fin=open("record.dat","rb")
	    fout=open("_____") #Statement 2
	    found=False
	    eid=int(input("Enter employee id to update their salary :: "))
	    while True:
	        try:
	            rec=_____ #Statement 3
	            if rec["Employee id"]==eid:
	                found=True
	                rec["Salary"]=int(input("Enter new salary:: "))
	                pickle._____ #Statement 4
	            else:
	                pickle.dump(rec,fout)
		4

```
        except:
            break
    if found==True:
        print("The salary of employee id ",eid," has been updated.")
    else:
        print("No employee with such id is not found")
    fin.close()
    fout.close()
```

(i)   Which module should be imported in the program? (Statement 1)

(ii)   Write the correct statement required to open a temporary file named temp.dat.   (Statement 2)

(iii)   Which statement should Aman fill in Statement 3 to read the data from the binary file,   record.dat ?

(iv)   Write Statement 4 to write the updated data in the file, temp.dat?

18.	A binary file "Bank.dat" has structure as [account_no, cust_name,balance]. i. Write a user-defined function addfile( ) and add a record to Bank.dat. ii. Create a user-defined function CountRec( ) to count and return the number of customers whose balance amount is more than 100000	4

5 Marks Question

19.	A binary file "Stu.dat" has structure (rollno, name, marks). (i) Write a function in Python add_record() to input data for a record and add to Stu.dat. (ii) Write a function in python Search_record() to search a record from binary file "Stu.dat" on the basis of roll number.	5

20.	Amaira's teacher asked her to count the no. of times words 'he' and 'she' comes in a text file "poem.txt". She wrote the code, but got confused in few statements. Help her complete the following code.
	
	 `f=open("poem.txt", "___")   #Statement-1`
	 `data=f._____        #Statement-2`
	 `data=data._____    #Statement-3`
	 `c=0`
	 `c1=0`
	 `for ch in data:`
	 `    ch = ch._____      #Statement-4`
	 `    if ch=="HE" :`
	 `        c=c+1`
	 `    elif ch=="SHE":`
	 `        c1+=1`
	 `print("No of She",c1)`
	 `print("No of he",c)`
	 `f._____           #Statement-5`
	
	 i) Which of the following modes to be used in Statement-1while opening the file?
	 a. W b. r c. a d.w+
	 ii) What should come in statement-2 to read all the contents of the file as a single string?
	 a. read() b. readline() c. readlines() d. load()
	 iii) Which function should come in Statement-3 to get a list of words?
		5

a.   getlist() b. splitstr()   c. split()   d. getword()

iv) Which function should be used in Statement-4 to convert the string in uppercase?

a.   toupper() b. ToUpper()   c. uppercase()   d. upper()

v) What should be written in Statement-5 to close the file?

a.   close('poem.txt')   b. close()   c. end()   d.close(f)

Solutions Case based questions

Data Files

1	**rb+ mode:** • Opens a file for both reading and writing in binary format. • The file must already exist; otherwise, an error occurs. • The file pointer is placed at the beginning of the file. • Existing content is preserved, and writing will overwrite from the current file pointer position. **wb+ mode:** • Opens a file for both reading and writing in binary format. • If the file exists, it is truncated (emptied); otherwise, a new file is created. • The file pointer is placed at the beginning of the file. • Any existing content is lost, and writing starts from the beginning of the file.	2
2	**Text Files:** • Store data as a sequence of characters (like ASCII or Unicode). • Each line is terminated by a special character (EOL), typically a newline character (\n). • These delimiters are used to separate lines of text, allowing for easy reading and writing of textual data. **Binary Files:** • Store data as a stream of bytes, without character encoding or line delimiters. • There is no concept of "lines" in the same way as in text files. • Binary files are typically used for storing data that is not intended for human readability, such as images, audio, or program code.	2
| 3 | ```python
import pickle
def countRecord():
    f=open('sport.dat','rb')
    count=0
    while True:
        try:
            record=pickle.load(f)
            count=count+1
        except EOFError:
            break
    f.close()
def copyData():
        f1=open('sport.dat','rb')
        f2=open('cricket.dat','wb')
``` | 2+2 |

| | ```
while True:
    try:
        record=pickle.load(f1)
        if record[0]=='Cricket':
            pickle.dump(record,f2)
    except EOFError:
        break
f1.close()
f2.close()
``` | | |
| 4 | ```
import pickle
def findType(mtype):
    f=open('cinema.dat','rb')
    while True:
        try:
            record=pickle.load(f)
            for y in record:
                if record[y][1]==mtype:
                    print(record)
        except EOFError:
            break
    f.close()
``` | 3 |
| 5 | i)pickle #Statement-1
ii)fout=open('temp.dat','wb') #Statement-2
iii)rec=pickle.load(fin) #Statement-3
iv) pickle.dump(rec,fout) Statement-4 | 4 |
| 6 | ```
def add_record():
    f=open('stu.dat','ab')
    roll=int(input('enter roll number'))
    name=input('enter name')
    marks=int(input('enter marks'))
    record=[roll,name,marks]
    pickle.dump(record,f)
    f.close()
def Searchrecord():
    f=open('stu.dat','rb')
    r=int(input('enter roll number to be searched'))
    found=0
    try:
        while True:
            record=pickle.load(f)
            if record[0]==r:
                print('record found',record)
                found=1
    except EOFError:
        if found==0:
            print('record not found')
        f.close()
``` | 2+3 |

| 7 | ```
def add_file():
    f=open('bank.dat','ab')
    acno=int(input('enter account number'))
    name=input('enter name')
    balance=int(input('enter balance))
    record=[ acno,name, balance]
    pickle.dump(record,f)
    f.close()

