



SAINIK SCHOOL AMARAVATHINAGAR
SERIES TEST - IV

DATE: **COMPUTER SCIENCE (083)**
CLASS: XII

MAX MARKS : 70
MAX TIME : 3h

General Instructions:

1. *Please check that this question paper contains 7 printed pages.*
2. *Please check that this question paper contains 10 questions.*
3. *Please write down the serial number of the question before attempting it.*
4. *All questions are compulsory.*
5. *Programming language: Python.*

1. Answer the Followings each carries one mark (1 x 7 = 07)

- a) Define Computer Network.
- b) What is 80-20 rule?
- c) Write the expanded names for the following abbreviated terms used in Networking and Communications:
(i) GSM (ii) NCP (iii) WiFi (iv) VoIP
- d) When do you prefer XML over HTML and why?
- e) Write any two important characteristics of Cloud Computing.
- f) What is WEB2.0?
- g) Give one suitable example of each URL and Domain Name.

2 Answer the followings each carries 2 marks (2 x 5 = 10)

- a) What is amplitude modulation? Explain
- b) What is demodulation? How it is different from modulation?
- c) What is collision in network?
- d) What is CSMA/CA? How it works?
- e) What do you understand by parity checking?

3 Answer the followings each carries 2 marks (2 x 5 = 10)

- a) What type of errors may occur in the data transmitted over networks?
- b) Explain the two types of duplex communication
- c) Differentiate between client server and P2P networks

- d) What is Internet of Things (IoT)
- e) Differentiate between public cloud and private cloud

4 Answer the followings each carries 2 marks (2 x 5 = 10)

- a) What is alternate key?
- b) What is candidate key?
- d) What is primary key?
- d) What is Degree of relation? What is cardinality of given relation? Give example
- e) What is foreign key?

5 Answer the followings each carries 3 marks (3 x 3= 09)

- a) Explain in detail IPv4 and IPv6
- b) Write a note on Single Dimensional Parity Checking
- c) Write a note on Two Dimensional Parity Checking

6. Consider the following tables Product and Client. Write SQL commands for the statement (i) to (iv) and give outputs for SQL queries (v) to (viii) 6 Marks

Table: PRODUCT			
P_ID	Product Name	Manufacturer	Price
TP01	Talcom Powder	LAK	40
FW05	Face Wash	ABC	45
BS01	Bath Soap	ABC	55
SH06	Shampoo	XYZ	120
FW12	Face Wash	XYZ	95

Table: CLIENT			
C_ID	Client Name	City	P_ID
01	Cosmetic Shop	Delhi	FW05
06	Total Health	Mumbai	BS01
12	Live Life	Delhi	SH06
15	Pretty Woman	Delhi	FW12
16	Dreams	Banglore	TP01

- (i) To display the details of those Clients whose city is Delhi.
- (ii) To display the details of Products whose Price is in the range of 50 to 100 (Both values included).
- (iii) To display the ClientName, City from table Client, and ProductName and Price from table Product, with their corresponding matching P_ID.
- (iv) To increase the Price of all Products by 10
- (v) **SELECT DISTINCT Address FROM Client.**

(vi) `SELECT Manufacturer, MAX(Price), Min(Price), Count(*) FROM Product GROUP BY Manufacturer;`

vii) `SELECT ClientName, ManufacturerName FROM Product, Client WHERE Client.Prod_Id=Product.P_Id;`

(viii) `SELECT ProductName, Price * 4 FROM Product.`

7. Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii), which are based on the tables **6 Marks**

Table: VEHICLE

VCODE	VEHICLETYPE	PERKM
V01	VOLVO BUS	150
V02	AC DELUXE BUS	125
V03	ORDINARY BUS	80
V05	SUV	30
V04	CAR	18

Note: PERKM is Freight Charges per kilometre

Table: TRAVEL

CNO	CNAME	TRAVELDATE	KM	VCODE	NOP
101	K.Niwal	20151213	200	V01	32
103	Fredrick Sym	20160321	120	V03	45
105	Hitesh Jain	20160423	450	V02	42
102	Ravi Anish	20160113	80	V02	40
107	John Malina	20150210	65	V04	2
104	Sahanubhuti	20160128	90	V05	4
106	Ramesh Jaya	20160406	100	V01	25

Note:

- *Km is Kilometers travelled*
- *NOP is number of passengers travelled in vehicle*

(i) To display CNO, CNAME, TRAVELDATE from the table TRAVEL in descending order of CNO.

(ii) To display the CNAME of all the customers from the table TRAVEL who are travelling by vehicle with code V01 or V02.

(iii) To display the CNO and CNAME of those customers from the table TRAVEL who travelled between '2015-12-31' and '2015-05-01'.

(iv) To display all the details from table TRAVEL for the customers, who have travel distance more than 120 KM in ascending order of NOP.

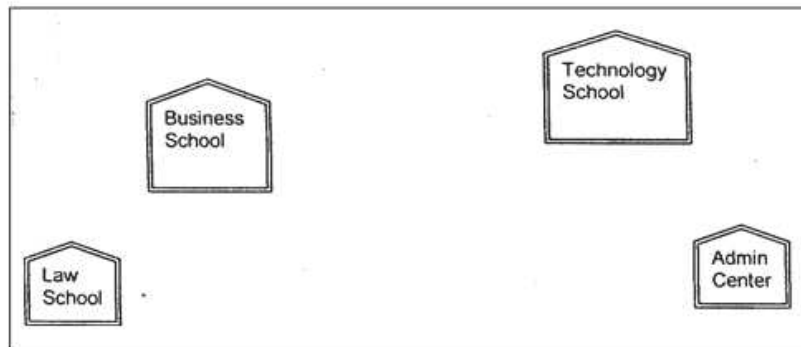
(v) `SELECT COUNT(*),VCODE FROM TRAVEL GROUP BY VCODE HAVING COUNT(*)>1;`

