KENDRIYA VIDYALAYA SANGATHAN ERNAKULAM REGION

COMPUTER SCIENCE MARKING SCHEME - 083

CLASS: XII PRE-BOARD EXAMINATION 2025

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

General Instructions:

- This question paper contains 37 questions.
- All questions are compulsory. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions
- The paper is divided into 5 Sections- A, B, C, D and E.
- Section A consists of 21 questions (1 to 21). Each question carries 1 Mark.
- Section B consists of 7 questions (22 to 28). Each question carries 2 Marks.
- Section C consists of 3 questions (29 to 31). Each question carries 3 Marks.
- Section D consists of 4 questions (32 to 35). Each question carries 4 Marks.
- Section E consists of 2 questions (36 to 37). Each question carries 5 Marks.
- All programming questions are to be answered using Python Language only.
- In case of MCQ, text of the correct answer should also be written.

Q No.	Section-A (21 x 1 = 21 Marks)	Marks
1.	Which of the following symbol is used in Python for a single line comment? (a) # (b) /* (c) // (d) ! **Answer : (a) #**	(1)
2.	What will be the output of the following Python dictionary operation? drs={'Kerala':3,"Karnataka":5,"Goa":4,"Kerala":1} print(drs) (a) {'Kerala':3,"Karnataka":5,"Goa":4,"Kerala":1} (b) {'Kerala':3,"Karnataka":5,"Goa":4} (c) {'Kerala': 1, 'Karnataka': 5, 'Goa': 4} (d) It will generate an error **Answer :** (c) {'Kerala': 1, 'Karnataka': 5, 'Goa': 4}	(1)
3.	Predict the correct output of the following Python Statement: print(4+2**3**2/2) (a) 12.0 (b) 36.0 (c)256 (d) 260.0 **Answer :** (d) 260.0	(1)
4.	Which of the following type of table constraints will prevent the entry of duplicate rows? (a) Unique (b) Distinct (c) Primary Key (d) NULL	(1)

	Answer : (c) Primary Key	
5.	Consider the following expression: print(10!=10 or 100>50 and not 100<20) False (b) True (c) None (d) NULL **Answer :** (b) True	(1)
6.	Suppose a Tuple **tup** is declared as tup=(55,100,200,25) Which of the following is incorrect? print(tup[1]) (b) tup[0]=50 (c) print(max(tup)) (d) print(len(tup)) **Answer :** (b) tup[0]=50	(1)
7.	Suppose lst=[2* x for x in range(1,7,2)], then the value of lst is (a) [2, 6, 10] (b) [1,3,5] (c) [1,3,5,7] (d) [2,6,10,14] **Answer :** (a) [2, 6, 10]	(1)
8.	Raghu wants to insert a new values in to a table using SQL command for insertion. To which category of SQL command, does the command belongs? (a) DDL (b) TCL (c) DQL (d) DML **Answer :** (d) DML	(1)

9.	Identify the correct output of the following code snippet :
	try:
	print(int(4050/2),end="")
	except ZeroDivisionError:
	print("M1",end="")
	else:
	print("M2",end="")
	finally:
	print("M3",end="")
	print("End")
	(a) 2025M3End (b) M1M2M3End (c) 2025M2M3End (d) 2025M2End
	
	Answer : (c)2025M2M3End
		(1)

10.	Select the correct output of the following Python Code: txt="just wait for just" print(txt.partition("just")) (a) ('', 'just', ' wait for just') (b) ('just', 'wait', 'for', 'just') (c) ('just ', 'wait', ' for just') (d) ("wait", "for", "just") **Answer :** (a) ('', 'just', ' wait for just')	(1)
11.	Given the list mylst=['p','y','t','h','o','n'], Write the output of print(mylst[2:-1:2])	(1)

	Answer : ['t', 'o']	
12.	What possible output from the given option is expected to be displayed when the following code is executed? import random dir=["East","West","North","South"] n=random.randint(1,3) res="" for index in range(n,1,-1): res+=dir[index] print(res) (a) SouthNorthWest (b) SouthNorth (c) South (d) EastWestNorth **Answer :** (b) SouthNorth	(1)
13.	Predict the output generated by the following code: s="1234" print(s[-2:]*2) (a) 33 (b) 68 (c) 34 (d) 3434 **Answer :** (d) 3434	(1)
14.	Which of the following commands will remove the table from MySQL database? (a) ALTER TABLE (b) DELETE TABLE (c) DROP TABLE (d) REMOVE TABLE **Answer :** (c) DROP TABLE	(1)