def countRec():
    f=open('bank.dat','rb')
    count=0
    while True:
        try:
            record=pickle.load(f)
            if record[2]>100000:
                count=count+1
        except EOFError:
            break
    f.close()
    return count
``` | 2+2 |

STACK

1.	Stack implementation can be performed using a list in Python. (True / False)	1
2.	top operation does not modify the contents of a stack. (True / False)	1
3.	The peek operation refers to accessing/inspecting the top element in the stack (True/False)	1
4.	len() method used to find the size of stack. (True /False)	1
5.	What is the process of inserting data into a stack called? a. Create b. Insert c. Push d. Evaluate	1
6.	Which pointer is associated with a stack? a. First b. Front c. Rear d. Top	1
7.	Assume a stack has size 10. If a user tries to push a 11th element to a stack, which of the mentioned condition will arise? a. Underflow b. Overflow c. Crash d. Successful Insertion	1
8.	Which of these is not an application of stack? a. Parenthesis Balancing program b. Evaluating Arithmetic Expressions c. Reversing Data d. Data Transfer between Process	1
9.	**Assertion (A)** : A stack is used to reverse a string. **Reason (R)** : Stack follows Last-In, First-Out (LIFO) order. **Options:** a. Both A and R are true, and R is the correct explanation of A b. Both A and R are true, but R is not the correct explanation of A c. A is true, but R is false d. A is false, but R is true	1

10.	**Assertion (A)** : Stack allows element addition at one end only. **Reason (R)** : Stack operations are performed at both end.	1
11.	You have a stack named **BooksStack** that contains records of books. Each book record is represented as a list containing **book_title**, **author_name**, and **publication_year**. Write the following user-defined functions in Python to perform the specified operations on the stack **BooksStack**: ● push_book(BooksStack, new_book): This function takes the stack BooksStack and a new book record new_book as arguments and pushes the new book record onto the stack. ● pop_book(BooksStack): This function pops the topmost book record from the stack and returns it. If the stack is already empty, the function should display "Underflow". ● peep(BookStack): This function displays the topmost element of the stack without deleting it. If the stack is empty, the function should display 'None'.	3
12.	Thushar received a message(string) that has upper case and lower-case alphabet. He want to extract all the upper case letters separately .Help him to do his task by performing the following user defined function in Python: a. Push the upper case alphabets in the string into a STACK b. Pop and display the content of the stack. For example: If the message is "All the Best for your Pre-board Examination" The output should be : E P B A	3
13.	Write a function in Python, Push(EventDetails) where , EventDetails is a dictionary containing the number of persons attending the events– {EventName : NumberOfPersons}. The function should push the names of those events in the stack named 'BigEvents' which have number of persons greater than 200. Also display the count of elements pushed o n to the stack. For example: If the dictionary contains the following data: EventDetails ={"Marriage":300, "Graduation Party":1500, "Birthday Party":80, "Get together" :150} The stack should contain : Marriage Graduation Party The output should be: The count of elements in the stack is 2	3
14.	A list of numbers is used to populate the contents of a stack using a function push(stack, data) where stack is an empty list and data is the list of numbers. The function should push all the numbers that are even to the stack. Also write the function pop(stack) that removes and returns the top element of the stack on its each call.	3
15.	A list contains following record of a student: [student_name, age, hostel] Write the following user defined functions to perform given operations on the stack named **'stud_details'**: (i) Push_element() - To Push an object containing name and age of students who live in hostel "Ganga" to the stack (ii) Pop_element() - To Pop the objects from the stack and display them. Also, display "Stack Empty" when there are no elements in the stack.	3

	For example: If the lists of customer details are: ["Barsat",17,"Ganga"] ["Ruben", 16,"Kaveri"] ["Rupesh",19,"Yamuna"] The output should be: ["Barsat",17,"Ganga"] Stack Empty	
16.	Write a function in Python PUSH_IN(L), where L is a list of numbers. From this list, push all numbers which are multiple of 3 into a stack which is implemented by using another list.	3
17.	Write a function in Python, Push(KItem),where KItem is a dictionary containing the details of Kitchen items– {Item:price}. The function should push the names of those items in a stack which have price less than 100. Also display the average price of elements pushed into the stack. For example: If the dictionary contains the following data: **{"Spoons":116,"Knife":50,"Plates":180,"Glass":60}** The stack should contain **Glass** **Knife** The output should be: **The average price of an item is 55.0**	3
18.	Given a Dictionary Stu_dict containing marks of students for three test-series in the form Stu_ID:(TS1, TS2, TS3) as key-value pairs. Write a Python program with the following user-defined functions to perform the specified operations on a stack named Stu_Stk (i) Push_elements(Stu_Stk, Stu_dict) : It allows pushing IDs of those students, from the dictionary Stu_dict into the stack Stu_Stk, who have scored more than or equal to 80 marks in the TS3 Test. (ii) Pop_elements(Stu_Stk): It removes all elements present inside the stack in LIFO order and prints them. Also, the function displays 'Stack Empty' when there are no elements in the stack. Call both functions to execute queries. For example: If the dictionary Stu_dict contains the following data: **Stu_dict ={5:(87,68,89), 10:(57,54,61), 12:(71,67,90), 14:(66,81,80), 18:(80,48,91)}** After executing Push_elements(), Stk_ID should contain **[5,12,14,18]** After executing Pop_elements(), The output should be: **18** **14** **12** **5** **Stack Empty**	3
19.	Consider a list named Nums which contains random integers. Write the following user defined functions in Python and perform the specified operations on a stack named BigNums. (1)PushBig(): It checks every number from the list Nums and pushes all such numbers which have 5 or more digits into the stack, BigNums.	3

	(ii) PopBig(): It pops the numbers from the stack, BigNums and displays them. The function should also display "Stack Empty" when there are no more numbers left in the stack. For example: If the list Nums contains the following data: Nums [213,10025,167,254923,14,1297653,31498,386,92765) Then on execution of PushBig(), the stack BigNums should store: [10025, 254923, 1297653, 31498, 92765] And on execution of PopBig (), the following output should be displayed: 92765 31498 1297653 254923 10025 Stack Empty	
20.	A dictionary, d_city contains the records in the following format: (state:city) Define the following functions with the given specifications: (i) push_city (d_city): It takes the dictionary as an argument and pushes all the cities in the stack CITY whose states are of more than 4 characters. (ii) pop_city(): This function pops the cities and displays "Stack empty" when there are no more cities in the stack.	3

SOLUTION Stack

	Answers:
	   1. Ans. c
	   2. Ans. d
	   3. Ans. b
	   4. Ans. d
	   5. Ans. a
	   6. Ans. a
	   7. Ans. a
	   8. Ans. a
	   9. Ans. a
	   10. Ans. b	

11.	```
	def push_book(BooksStack, new_book):
	   BooksStack.append(new_book)
	def pop_book(BooksStack):
	  if len(BooksStack) == 0:
	     print("Underflow")
	  else:
	     return BooksStack.pop()
	def peep(BooksStack):
	  if len(BooksStack) == 0:
	     print("None")
	
	  else:
	     print(BooksStack[-1])
	     return BooksStack[-1]
	``	

| 12. | ```python
def push_uppercase(stack, message):
    for char in message:
        if char.isupper():
            stack.append(char)
def pop_and_display(stack):
    while stack:
        print(stack.pop(), end=' ')
    print()  # For newline after output
``` |
| 13. | ```python
def Push(EventDetails):
    BigEvents = []  # Stack to hold big event names
    for event, persons in EventDetails.items():
        if persons > 200:
            BigEvents.append(event)
    # Display the stack
    for event in BigEvents:
        print(event)
    # Display the count
    print("The count of elements in the stack is", len(BigEvents))
``` |
| 14. | ```python
def push(stack, data):
    for num in data:
        if num % 2 == 0:
            stack.append(num)
def pop(stack):
    if len(stack) == 0:
        return None  # Or raise an error if preferred
    return stack.pop()
``` |
| 15. | ```python
stud_details = []  # Stack initialized
def Push_element(student_list):
    if student_list[2] == "Ganga":
        stud_details.append(student_list)
def Pop_element():
    if not stud_details:
        print("Stack Empty")
    else:
        while stud_details:
            print(stud_details.pop())
        print("Stack Empty")
``` |
| 16. | ```python
def PUSH_IN(L):
    stack = []
    for num in L:
        if num % 3 == 0:
            stack.append(num)
    return stack
``` |
| 17. | ```python
def Push(KItem):
    stack = []
    total = 0
    count = 0
    for item, price in KItem.items():
``` |

```python
            if price < 100:
                stack.append(item)
                total += price
                count += 1
        # Display stack content
        for i in stack:
            print(i)
        # Display average
        if count > 0:
            average = total / count
            print(f"The average price of an item is {average}")
```
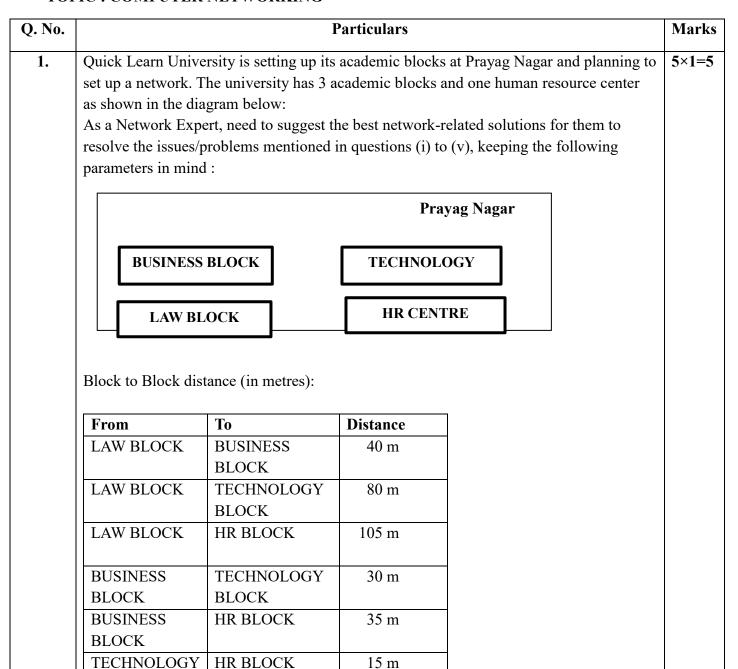
| 18. | ```python
def Push_elements(Stu_Stk, Stu_dict):
    for Stu_ID, marks in Stu_dict.items():
        if marks[2] >= 80:  # TS3 is the third test (index 2)
            Stu_Stk.append(Stu_ID)
# Function to pop and print all elements from the stack
def Pop_elements(Stu_Stk):
    while Stu_Stk:
        print(Stu_Stk.pop())
    print("Stack Empty")
# Main program
Stu_dict = {
    5: (87, 68, 89),
    10: (57, 54, 61),
    12: (71, 67, 90),
    14: (66, 81, 80),
    18: (80, 48, 91)
}

Stu_Stk = []
# Perform operations
Push_elements(Stu_Stk, Stu_dict)
Pop_elements(Stu_Stk)
``` | |

| 19. | ```python
# Sample list of random integers
Nums = [213, 10025, 167, 254923, 14, 1297653, 31498, 386, 92765]
# Stack to hold numbers with 5 or more digits
BigNums = []
# Function to push big numbers (5 or more digits) to the stack
def PushBig():
    for num in Nums:
        if len(str(num)) >= 5:
            BigNums.append(num)