(vi) `SELECT DISTINCT VCODE FROM TRAVEL;`

(vii) `SELECT A.VCODE,CNAME,VEHICLETYPE FROM TRAVEL A,VEHICLE B WHERE A.VCODE=B.VCODE AND KM<90;`

(viii) `SELECT CNAME,KM*PERKM FROM TRAVEL A,VEHICLE B WHERE A.VCODE=B.VCODE AND A.VCODE='V05';`

8. Great Studies University is setting up its Academic schools at Sunder Nagar and planning to set up a network. The university has 3 academic schools and one administration center as shown in the diagram below: **4 Marks**



Center to Center distances between various Buildings is as follows :

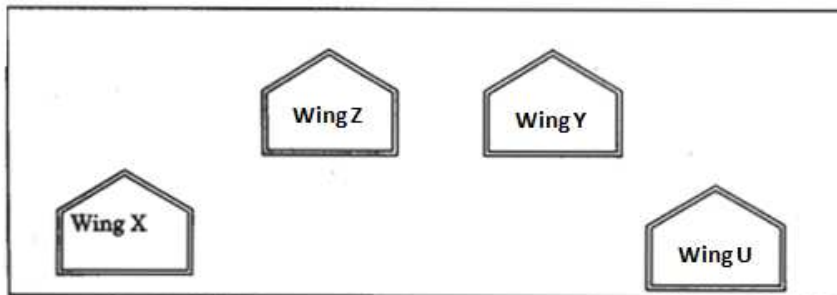
Law School to Business School	60m
Law School to Technology School	90m
Law School to Admin Center	115m
Business School to Technology School	40m
Business School to Admin Center	45m
Technology School to Admin Center	25m

Number of Computers in each of the Schools/Center is follows:

Law School	25
Technology School	50
Admin Center	125
Business School	35

- (i) Suggest the most suitable place (i.e. School/Center) to install the server of this university with a suitable reason.
- (ii) Suggest an ideal layout for connecting these schools/ center for a wired connectivity.
- (iii) Which device will you suggest to be placed/installed in each of these schools /center to efficiently connect all the computers within these schools / center?
- (iv) The university is planning to connect its admission office in the closest big city, which is more than 350 km from the university. Which type of network out of LAN, MAN or WAN will be formed? Justify your answer.

9. The Cyber Mind Organization has set up its new Branch at Mizoram for its office and web based activities. It has 4 Wings of buildings as shown in the diagram: **4 Marks**



CENTER TO CENTER DISTANCE BETWEEN VARIOUS BLOCKS

Wing X to Wing Z	40 m
Wing Z to Wing Y	60 m
Wing Y to Wing X	135 m
Wing Y to Wing U	70 m
Wing X to Wing U	165 m
Wing Z to Wing U	80 m

NUMBER OF COMPUTERS

Wing X	50
Wing Z	130
Wing Y	40
Wing U	15

(e1) Suggest a most suitable cable layout of connections between the Wings and topology.

(e2) Suggest the most suitable place (i.e. Wing) to house the server of this organization with a suitable reason with justification.

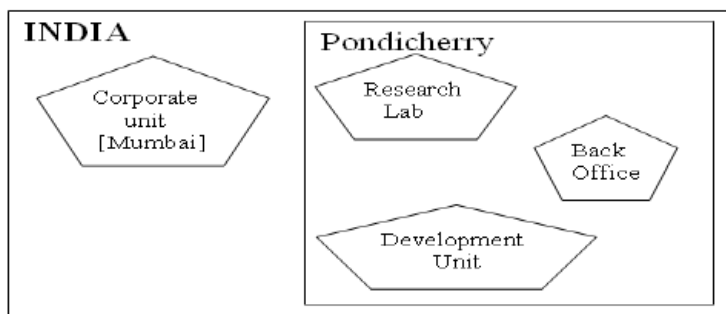
(e3) Suggest the placement of the following devices with justification :

- (i) Repeater
- (ii) Hub / Switch

(e4) The organization is planning to link its head office situated in Delhi with the offices as Mizoram. Suggest an economic way to connect it; the company is ready to compromise on the speed of connectivity. Justify your answer.

10. “Bias methodologies” is planning to expand their network in India, starting with three cities in India to build infrastructure for research and development of their chemical products. The company has planned to setup their main office in Pondicherry – at three different locations and have named their offices as “Back Office”, “Research Lab” and “Development Unit”. The company has one more Research office namely “Corporate Office” in “Mumbai”. A rough layout of the same is as follows:

4 Marks



From	To	Distance
Research Lab	Back Office	111 Mtr
Research Lab	Development Unit	16 KM
Research Lab	Corporate Unit	1800 KM
Back Office	Development Unit	13 KM

In continuation of the above, the company experts have planned to install the following number of computers in each of their offices:

Research Lab	158
Back Office	79
Development Unit	90
Corporate Unit	51

(a) Suggest the kind of network required (out of LAN, MAN, WAN) for connecting each of the following office units:

- i) Research Lab and Back Office ii) Research Lab and Development Unit

(b) Which one of the following devices will you suggest for connecting all the computers with in each of their office units?

- i) Switch/Hub ii) Modem iii) Telephone

(c) Which of the following communication media, you will suggest to be procured by the company for connecting their local office units in Pondicherry for very effective (High Speed) communication?

- i) Telephone cable ii) Optical Fibre iii) Ethernet Cable

(d) Suggest a technology/layout for connecting the Company's local office units located in Pondicherry. Also, suggest an effective method / technology for connecting the company's office unit located in Mumbai.