15.	Find the output of the following Python Code:
	p=12
	q=10
	def profun(q):
	  global p
	  p=q+5
	  q=p+2
	  print(p,q,end=" ")
	profun(p)
	print(p,q)
	(a)17 17 19 10 (b) 17 10 17 19 (c) 17 19 12 10 (d) 17 19 17 10
	
	Answer : (d) 17 19 17 10
		(1)

16.	Which of the following is not an aggregate functions? (a) ROUND() (b)_ COUNT(*) (c) MAX() (d) AVG() **Answer :** (a) ROUND()	(1)
17.	The Student Table has 5 rows and 3 columns, and Result Table has 6 rows and 2 columns. What is the cardinality in the Cartesian Product of Student and Result? (a) 11 (b) 30 (c) 6 (d) 5	(1)

	Answer : (b) 30	
18.	Sujay wants to copy a picture from his cell phone to his very nearby laptop by connecting the two devices. Which type of network will be established in this scenario? (a) LAB (b) MAN (c) PAN (d) WAN **Answer :** (c) PAN	(1)
19.	User defined tags can be created in …….. (a) XML (b) HTML (c) DHTML (d) SQL **Answer :** (a) XML	
	Q20 and Q21 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**	
20.	**ASSERTION:** In SQL, the WHERE clause filters rows based on conditions. **REASONING:** Because WHERE clause is used only with aggregate functions. **Answer :** Option (C) is correct. **A is True but R is False**	(1)
21.	**ASSERTION:** A gateway connects dissimilar networks. **REASONING:** A gateway act as a bridge between local network and internet. **Answer :** Option (A) is correct **(A) Both A and R are true and R is the correct explanation for A**	(1)
Q No	**Section-B (7 x 2=14 Marks)**	**Marks**
22.	(A) What is a mutable data type in Python? Give two examples. **Answer:** A mutable data type is a data type whose values can be changed (add/modify/delete) after creation. Examples: List, Dictionary, Set **OR** (B) What is the purpose of range() function? Give one example in Python. **Answer:** The range() function in Python is used to generate a sequence of numbers using arguments **start, stop** and **step**, typically used in loops(like for loops) Example: for i in range(2,10,2): print("hi",i,end=" ") Output: hi 2 hi 4 hi 6 hi 8	(2)

23.	The code given below is intended to find the reverse of a string. But there are syntax and logical errors in the code. Rewrite the above code after removing all errors. Also underline all the corrections made.
	Def revstring(str1):
	rstr=""
	for i in range(len(str1)-1,-1):
	rstr=str1[i]
	return rstr
	
	#Main Program
	print("Python Program to Revese a String:")
	str0=input("Enter the String:")
	Print("Reverse of ",str0,"is",revstring(str0))
	Answer:
	def revstring(str1):
	rstr=""
	for i in range(len(str1)-1,-1,-1):
	rstr+=str1[i]
	return rstr
	
	#Main Program
	print("Python Program to Revese a String:")
	str0=input("Enter the String:")
	print("Reverse of ",str0,"is",revstring(str0))
		(2)

24.	(A) Write a Python statement for each of the following task using Built-in-functions/methods only: (Given ds={"name":"adi dev","regno":1240} (i) To add a new key: value pair as "result":"passed". (ii) To print all the keys and values of the given dictionary ds. **Answer:** (i) ds["result"]="passed" (ii) print(ds.keys(),ds.values()) , print(ds.items()) **OR** (B) What will be the output of the following Python Program: txt="TEST IS GOING ON" data=txt.split() print(data[0].lower()) print(data[2][::-1]) **Answer:** test GNIOG	(2)

25.	(A) Write a Python function ZeroEnding(Scores) to add all those values in the list of Scores, which are ending with zero(0) and display the sum.
	For example:
	If the Scores contains [235,100,455,300,111,600]
	Then the sum should be displayed as 1000.
	Answer:
	def ZeroEnding(Scores): #Sum of Numbers ending with Zero in the given List
	sumZero=0
	for value in Scores:
	if value%10==0:
	sumZero+=value
	print("Sum of Numbers ending with Zero in the given List=",sumZero)
	OR
	(B) Write a Python function to create a dictionary from a given text. The new dictionary should contain each word as the key and number of characters in each word as the value in the given text.
	For example:
	If the given text is "Are you keeping well?"
	Then the output is {'Are': 3, 'you': 3, 'keeping': 7, 'well?': 5}
	Answer:
	#creating a dictionary from the given text
	def credict(txt):
	words=txt.split()
	dwords=dict()
	for word in words:
	dwords[word]=len(word)
	print("Newly created dictionary from the given text is ",dwords)
		(2)