# Function to pop and display all elements from the stack
def PopBig():
    while BigNums:
        print(BigNums.pop())
    print("Stack Empty")
``` | |

	# Example usage: PushBig() # Push 5 or more digit numbers into the stack PopBig() # Pop and display the numbers	

20.	CITY = [ ]
	# Function to push cities where the state has more than 4 characters
	def push_city(d_city):
	   for state, city in d_city.items():
	     if len(state) > 4:
	       CITY.append(city)
	# Function to pop cities from the stack
	def pop_city():
	   while CITY:
	     print(CITY.pop())
	   print("Stack empty")	

TOPIC : COMPUTER NETWORKING

Q. No.	Particulars	Marks
1.	Quick Learn University is setting up its academic blocks at Prayag Nagar and planning to set up a network. The university has 3 academic blocks and one human resource center as shown in the diagram below: As a Network Expert, need to suggest the best network-related solutions for them to resolve the issues/problems mentioned in questions (i) to (v), keeping the following parameters in mind :	5×1=5

Block to Block distance (in metres):

From	To	Distance
LAW BLOCK	BUSINESS BLOCK	40 m
LAW BLOCK	TECHNOLOGY BLOCK	80 m
LAW BLOCK	HR BLOCK	105 m
BUSINESS BLOCK	TECHNOLOGY BLOCK	30 m
BUSINESS BLOCK	HR BLOCK	35 m
TECHNOLOGY BLOCK	HR BLOCK	15 m

Number of Computers in each block is as follows:
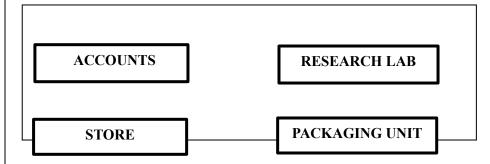
Block	No. of Computers
LAW BLOCK	15
TECHNOLOGY BLOCK	40
HR CENTRE	115
BUSINESS BLOCK	25

(i). Suggest a cable layout of connection between the blocks.
(ii). Suggest the most suitable place to house the server of the   organization with suitable reason.
(iii). Which device should be placed/installed in each of these blocks to efficiently connect all the computers within these blocks?
(iv). The university is planning to link its sales counters situated in various parts of the CITY. Which type of network out of LAN, MAN or WAN will be formed?
(v). (a) Which network topology may be preferred between these blocks?

OR

   (b) What type of network (PAN, LAN, MAN, or WAN) will be set up among the computers connected in Prayag Nagar?

---

2. Rehaana Medicos Center has set up its new center in Dubai. It has four buildings as shown in the diagram below:
As a Network Expert, need to suggest the best network-related solutions for them to resolve the issues/problems mentioned in questions (i) to (v), keeping the following parameters in mind :

```
┌──────────────────────────────────────────────────────────┐
│  ┌──────────────────┐          ┌──────────────────┐       │
│  │    ACCOUNTS      │          │  RESEARCH LAB    │       │
│  └──────────────────┘          └──────────────────┘       │
│  ┌──────────────────┐          ┌──────────────────┐       │
│  │     STORE        │──────────│ PACKAGING UNIT   │       │
│  └──────────────────┘          └──────────────────┘       │
└──────────────────────────────────────────────────────────┘
```

Block to Block distance (in meters):

From	To	Distance
ACCOUNTS	RESEARCH LAB	55 m
ACCOUNTS	STORE	150 m
STORE	PACKAGING UNIT	160 m
PACKAGING UNIT	RESEARCH UNIT	60 m
ACCOUNTS	PACKAGING UNIT	125 m
STORE	RESEARCH UNIT	180 m

Number of Computers in each block is as follows:

Block	No. of Computers
ACCOUNTS	25
RESEARCH LAB	100
STORE	15
PACKAGING UNIT	60

5×1=5

(i) Suggest a cable layout of connections between the buildings.
(ii) Suggest the most suitable place (i.e. buildings) to house the server of this organization.
(iii) Suggest the placement of the Repeater device with justification.
(iv) Suggest a system (hardware/software) to prevent unauthorized access to or from the network.
(v) (a) Suggest the placement of the Hub/ Switch with justification.

<div align="center">OR</div>

   (b) What type of network (PAN, LAN, MAN, or WAN) will be set up among the computers connected in the above-mentioned diagram?

---

3. Total-IT Corporation, a Karnataka based IT training company, is planning to set up training centers in various cities in next 2 years. Their first campus is coming up in Kodagu district. At Kodagu campus, they are planning to have 3 different blocks, one for AI, IoT and DS (Data Sciences) each. Each block has number of computers, which are required to be connected in a network for communication, data and resource sharing as shown in the diagram below:

5×1=5

Block to Block distance (in metres):

From	To	Distance
IT	DS	28 m
IT	IoT	55 m
DS	IoT	32 m
KODAGU CAMPUS	COIMBATORE CAMPUS	304 km

Number of Computers in each block is as follows:

Block	No. of Computers
IT	75
DS	50
IoT	80

As a Network Expert, need to suggest the best network-related solutions for them to resolve the issues/problems mentioned in questions (i) to (v), keeping the following parameters in mind:
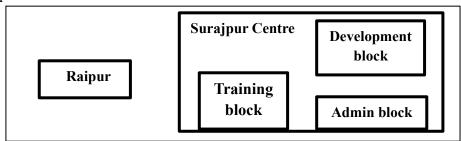(i) Suggest the most appropriate block/location to house the SERVER in the Kodagu campus (out of the 3 blocks) to get the best and effective connectivity. Justify your answer.

(ii) Suggest a device/software to be installed in the Kodagu Campus to take care of data security.

(iii) Suggest the best wired medium and draw the cable layout (Block to Block) to most efficiently connect various blocks within the Kodagu Campus.

(iv) Suggest the placement of the following devices with appropriate reasons: (a) Switch/Hub (b) Router

(v) (a) Suggest a protocol that shall be needed to provide Video Conferencing solution between Kodagu Campus and Coimbatore Campus.

OR

(b) What type of network (PAN, LAN, MAN, or WAN) will be set up among the computers connected in above mentioned diagram?

4.	Future Tech Corporation, a Bihar based IT training and development company, is planning to set up training centers in various cities in the coming year. Their first center is coming up in Surajpur district. At Surajpur center, they are planning to have 3 different blocks - one for Admin, one for Training and one for Development. Each block has number of computers, which are required to be connected in a network for communication, data and resource sharing as shown in the diagram below: As a Network Expert, need to suggest the best network-related solutions for them to resolve the issues/problems mentioned in questions (i) to (v), keeping the following parameters in mind :	**5×1=5**

Block to Block distance (in meters):

From	To	Distance
DEVELOPMENT	ADMIN	28 m
DEVELOPMENT	TRAINING	105 m
ADMIN	TRAINING	32 m
SURAJPUR CAMPUS	COIMBATORE CAMPUS	340 km

Number of Computers in each block is as follows:

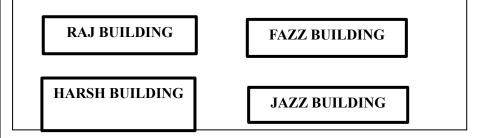| Block	No. of Computers
DEVELOPMENT	90
ADMIN	40
TRAINING	50

(i) Suggest the most appropriate block/location to house the SERVER in the Surajpur center (out of the 3 blocks) to get the best and effective connectivity. Justify your answer.

(ii) Suggest why should a firewall be installed at the Surajpur Center?

(iii) Suggest the best wired medium and draw the cable layout (Block to Block) to most efficiently connect various blocks within the Surajpur Center.

(iv) Suggest the placement of the following devices with appropriate reasons: a) Switch/Hub b) Router

	(v) (a) Suggest the best possible way to provide wireless connectivity between Surajpur Center and Raipur Center. **OR** (b) What type of network (PAN, LAN, MAN, or WAN) will be set up among the computers connected in above mentioned diagram?	
5.	Ravya Industries has set up its new center at Kaka Nagar for its office and web-based activities. The company compound has 4 buildings as shown in the diagram below: As a Network Expert, need to suggest the best network-related solutions for them to resolve the issues/problems mentioned in questions (i) to (v), keeping the following parameters in mind :	**5×1=5**

```
┌──────────────────────────────────────────────────────────┐
│   ┌────────────────────┐        ┌────────────────────┐     │
│   │   RAJ BUILDING      │        │   FAZZ BUILDING     │     │
│   └────────────────────┘        └────────────────────┘     │
│   ┌────────────────────┐        ┌────────────────────┐     │
│   │  HARSH BUILDING     │        │   JAZZ BUILDING     │     │
│   └────────────────────┘        └────────────────────┘     │
└──────────────────────────────────────────────────────────┘
```

Block to Block distance (in meters):

From	To	Distance
HARSH BUILDING	RAJ BUILDING	50 m
RAJ BUILDING	FAZZ BUILDING	60 m
FAZZ BUILDING	JAZZ BUILDING	25 m
JAZZ BUILDING	HARSH BUILDING	170 m
HARSH BUILDING	FAZZ BUILDING	125 m
RAJ BUILDING	JAZZ BUILDING	90 m

Number of Computers in each block is as follows:

Block	No. of Computers
HARSH	15
RAJ	150
FAZZ	15
JAZZ	25

(i) Suggest a cable layout of connections between the buildings.

(ii) Suggest the most suitable place (i.e. building) to house the server of this organization with a suitable reason.

(iii) Suggest the placement of the following devices with appropriate reasons: a. Hub / Switch b. Repeater

(iv) The organization is planning to link its sale counter situated in various parts of the same city, which type of network out of LAN, MAN or WAN will be formed? Justify your answer.

(v) (a) Suggest a device/software to be installed in the Campus to take care of data security.

OR

(b) What type of network (PAN, LAN, MAN, or WAN) will be set up among the computers connected in above mentioned diagram?

NETWORKING

Q.No.	MCQs	Marks
1.	Your school has four branches spread across the city. A computer network created by connecting the computers of all the school branches, is a. a.LAN b.WAN c.MAN d.PAN	1
2.	A user gets an email asking to click a link and enter bank details. This is an example of: a. Spam b. Phishing c. Hacking d. Malware	1
3.	The protocol used to transfer files over the Internet is: a. FTP b. HTTP c. SMTP d. IP	1
	A set of rules that governs data communication is known as: a. Topology b. Protocol c. Router d. Gateway	1
4.	Which of the following is not a type of computer network? a. LAN b. MAN c. WAN d. SANITIZE	1
5.	Which device is used to connect different networks together? a. Switch b. Router c. Hub d.Repeater	1
6.	A user is watching a video on YouTube. Which protocol is primarily responsible for data transmission? a. FTP b. SMTP c. TCP/IP d. POP3	1
7.	In which topology is each computer connected to a central hub? a. Ring b. Bus c. Star d. Mesh	1
8.	Which protocol is used to transfer web pages? a. FTP b. HTTP c. SMTP d. IP	1
9.	Which protocol is used to send emails? a. HTTP b. FTP c. SMTP d. SNMP	1
10.	Which of the following is used for wireless communication? a. Ethernet b. Bluetooth c. USB d. HDMI	1
11.	Which of the following is not a web browser? a. Chrome b. Firefox c. Windows d. Safari	1
	FULL FORMS Questions	
13.	What does ISP stand for?	1
14.	What is the full form of URL?	1
15.	What is the full form of Wi-Fi?	1
	Assertion and Reasoning Questions Directions: For each question, select the correct option: (A) Both Assertion and Reason are true and Reason is the correct explanation of Assertion. (B) Both Assertion and Reason are true but Reason is NOT the correct explanation of Assertion. (C) Assertion is true but Reason is false. (D) Assertion is false but Reason is true.	
16.	Assertion (A): Star topology is more reliable than bus topology. Reason (R): In star topology, each device is connected to a central hub, reducing dependence on a single cable.	1
17.	Assertion (A): In ring topology, data moves in multiple directions. Reason (R): Ring topology has multiple paths between nodes.	1
18.	Assertion (A): SMTP is used to receive emails.	1

	Reason (R): SMTP is a sending protocol, not a receiving protocol.	
19.	Assertion (A): Switch operates at the Data Link Layer of the OSI model. Reason (R): Switch uses MAC addresses to forward data.	1
20.	Assertion (A): In LAN, devices are spread over a large geographical area. Reason (R): LAN is designed for short distances like within a building.	1
Q.No.	**Answers**	Marks
1.	c. MAN	1
2.	b. Phishing	1
3.	a. FTP	1
4.	b. Protocol	1
5.	d. SANITIZE	1
6.	b. Router	1
7.	c. TCP/IP	1
8.	c. Star	1
9.	b. HTTP	1
10.	c. SMTP	1
11.	b. Bluetooth	1
12.	c. Windows	1
	FULL FORMS	
13.	Internet Service Provider	1
14.	URL: Uniform Resource Locator	1
15.	Wireless Fidelity	1
	Assertion and Reasoning Questions	
16.	A) Both A and R are true and R is the correct explanation of A.	1
17.	D) Assertion is false but Reason is true. (In Ring topology, data moves in only one direction unless it's a dual ring!)	1
18.	D) Assertion is false but Reason is true.	1
19.	A) Both A and R are true and R is the correct explanation of A.	1
20.	D) Assertion is false but Reason is true.	1

Database & SQL

Q. No.	Question	Marks
	a. Both A & R are True and R is correct explanation of A b. Both A & R are True and R is not correct explanation of A c. A is True and R is False. d. A is False and R is True. Answer Question from 1 to 5.	
1	Assertion(A): In SQL, aggregate function avg() calculates the average value on a set of values and produces a single result. Reason(R): The aggregate function are used to perform some fundamentals arithmetic tasks such as min(), max(), sum() etc	1
2	Assertion(A): Primary key is a key which ensures unique records in a key. Reason(R): A key is a attribute which retrieves a single record from the table.	1
3	Assertion(A): The SQL keyword like is used with wild card characters. Reason(R): '_' and '%' are two wild card characters used with LIKE clause.	1
4	Assertion(A): DISTINCT clause must be used in an SQL statement to eliminate duplicate rows. Reason(R): DISTINCT only works with numeric data type only.	1

5	Assertion(A): A database constraints can be added or removed any time in/from the database tables. Reason(R): Alter table command is used to change the structure of the table.	1
6	Identify DDL and DML Commands. CREATE, UPDATE, ALTER and DELETE	1

Consider the following table and write sql command from QN 7 to 11.

Employee

empid	Empname	Salary
101	ALOK GUPTA	5000
102	ANITA KANNOJIA	Null
103	SANGEETA	4900
104	B L MARODIA	11000

7	Insert a record into the table employee. (105, PANKAJ,5100) a. insert into table employee values (105,'PANKAJ',5100); b. insert into table emp (empid, empname, salary) values (105,'PANKAJ',5100); c. insert into employee (empid, empname, salary) values (105,'PANKAJ',5100); d. All of above	1
8	Update null values in column salary with 5000. a. update employee set salary = 5000; b. update employee set salary = 5000 where salary = null; c. update employee set salary = 5000 where salary is null; d. None of these	1
9	Show the structure of the table employee. a. desc employee; b. show employee; c. display employee; d. desc emp;	1
10	Delete the record of employee with empid 101. a. drop employee where empid = 101; b. delete from employee where empid = 101; c. delete from employee; d. alter table employee drop empid = 101;	1
11	Change the data type of empname to varchar(50). a. alter table employee modify empname varchar(50); b. alter table employee change empname varchar(50); c. alter table employee add empname varchar(50); d. alter table employee edit empname varchar(50);	1

Consider the following table and write SQL command from QN 12 to 15 and output from 16 to 17.

TECH_COURSE

CNAME	FEES	TID

Animation	12000	101
Cad	15000	Null
Dca	10000	102
Dtp	9000	104
Mobile app	18000	101
Digital marketing	16000	103

12	Display course name with fees between 10000 to 20000. a. select cname from tech_course where fees between 10000 and 20000; b. select cname from tech_course where fees between 10000 or 20000; c. select * from tech_course where fees between 10000 and 20000; d. select cname from tech_course where fees between 10000 to 20000;	1

13	Count the number of Records.
	a. select count(cname) from tech_course;
	b. select count(*) from tech_course;
	c. select cname, count(*) from tech_course;
	d. None of these
		1

14	Display the candidate names in ascending order. a. select * from tech_course; b. select * from tech_course order by cname; c. select cname from tech_course; d. select cname from tech_course order by cname;	1