26.	def update(nums,n):
	for value in range(n):
	if nums[value]%3 == 0:
	nums[value]%=4
	if nums[value]%2 == 0:
	nums[value]*=2
	lstnum = [81,82,18,48,99,60,25]
	update(lstnum,4)
	for ele in lstnum:
	print(ele,end="#")
	Answer:
	1#164#4#0#99#60#25#
		(2)

27. (A) Write a suitable SQL commands do the following operation in MySQL. (2)

(i) To display all the information from MEDICINE table.

(ii) To add a new column namely EXP_DATE as Data Type DATE to the existing table MEDICINE.

Answer:

(i) SELECT * FROM MEDICINE;

(ii) ALTER TABLE MEDICINE ADD EXP_DATE DATE;

OR

(B) Differentiate between DDL and DML commands. Give two examples each.

Answer:

Sl.No.	DDL	DML
1.	Data Definition Language	Data Manipulation Language
2.	Used to define and manage the structure of database, tables etc.	Used to manipulate or manage the data stored in the database tables.
3.	Affects the structure of the database	Affects the data inside the database
	Examples: CREATE,ALTER,DROP	Examples: INSERT,UPDATE,DELETE

28. (A) Define the following terms: (2)

(i) Packet Switching

(ii) Ethernet Card

Answer:

(i) Packet Switching is a method of data transmission in which a big data is broken into small units of packets of equal size (Datagram) before being sent over a network. Each packet travels independently through the network and may different routes to reach to the destination, where all packets are reassembled in the correct order into the original message at the destination point. This make use of TCP/IP protocol.

(ii) An Ethernet Card also known as Network Interface Card (NIC) or LAN Card is a hardware device that allows computer or other device to connect to a network using Ethernet cables.in other words we can define Ethernet card is a hardware component that provides a physical connection between a computer and a wired network for data transmission.

OR

(B) Expand the following terms:

(i) NSFNET and SMTP

(ii) Differentiate between Domain Name and URL

Answer:

(i) NSFNET: National Science Foundation Network &

SMTP: Simple Mail Transfer Protocol

(ii)

Sl.No.	Domain Name	URL
1.	It is the human-readable name of a website that identifies its location on the Internet. Eg. https://www.example.com	It is the complete web address used to access a specific resource or page on a website. Eg: https://www.example.com/about.html
2.	Identifies the website.	Specifies the exact address (including domain, protocol, and file path) of a web page or resource
3.	Only the name part Eg. Google.Com	Includes Protocol (https://), Domain Name (Google.Com), and Path (/search, etc.)

Q No.	Section-C (3 x 3 = 9 Marks)	Marks
29.	Write a function display() in Python that counts and display number of lines begins with the alphabet 'A' present in a text file "LINES.TXT". For example the text file LINES.TXT contains the following lines. A boy is there. There is a playground. An aero plane is in the sky. Alphabets and numbers are allowed in password. The function should display output as 3 **Answer:**	(3)

```
def display():
# No. of Lines start with alphabet A in a given Text File LINES.TXT
    fin=open("LINES.TXT","r")
    count=0
    try:
        while True:
            line=fin.readline()
            if line[0]=='A':
                count+=1
    except:
        fin.close()
    print("No. of Lines start with alphabet A=",count)
```

OR

Write a function Acount() to count only the number of alphabets in a given text of READ.TXT.

For example, the text file READ.TXT contains the following details.

He is good. His age is 20

The function should display output as 16

Answer:

```
def Acount():
    # No. of Alphabets in the given Text File READ.TXT
    fin=open("READ.TXT","r")
    txt=fin.read()
    count=0
    for ch in txt:
        if ch.isalpha():
            count+=1
    print("No. of Alphabets in the given Text File=",count)
    fin.close()
```

30. (3)

A dictionary containing records of stationary items as

Sitem={“Eraser”:25,”Note Book”:125,”Pencil”:50,”Pen”:250}

Write the following user defined functions to perform operations on a stack named stackitem to

1. Push_Item() – To push the names of those items in the stack who have price greater than 100. Also display the count of elements pushed into the stack.
2. Pop_Item() – to pop the items from the stack and display them. Also, display ‘Stack Empty’ when there are no elements in the stack.

Answer:

```
stackitem=[]
def Push_Item(Ditem):
    #push items in the stack who have price more than Rs.100
    print("Push-Item()-items in the stack who have price more than Rs.100")
    count=0
    for key in Ditem:
        if Ditem[key]>100:
            stackitem.append(key)
            count+=1
    print("Stack is ",stackitem)
    print("Count of Elements in the Stack=",count)

def Pop_Item(stackitem):
    print("Pop-Item()--Pop Operations")
    while stackitem:
        item=stackitem.pop()
        print(item)
    else:
        print("Stack is Empty")
```

31. Predict the output of the following Python Code: (3)

```
msg1="ReViSIon"
msg2="PyThON"
msg3=""
for i in range(0,len(msg2)+1):
    if msg1[i]>'A' and msg1[i]<'O':
        msg3+=msg1[i]
    elif msg1[i]>='P' and msg1[i]<='Z':
        msg3+=msg2[i]

    else:
        msg3+="#"
print(msg3)
```

Answer:
P#T#OI#

OR

```
def COUNT(MSG):
    d={"UPPER":0,"LOWER":0}
    for ch in MSG:
        if ch.isupper():
            d['UPPER']+=1
        elif ch.islower():
            d['LOWER']+=1
        else:
            pass
    print("Upper Case count=",d['UPPER'])
    print("Lower Case count=",d['LOWER'])

COUNT('WE Make Fun DAILY')
```

Answer:
Upper Case count= 9
Lower Case count= 5

Q No.	**Section-D (4 x 4 = 16 Marks)**	**Marks**

32. Consider the Table: ITEM **(4)**

No.	Itemname	Type	Price	Stockdate
1	Chaises	Living	12000.00	2020/02/19
2	Accent Chairs	Living	30000.00	2021/02/15
3	Baker Racks	Kitchen	25000.00	2019/01/01
4	Sofa	Living	8000.00	2020/10/18
5	Nightstand	Bedroom	NULL	2021/07/23

A) Write SQL queries for the following:
(i) Display all the records in descending order of Stockdate
(ii) Display the Type and total number of items of each Type
(iii) Display the least Price.
(iv) To delete the record(s) which were purchased after the Stockdate 31st December 2021

Answer:

(i) SELECT * FROM ITEM ORDER BY Stockdate DESC;

(ii) SELECT TYPE,COUNT(TYPE) FROM ITEM GROUP BY TYPE

(iii) SELECT MIN(Price) FROM ITEM;

(iv) DELETE FROM ITEM WHERE Stockdate>"2021/12/31";

OR

(B) Predict the output of the following:

(i) SELECT * FROM ITEM WHERE TYPE="Kitchen";

(ii) SELECT Itemname, Price FROM ITEM WHERE PRICE IN(8000.00,12000.00);

(iii) SELECT COUNT(PRICE) FROM ITEM;

(iv) SELECT SUM(PRICE) FROM ITEM WHERE TYPE="Living";

Answer:

(i)

No.	Itemname	Type	Price	Stockdate
3	Baker Racks	Kitchen	25000.75	2019/01/01

(ii)

Itemname	Price
Chaises	12000.00
Sofa	8000.00

(iii)

COUNT(Price)
04

(v)

SUM(Price)
50000.00

33. Arun Kumar is a Python programmer working in a furniture company. He has to maintain the records of item details. He created a csv file named items.csv, to store the details. The structure of the csv file is [item_id,item_name,item_price] Where item_id is the item number (integer), item_name is name of the item(string) and item_price is price of the item(integer). **(4)**

Arun Kumar wants to write the following user defined functions :

Enter() : To accept the record from the user and add it to a csv file, items.csv.

Display(): To display all the item details whose price is above Rs.2500.