15	Show the unique TID. a. select distinct tid from tech_course; b. select unique tid from tech_course; c. select primary key tid from tech_course; d. show distinct tid from tech_course	1
16	SELECT AVG(FEES) FROM TECH_COURSE WHERE FEES BETWEEN 15000 AND 17000;	1

a. AVG(FEES) 15500	b. 15500
c. AVG(FEES) 15500.00	d. All of these

| 17 | SELECT TID, COUNT(*), MIN(FEES) FROM TECH_COURSE GROUP BY TID HAVING COUNT(TID) >1; | 1 |

a. TID   COUNT(*) MIN(FEES)
  101   2   12000
  102   1   10000
  103   1   16000
  104   1   9000
	b. TID COUNT(*) MIN(FEES)
	  101 2 12000

c. TID   COUNT(*) MIN(FEES)
  102   1   10000
  103   1   16000
  104   1   9000
	d. All of these

18	Foreign Key ensures_____. a. Referential Integrity b. Reduction of Data Redundancy c. Data Security d. All of these	1
19	Cardinality is the total number of _____ and Degree is Total number of _____. a. rows, columns b. columns, rows c. non null values d. None of these	1
20	How many primary keys exist in a table? a.Zero b. One c. Two d. Three	1

Answer Key

1	A	6	DDL – CREATE, ALTER DML- UPDATE, DELETE	11	A	16	C
2	A	7	C	12	A	17	B
3	A	8	C	13	B	18	A
4	C	9	A	14	D	19	A
5	B	10	B	15	A	20	B

Q.NO.		MARKS
1	Write SQL Command for (a) to (d) **TABLE: GRADUATE STUDENTS**	4

S.NO	NAME	STIPEND	SUBJECT	AVERAGE	DIV
1	KARAN	400	PHYSICS	68	I
2	DIWAKAR	450	COMP Sc	68	I
3	DIVYA	300	CHEMISTRY	62	I
4	REKHA	350	PHYSICS	63	I
5	ARJUN	500	MATHS	70	I
6	SABINA	400	CHEMISTRY	55	II
7	JOHN	250	PHYSICS	64	I
8	ROBERT	450	MATHS	68	I
9	RUBINA	500	COMP Sc	62	I
10	VIKAS	400	MATHS	57	II

a. List the names of those students who have obtained DIV I sorted by NAME.

b. Display a report, listing NAME, STIPEND, SUBJECT and amount of stipend received in a year assuming that the STIPEND is paid every month.

c. To count the number of students who are either PHYSICS or COMPUTER SC graduates.

d. To insert a new row in the Graduate_students table: 11,"KAJOL", 300, "computer sc", 75, 1

2	Consider the table ORDERS as given below	4

TABLE- ORDER

O_Id	C_Name	Product	Quantity	Price
1001	Jitendra	Laptop	1	12000
1002	Mustafa	Smartphone	2	10000
1003	Dhwani	Headphone	1	1500
1004	Alice	Smartphone	1	9000
1005	David	Tablet	NULL	7000

A)   Write the SQL commands :

a. To display the total Quantity for each Product, excluding Products with total Quantity less than 5.

b. To display the ORDERS table sorted by total price in descending order.

c. To display the distinct customer names from the ORDERS table.

d. To display the sum of the Price of all the orders for which the quantity is NULL

OR

B) Write the output:

a. SELECT C_Name, SUM(Quantity) AS Total_Quantity
    FROM ORDERS GROUP BY C_Name;

b. SELECT * FROM ORDERS WHERE Product LIKE '%phone%';

c. SELECT O_Id, C_Name, Product, Quantity, Price
    FROM ORDERS WHERE Price BETWEEN 1500 AND 12000;

d. SELECT MAX(Price) FROM ORDERS;

3	Mayank creates a table RESULT with a set of records to maintain the marks secured by students in sub1, sub2, sub3 and their GRADE. After creation of the table, he has entered data of 8 students in the table.	4

Table : RESULT

ROLL_NO	SNAME	sub1	sub2	sub3	GRADE
101	KIRAN	366	410	402	I
102	NAYAN	300	350	325	I
103	ISHIKA	400	410	415	I
104	RENU	350	357	415	I
105	ARPITA	100	75	178	IV
106	SABRINA	100	205	217	II
107	NEELIMA	470	450	471	I
103	ISHIKA	400	410	415	I

Write the statements to:

a. Add a column REMARKS in the table with datatype as varchar with 50 characters.

b. Display the name, sub1, sub2, sub3 whose grade is IV.

c. Insert the following record into the table
    Roll No- 108, Name- Aaditi, sub1- 470, sub2-444, sub3- 475, Grade– I.

d. Increase the sub2 marks of the students by 3% whose name begins with 'N'.

4

Write SQL queries for (a) to (d) which are based on the tables TRANSPORT AND JOURNEY.

Table: TRANSPORT

CODE	VTYPE	PERKM
101	VOLVO BUS	160
102	AC DELUXE BUS	150
103	ORDINARY BUS	90
105	SUV	40
104	CAR	20

Table: JOURNEY

NO	NAME	TDATE	KM	CODE	NOP
101	Janish Kin	2015-11-13	200	101	32
103	Vedika Sahai	2016-04-21	100	103	45
105	Tarun Ram	2016-03-23	350	102	42
102	John Fen	2016-02-13	90	102	40
107	Ahmed Khan	2015-01-10	75	104	2
104	Raveena	2016-05-28	80	105	4

a. To display NO, NAME, TDATE from the table TRANSPORT in descending order of NO.
b. To display the NAME of all the travellers from the table TRANSPORT who are travelling by vehicle with code 101 or 102.
c. To display the NO and NAME of those travellers from the table TRAANSPORT who travelled between '2015-12-31' and '2015-04-01'.
d. To display all the details from table TRANSPORT for the travellers, who have travelled distance more than 100 KM in ascending order of NOP?

5

Give output of the following queries as per given table(s):

TABLE- WORKER

WID	WNAME	JOB	SALARY	DNO
1001	RAHUL SHARMA	CLERK	15000	D03
1002	MUKESH VYAS	ELECTRICIAN	11000	D01
1003	SURESH	FITTER	9000	D02
1004	ANKUR	GUARD	8000	D01
1001	RAHUL SHARMA	CLERK	15000	D03

TABLE- DEPT

DNO	DNAME	LOC	MANAGER

D01	PRODUCTION	GROUND FLOOR	D K JAIN
D02	ACCOUNTS	1ST FLOOR	S ARORA
D03	SECURITY	1ST FLOOR	R K SINGH

a. SELECT DISTINCT JOB FROM WORKER;
b. SELECT DNAME, LOC FROM DEPT WHERE SALARY > 10000;
c. SELECT W.WNAME, D.MANAGER FROM WORKER AS W, DEPT AS D WHERE W.DNO = D.DNO;

d. SELECT WNAME FROM WORKER WHERE WNAME LIKE 'R%';

---

6 (A) Consider the following tables SCHOOL and ADMIN and answer the following questions: **4**

TABLE- SCHOOL

CODE	TEACHER	SUBJECT	DOJ	PERIODS	EXPERIENCE
1001	RAVI	ENGLISH	12/03/2000	24	10
1009	PRIYA	PHYSICS	03/09/1998	26	12
1203	LISA	ENGLISH	09/04/2000	27	5
1045	YASH RAJ	MATHS	24/08/2000	24	15
1123	GAGAN	PHYSICS	16/07/1999	28	3
1167	HARISH	CHEMISTRY	19/10/1999	27	5
1215	UMESH	PHYSICS	11/05/1998	22	16

TABLE : ADMIN

CODE	GENDER	DESIGNATION
1001	MALE	VICE PRINCIPAL
1009	FEMALE	COORDINATOR
1203	FEMALE	COORDINATOR
1045	MALE	HOD
1123	MALE	SENIOR TEACHER
1167	MALE	SENIOR TEACHER
1215	MALE	HOD

Give the output of the following sql queries:

a. SELECT DESIGNATION, COUNT(*) FROM ADMIN GROUP BY DESIGNATION HAVING COUNT(*)<2;

	b. SELECT MAX(EXPERIENCE) FROM SCHOOL;
	c. SELECT TEACHER FROM SCHOOL WHERE EXPERIENCE >12 ORDER BY TEACHER;
	d. SELECT COUNT(*), GENDER FROM ADMIN GROUP BY GENDER;	

7	Consider the following tables – BANK_ACCOUNT and Branch:	1+4

BANK_ACCOUNT

ACode	Name	Type
A01	Amit	Savings
A02	Parth	Current
A03	Mira	Current

BRANCH

ACode	City
A01	Delhi
A02	Jaipur
A01	Ajmer

a. What will be the output of the following statement?

SELECT * FROM BANK_ACCOUNT NATURAL JOIN BRANCH;

(B) Give the output of the following sql statements as per table given above-

TABLE: SPORTS

Student No	Class	Name	Game1	Grade1	Game2	Grade2
10	7	Sammer	Cricket	B	Swimming	A
11	8	Sujit	Tennis	A	Skating	C
12	7	Kamal	Swimming	B	Football	B
13	7	Venna	Tennis	C	Tennis	A
14	9	Archana	Basketball	A	Cricket	A
15	10	Arpit	Cricket	A	Athletics	C

a. SELECT COUNT(*) FROM SPORTS;
b. SELECT DISTINCT Class FROM SPORTS;
c. SELECT MAX(Class) FROM SPORTS;
d. SELECT COUNT(*) FROM SPORTS GROUP BY Game1;

8	(a) consider the following tables STUDENT and FEE and answer the following questions	4

TABLE – STUDENT

RollNo	Name	Class	Section	Marks
101	Anjali	12	A	85
102	Rohan	12	B	92
103	Meera	12	A	78

| 104 | Aditya | 12 | C | 88 |
| 105 | Arun | 12 | C | 89 |

TABLE- FEE

RollNo	AmountPaid	PaymentDate
101	25000	2024-04-15
102	30000	2024-04-16
104	28000	2024-04-18

a. Display the names of all students along with the amount of fee they have paid.
b. Display the names of students who paid the fee between '2024-04-15' and '2024-04-17'.
c. List names of students who belong to section 'a' and have paid more than 25000.
d. List the names of students who have not paid the fee yet.

---

9   consider the following tables EMPLOYEE and PROJECT and answer the following questions   **5**

EMPLOYEE

EmpID	Name	Department	Salary
201	Anil	HR	50000
202	Seema	Finance	60000
203	Ravi	IT	55000
204	Pooja	HR	52000
205	Karan	IT	58000

PROJECT

ProjectID	EmpID	Project Name	HoursWorked	ProjectID
P1	201	Recruitment App	35	P1
P2	202	Payroll System	40	P2
P3	203	Inventory Mgmt	30	P3
P4	201	Employee Portal	20	P4
P5	205	Website Redesign	25	P5

a. Display all employees along with the projects they are working on.

	b. List names of employees who are working on more than one project. c. Show the total hours worked by each employee. d. List all employees and their project names, including those who are not working on any project. e. Display names and departments of employees who have worked more than 30 hours in any project.	
10	consider the following tables EMPLOYEE and DEPARTMENT and answer the following questions-	4

EMPLOYEE

EmpID	Name	Salary	DeptID
1	Aman	50000	101
2	Priya	60000	102
3	Rakesh	45000	101
4	Sneha	70000	103

DEPARTMENT

DeptID	DeptName	Location	DeptID
101	Sales	Delhi	101
102	HR	Mumbai	102

a. Show all employee details along with department name.
b. Show the List employees who work in Delhi.
c. Display the names and salaries of employees earning the highest salary.
d. Show average salary for each department

Answer

| 1 | a. SELECT NAME from GRADUATE_STUDENT where DIV = 'I' order by NAME;
b. SELECT NAME,STIPEND,SUBJECT, STIPEND*12 from GRADUATE_STUDENT;
c. SELECT SUBJECT,COUNT(*) from GRADUATE_STUDENT
d. group by SUBJECT having SUBJECT='PHYISCS' or SUBJECT='COMPUTER SC';
e. INSERT INTO GRADUATE_STUDENT values(11,'KAJOL',300,'COMPUTER SC',75,1); | 4 |

2	Ans : (A)	4

a. SELECT Product, SUM(Quantity) AS Total_Quantity
   FROM ORDERS
   GROUP BY Product
   HAVING SUM(Quantity) >= 5;

b. SELECT O_Id, C_Name, Product, Quantity, Price
   FROM ORDERS
   ORDER BY Price DESC;

c. SELECT DISTINCT C_Name
   FROM ORDERS;

d. SELECT SUM(Price) AS
   Total_Price_Null_Quantity
   FROM ORDERS
   WHERE Quantity IS NULL;

OR

(B)

a. C_Name Total Quantity

Jitendra	1
Mustafa	2
Dhwani	1
Alice	1
David	NULL

b.

O_Id	C_Name	Product	Quantity	Price
1002	Mustafa	Smartphone	2	10000
1004	Alice	Smartphone	1	9000

c.

O_Id	C_Name	Product	Quantity	Price
1001	Jitendra	Laptop	1	12000
1002	Mustafa	Smartphone	2	10000
1003	Dhwani	Headphone	1	1500
1004	Alice	Smartphone	1	9000

3	a. New Degree: 8 New Cardinality: 5	4

b. SELECT name,sub1,sub2,sub3
   FROM RESULT
   WHERE GRADE='IV',

c. A) INSERT INTO RESULT VALUES (108, 'Aadit', 470, 444, 475, 'I');

d. UPDATE RESULT SET SEM2=SEM2+ (SEM2*0.03)
   WHERE SNAME LIKE "N%";

OR (Option for part iii only)

	a.DELETE FROM RESULT WHERE DIV='IV'; ALTER TABLE RESULT ADD (REMARKS VARCHAR(50));		4
4	a. SELECT NO, NAME, TDATE FROM TRAVEL ORDER BY NO DESC; b. SELECT NAME FROM TRAVEL WHERE CODE='101' OR CODE='102'; or c. SELECT NAME FROM TRAVEL WHERE CODE IN ('101','102') d. SELECT NO, NAME from TRAVEL WHERE TDATE >= '2015-04-01' AND TDATE <= '2015-12-31'; OR SELECT NO, NAME from TRAVEL WHERE TDATE BETWEEN '2015-04-01' AND '2015-12-31';		4

5	a. JOB
	        ---- 	
	        CLERK
	        ELECTRICIA
	        N FITTER
	        GUARD
	   b.
	
	         DNAME LOC
	         ------ -------
	         PRODUCTION GROUND FLOOR
	         SECURITY 1ST FLOOR
	
	    c.
	         WNAME MANAGER
	         ------- -----
	         RAHUL SHARMA R KSINGH
	
	         MUKESH VYAS D K JAIN
	
	         SURESH S ARORA
	         ANKUR D K JAIN
	   d. WNAME
	        ------- 	
	        RAHUL SHARMA
			4

6	a. Vice principal 01
	   b. 16
	   c. UMESH YASHRAJ
	   d.
			4

5	Male
2	Female

7	(A) a.		3

ACode	Name	Type	City
A01	Amit	Savings	Delhi
A01	Amit	Savings	Ajm

			er		
A02	Parth	Current	Jaipur		

(B)-a. 6

b.

Class
7
8
9
10

c.10

d.

Game1	Count(*)
Cricket	2
Tennis	2
Swimming	1

| 8 | a. SELECT STUDENT. Name, FEE.AmountPaid
   FROM STUDENT
   LEFT JOIN FEE ON STUDENT.RollNo = FEE.RollNo;
b. SELECT STUDENT. Name
   FROM STUDENT
   INNER JOIN FEE ON STUDENT.RollNo = FEE.RollNo
   WHERE FEE.PaymentDate BETWEEN '2024-04-15' AND '2024-04-17';
c. SELECT STUDENT. Name
   FROM STUDENT
   INNER JOIN FEE ON STUDENT.RollNo = FEE.RollNo
   WHERE STUDENT. Section = 'A' AND FEE.AmountPaid > 25000
d. SELECT STUDENT. Name
   FROM STUDENT
   LEFT JOIN FEE ON STUDENT.RollNo = FEE.RollNo
   WHERE FEE.AmountPaid IS NULL; | 4 |
| 9 | a. SELECT EMPLOYEE.Name, PROJECT.ProjectName
   FROM EMPLOYEE
   INNER JOIN PROJECT ON EMPLOYEE.EmpID = PROJECT.EmpID;
b. SELECT EMPLOYEE. Name, COUNT(PROJECT.ProjectID) AS ProjectCount
   FROM EMPLOYEE
   INNER JOIN PROJECT ON EMPLOYEE.EmpID = PROJECT.EmpID
   GROUP BY EMPLOYEE. Name
   HAVING COUNT(PROJECT.ProjectID) > 1;
c. SELECT EMPLOYEE. Name, SUM(PROJECT.HoursWorked) AS TotalHours
   FROM EMPLOYEE
   INNER JOIN PROJECT ON EMPLOYEE.EmpID = PROJECT.EmpID
   GROUP BY EMPLOYEE.Name;
d. SELECT EMPLOYEE.Name, PROJECT.ProjectName
   FROM EMPLOYEE
   LEFT JOIN PROJECT ON EMPLOYEE.EmpID = PROJECT.EmpID; | 5 |

	d. SELECT EMPLOYEE.Name, EMPLOYEE.Department
	   FROM EMPLOYEE
	   INNER JOIN PROJECT ON EMPLOYEE.EmpID = PROJECT.EmpID
	   WHERE PROJECT.HoursWorked > 30;	

10	a. SELECT Employee.EmpID, Employee.Name, Employee.Salary, Department.DeptName FROM Employee JOIN Department ON Employee.DeptID = Department.DeptID; b. SELECT Employee.Name FROM Employee JOIN Department ON Employee.DeptID = Department.DeptID WHERE Department. Location = 'Delhi'; c. SELECT Name, Salary FROM Employee WHERE Salary = (SELECT MAX(Salary) FROM Employee); d. SELECT Department.DeptName, AVG(Employee.Salary) AS AvgSalary FROM Employee JOIN Department ON Employee.DeptID = Department.DeptID GROUP BY Department.DeptName;	4

Python-MySQL Connectivity

(Q1	The fetchone() **method** returns results as a dictionary. (Find True or False)	1
Q2	MySQL connector must be installed using pip install mysql. (Find True or False)	1
Q3	The …………… method is used to execute SQL queries in Python	1
Q4	To prevent SQL injection, always use ……………instead of string formatting.	1
Q5	Which cursor function is not used to send query to connection? a. query() b. send() c. run() d. All	1

Q6	Identify the correct statement to create cursor:
	import mysql.connector as msq
	con = msq.connect(#Connection String) # Assuming all parameter required as passed
	mycursor = _____
	a. con.cursor() b.con.Cursor() c.con.open_cursor() d. con.get_cursor()
		1

Q7	Which function is used to fetch only one records from cursor? a. fetch() b. fetchone() c. fetchmany() d. fetchall()	1
Q8	Which function is used to establish a connection between Python and MySQL? a.connect() b. cursor() c. execute() d. commit()	1

Q9	Which function of connection is used to check whether connection to mysql is successfully done or not?
	import mysql.connector as msq
	con = msq.connect(#Connection String) # Assuming all parameter required as passed
	if ____:
	     print("Connected!")
	else:
	     print(" Error! Not Connected")
	 a. con.connected() b. con.isconnected() c. con.is_connected() d . con.is_connect()
		1

Q10.	Assertion (A): Parameterized queries prevent SQL injection.	1
	Reason (R): They separate SQL code from user input.	
	a. Both A and R are true, and R explains A.	
	b. Both A and R are true, but R does not explain A.	
	c. A is true but R is false.	
	d. A is false R is True	

Answers : COMPETENCY BASED QUESTION: Python-MySQL Connectivity

Ans1	False	
Ans2	False	
Ans3	execute().	
Ans4	Parameterized queries (e.g., %s placeholders)	
Ans5	d All	
Ans6	a con.cursor()	
Ans7	b. fetchone()	
Ans8	a) connect()	
Ans9	c. con.is_connected()	
Ans10	a	

Python MySQL Interface and Exception handling

Q. No.	Question	Marks
1.	State True or False A finally block is always executed, regardless of whether an exception occurred or not.	1
2.	State True or False The except: block without specifying an exception type will catch all exceptions.	1
3.	State whether the following statement is True or False: The finally block in Python is executed only if no exception occurs in the try block.	1
4.	How many except statements can a try-except block have? a. zero b. one c. more than one d. more than zero	1
5.	An exception is said to be caught when a. Error encountered and exception object is created b. Runtime system searches for appropriate exception handler c. Code that is designed to handle exception is executed d. None of these	1
6.	What is the purpose of the cursor() method in Python's database interaction? a. To create a new database b. To execute SQL queries c. To close the database connection d. To fetch all records from a table	1
7.	What is the correct order to perform database operations in Python a. Create connection -> Create cursor -> Execute query -> Commit (if needed) -> close connection	1

	b. Create cursor -> Create connection -> Execute query -> Commit (if needed) -> close connection c. Execute query ->Create cursor -> Create connection -> Commit (if needed) -> close connection d. None of these	