Answer:

```
import csv
def Enter():
#Python program to create a CSV file using List
    csvfile=open("items.csv","a")
    cwo=csv.writer(csvfile,lineterminator='\n')
    print("\n Adding of Item Details into the ITEMS.CSV file")
    record=list()
    any='y'
    lstitemrec=[]
    while any=='y':
        item_id=int(input("Enter the Item ID:"))
        item_name=input("Enter the Item Name:")
        item_price=int(input("Enter the Price:"))
        lstitemrec=[item_id,item_name,item_price]
        cwo.writerow(lstitemrec)
        print("\n This Student Record is Saved in CSV Format...\n")
        any=input("Do You Want to Add Another Record(y/n):")
    csvfile.close()
def Display():
    print("\n Displaying the Records of Items whose price is Rs.2500/-")
    with open("items.csv","r") as csvfile:
        records=csv.reader(csvfile)
        for record in records:
            if int(record[2])>2500:
                print(record)
        csvfile.close()
#main program
Enter()
Display()
```

34. Mr.Narayan Bhat a Librarian managing the following books in the library database and needs to perform a certain operations. Help him to get the required information by writing the appropriate SQL queries as per the tasks mentioned below. **(4)**

Table Name: Libstock

B_id	Bookname	Publisher	Qty	Price
B01	Python Programming	Pearson Education	10	650
B02	Computer Fundamentals	McGraw Hill India	5	450
B03	Cloud Computing	BPB Publications	7	750
B04	Data Structures using C++	Wiley India	25	350
B05	Computer Graphics	Pearson Education	15	600

Table Name: Issuebook

B_id	Member_id	Membername	Phoneno	Iqty	Idate
B01	M01	Sooraj Kumar	7683838273	1	2025/01/12
B03	M02	Babitha	8959604044	1	2025/03/11
B02	M03	Jaya Kumar	9849484884	1	2025/09/10
B04	M04	Ravi Kumar	8955445442	1	2025/10/13
B02	M05	Shyam Sundar	9863054353	1	2025/10/15

(i) Display the book information from the Libstock table according to the alphabetical order of book name.
(ii) Display all the book name, and price of all the books whose price is between 400 and 600 (both lower and upper values are inclusive)
(iii) Display the member name and book name taken by all the members.
(iv) To display the Cartesian Product of the above two tables.

OR

Apply natural join operation on the above two tables.

Answer:

(i) SELECT * FROM LIBSTOCK ORDER BY BNAME ASC;
(ii) SELECT * FROM LIBSTOCK WHERE PRICE BETWEEN 400 AND 600;
(iii) SELECT Bookname,Membername from Libstock A,Issuebook B
WHERE A.B_ID=B.B_ID;
(iv) SELECT * FROM Libstock,Issuebook ;

OR

SELECT * FROM Libstock NATURAL JOIN Issuebook;

35. **(4)**

A table named EMP in ESI database, has the following structure.

Field	Type
Ecode	integer
Ename	varchar(30)
Edesig	varchar(25)
Esalary	integer

Biju wants to create a function **add_rec()** in Python to **insert records** in to EMP table. Note the following to establish concavity between Python and MySQL.
User name – **root**, password- **admin**, host-**localhost**

Answer:

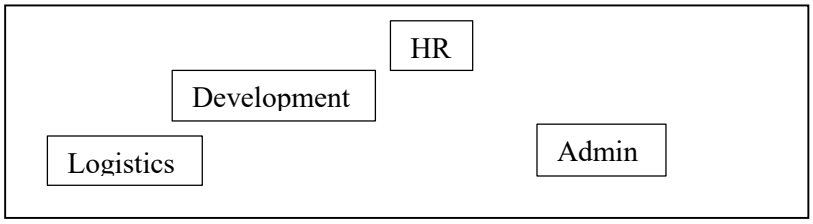
```
import mysql.connector as sqlc
def add_rec():
   #Function to insert a new record into the EMP table of ESI Database
   print("Function to insert a New Record into the EMP table of ESI Database")

conn=sqlc.connect(host="localhost",user="root",password="",database="ESI",charset="utf8")
   cur=conn.cursor()
   any='y'
   while any=='y':
      Ecode=int(input("Pease input the Employee Code:"))
      Ename=input("Enter the Name of the Employee:")
      Edesig=input("Enter the Designation of the Employee:")
      Esalary=int(input("Enter the Salary of the Employee:"))
      query="INSERT INTO EMP
      VALUES({},'{}','{}',{})".format(Ecode,Ename,Edesig,Esalary)
      cur.execute(query)
      conn.commit() # to save the record permanantely into the EMP table of ESI  db
      print("Employee Record is inserted into the EMP table of ESI Database")
      any=input("Do you want to add one more record(y/n):")
   conn.close()
   print("\t Thank You")
```