	Q9 and Q10 are Assertion(A) and Reason(R) 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	
9	**Assertion :** Exception handling handles all types of error and exceptions. **Reasoning :** Exception handling is responsible for handling anomalous situations during the execution of a program.	1
10	**Assertion :** A database cursor receives all the records retrieved as per the query. **Reason :** A resultset refers to the records in the database cursor and allows processing of individual records in it.	1

11	The code given below inserts the following record in the table Student:
	     RollNo – integer
	     Name – string
	     Clas – integer
	     Marks – integer
	Note the following to establish connectivity between Python and MYSQL:
	     Username is root
	     Password is tiger
	     The table exists in a MYSQL database named school.
	     The details (RollNo, Name, Clas and Marks) are to be accepted from the user.
	Write the following missing statements to complete the code:
	    Statement 1 – to form the cursor object
	    Statement 2 – to execute the command that inserts the record in the table Student.
	    Statement 3- to add the record permanently in the database
	import mysql.connector as mysql
	def sql_data():
	   con1=mysql.connect(host="localhost",user="root", password="tiger", database="school")
	   mycursor=_____ #Statement 1
	   rno=int(input("Enter Roll Number :: "))
	   name=input("Enter name :: ")
	   clas=int(input("Enter class :: "))
	   marks=int(input("Enter Marks :: "))
	   querry="insert into student values
	   ({},'{}',{},{})".format(rno,name,clas,marks)
	   _____ #Statement 2
	   _____ # Statement 3
	   print("Data Added successfully")
		3

12	The code given below reads the following record from the table named student and displays only those records who have marks greater than 75:
	
	       RollNo – integer
	       Name – string
	       Clas – integer
	       Marks – integer
	
	Note the following to establish connectivity between Python and MYSQL:
	       Username is root
	       Password is tiger
	       The table exists in a MYSQL database named school.
	
	Write the following missing statements to complete the code:
	     Statement 1 – to form the cursor object
	     Statement 2 – to execute the query that extracts records of
	          those students whose marks are greater than 75.
	     Statement 3- to read the complete result of the query (records
	          whose marks are greater than 75) into the object
	          named data, from the table student in the database.
	
	``python
	import mysql.connector as mysql
	    def sql_data():
	        con1=mysql.connect(host="localhost",user="root", password="tiger",
	database="school")
	        mycursor=_____ #Statement 1
	        print("Students with marks greater than 75 are : ")
	        _____ #Statement 2
	        data=_____ #Statement 3
	        for i in data:
	            print(i)
	        print()
	``
		3

13	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.
		3

14	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
		3

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.

15	A table, named STATIONERY, in ITEMDB database, has the following structure:	

Field	Type
itemNo	Int(11)
itemName	Varchar(20)
Price	Float
Qty	Int(11)

	Write the following Python function to perform the specified operation: AddAndDisplay(): To input details of an item and store it in the table STATIONERY. The function should then retrieve and display all records from the STATIONERY table where the Price is greater than 120. Assume the following for Python-Database connectivity: Host: localhost, User: root, Password: Pencil	4

16	Rahim wants to write a program in Python to insert the following record in the table named Bank_Account in MySQL database, Bank : ·
	        Accno – integer
	      · Cname – string
	      · Atype – string
	      · Amount – float
	  Note the following to establish connectivity between Python and MySQL : ·
	        Username – admin
	      · Password – root
	      · Host – localhost
	The values of fields Accno, Cname, Atype and Amount have to be accepted from the user. Help Rahim to write the program in Python.
		4

17	Sunil wants to write a program in Python to update the quantity to 20 of the records whose item code is 111 in the table named shop in MySQL database named Keeper:
	    Item_code integer
	    Item_name String
	    Qty Integer
	    Price Integer
	Consider the following to establish connectivity between Python and MySQL:
	    Username admin
	    Password 123456
	    Host localhost
		4

18	Sumit wants to write a code in Python to display all the details of the passengers from the table flight in MySQL database , Travel. The tables contains the following attributes:
	    F_code String
	    F_name String
	    Source String
	    Destination String
	Consider the following to eastablish connectivity between Python and MySQL:
	        Username admin
		4

	Password 123456 Host localhost	

19	The table Bookshop in MySQL contains the following attributes:
	     B_code Integer
	     B_name String
	     Qty Integer
	     Price Integer
	Note the following to eastablish connectivity between Python and MySQL on a 'localhost':
	     username is 'shop'
	     password is 'Book'
	     The table exists in a MySQL database named Bstore
	The code given below updates the records from the table Bookshop in MySQL.
	Statement 1 – to form the cursor object.
	Statement 2 – to execute the query that updates the Qty to 20 of the records whose B_code is 105 in the table.
	Statement 3 – to make the changes permanent in the database.
	import mysql.connector as mysql
	def update_book ( ):
	     mydb=mysql.connect (host="localhost", user="shop", passwd="Book", database="Bstore")
	     mycursor = _____ #Statement 1
	     qry= "update Bookshop set Qty=20 where B_code=105"
	     _____ #Statement 2
	     _____ #Statement 3
		3

20	Consider the Student table of SCHOOL database with following structure.
	     Rollno Integer
	     name String
	     Dob Date
	     Fee float
	The following credentials may be used to connect Python MySQL :
	     Username root
	     Password tiger
	     Host localhost
	Write a Python program to display the records of students whose fees is less than 2000.
		3

Answer-

Python MySQL Interface and Exception handling

Section -B

1. True
2. True
3. False
4. d) more than zero
5. a)
6. c. Assertion is True but Reason is False
7. a. Assertion and Reason are True. Reason is correct explanation of Assertion

8. a)
9. Assertion is False and Reasoning is True
10. d)
11. Statement 1   :   con1.cursor()
    Statement 2   :   mycursor.execute(querry)
    Statement 3   :   con1.commit()

12. Statement 1   :   con1.cursor()
    Statement 2   :   mycursor.execute ("select * from student where marks > 75")
    Statement 3   :   mycursor.fetchall()

13. import mysql.connector as mysql
    Con=mysql.connect(host = 'localhost', username='root', passwd='tiger', database='SCHOOL')
    Mycursor=Con.cursor()
    Query="select * from Student where Fee > 5000"
    Data=Mycursor.fetchall()
    for r in Data:
            print(r)
14. import mysql.connector as mysql
    Con=mysql.connect(host = 'localhost', username='root', passwd='tiger', database='SCHOOL')
    Mycursor=Con.cursor()
    rno=int(input("Enter roll no "))
    name=input("Enter name")
    dob=input("Enter date of birth ")
    fee=float(input("Enter fee"))
    Query="insert into student values ({},{},{},{}).format(rno,name,dob,fee)"
    mycursor.execute(query)
    con1.close()
15. import mysql.connector as mysql
    def AddAndDisplay():
            Con=mysql.connect(host = 'localhost', username='root', passwd='Pencil', database='SCHOOL')
    Mycursor=Con.cursor()
    itemno=int(input("Enter item no "))
    itemname=input("Enter item name")
    price=float(input("Enter price "))
    Qty=int(input("Enter quantity"))
    Query="insert into STATIONARY values ({},'{}',{},{}).format(itemno,itemname,price,Qty)"
    mycursor.execute(query)
    Query="select * from STATIONARY where price > 120"
    mcursor.execute(Query)
    for r in mycursor.fetchall():
            print(r)
16. import mysql.connector as mysql
    Con=mysql.connect(host = 'localhost', username='admin', passwd='root', database='Bank')