Q No.	Section-D (4 x 4 = 16 Marks)	Marks

36.	Mr.Lathesh, a developer in a software company needs to maintain records of DVDs. Each record includes dvd_id,dvd_name,qty,price.
	Write the following Python functions to:
	1. Create a binary file which should input DVD data and append it to a binary file "dvd.dat" using list data structure.
	2. Display the details of those DVDs whose price is more than 25.
	Answer:
	import pickle
	def create_dvd():
	#Function to Create Binary File containing DVD Data Record
	fout=open("dvd.dat","ab")
	any='y'
	lstrec=list()
	while any=='y':
	print("Creation of Binary File DVD.DAT")
	dvd_id=input("Enter the DVD ID:")
	dvd_name=input("Enter the DVD Name:")
	qty=int(input("Enter the Quantity:"))
	price=int(input("Enter the Price:"))
	lstrec=[dvd_id,dvd_name,qty,price]
	pickle.dump(lstrec,fout)
	print("\DVD Data Record is Saved into the Binary File:\n")
	any=input("\n Do you want to add another DVD record (y/n):")
	fout.close()
	def print_dvd_rec():
	#Function to Print Binary File containing DVD Data Record whose price is more than 25
	print("Print Binary File containing DVD Data Record whose price is more than 25")
	print("#"*80)
	fin=open("dvd.dat","rb")
	lstrec=[]
	recno=0
	print("Serial No.\tDVD ID \t DVD Name\tQuantity\tPrice")
	try:
	while True:
	lstrec=pickle.load(fin)
	if lstrec[3]>25:
	recno+=1
	print(recno,"\t\t",lstrec[0],"\t",lstrec[1],"\t",lstrec[2],"\t\t",lstrec[3])
	except:
	fin.close()
	print("#"*80)
		(5)

37.	Mangolia Infotech wants to set up their computer network in the Bangalore based	**(5)**

campus having four buildings. Each block has a number of computers that are required to be connected for ease of communication, resource sharing and data security. You are required to suggest the best answer to the questions (i) to (v) keeping in mind the building layout on the campus.



Number of Computers

Block	Number of computers
Development	100
HR	120
Admin	200
Logistics	110

Distance Between the various blocks

Block	Distance
Development to HR	50m
Development to Admin	75m
Development to Logistics	120m
HR to Admin	110m
HR to Logistics	50m
Admin to Logistics	140m

(i) Suggest the most appropriate block to host the Sever. Also justify your choice.

(ii) Suggest the device that should be placed in the Server building so that they can connect to internet Service Provider to avail internet services.

(iii) Suggest the wired medium and draw the cable block to block layout to economically connect the various blocks.

(iv) Suggest the placement of Switches and Repeaters in the network with justification.

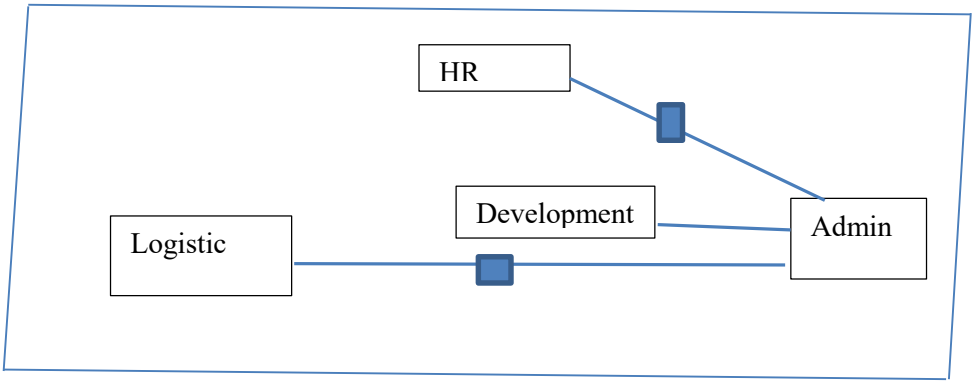
(v) Suggest the high-speed wired communication medium between Bangalore Campus and Mysore Campus to establish a data network

Answer:

(i) Admin Block since it has maximum number of computers.(Refer 80-20 Rule). Also cabling cost also can be reduced.

(ii) Modem should be placed in the Server Building.

(iii) The wired medium is UTP/STP cables.



(iv) Switches to be installed in all the blocks since the computers need to be connected to the network. Repeaters between Admin and HR block and Admin and Logistic Block. The reason being the distance more than 100m.

(v) Optical Fiber connection