```
Mycursor=Con.cursor()
accno=int(input("Enter account  no "))
cname=input("Enter name")
atype=input("Enter account type ")
amount=float(input("Enter amount"))
Query="insert into student values ({},'{}',{},{}).format(accno,cname,atype,amount)"
mycursor.execute(query)
con1.close()
```

17.
```
import mysql.connector as mysql
Con=mysql.connect(host = 'localhost', username='admin', passwd='123456',
database='Keeper')
Mycursor=Con.cursor()
Query="update shop set qty=20 where item_code=111)"
mycursor.execute(query)
con1.close()
```

18.
```
import mysql.connector as mysql
Con=mysql.connect(host = 'localhost', username='admin', passwd='123456',
database='Travel')
Mycursor=Con.cursor()
Query="select * from flight "
mycursor.execute(query)
for r in mycursor.fetchall():
        print(r)
con1.close()
```

19. Statement 1   :   mydb.cursor()
    Statement 2   :   mycursor.execute(mycursor)
    Statement 3   :   mydb.commit()

20.
```
import mysql.connector as mysql
Con=mysql.connect(host = 'localhost', username='root', passwd='tiger',
database='SCHOOL')
Mycursor=Con.cursor()
Query="select * from student where fee < 2000"
mycursor.execute(query)
Data=mycursor.fetchall()
for r in Data:
        print(r)
con1.close()
```