Computer Science – Terminal Exam

Class: XII   Marks : 70

Date: 01 -08-19   Time   : 3hrs

Section - A

I. Answer the following

1. (a) Explain the concept UNION between two tables, with the help of appropriate example.   (**2**)

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

DVD

DCODE	DTITLE	DTYPE
F101	Henry Martin	Folk
C102	Dhrupad	Classical
C101	The Planets	Classical
F102	Universal Soldier	Folk
R102	A day in life	Rock

MEMBER

MID	NAME	DCODE	ISSUEDATE
101	AGAM SINGH	R102	2017-11-30
103	ARTH JOSEPH	F102	2016-12-13
102	NISHA HANS	C101	2017-07-24

(i) To display all details from the table MEMBER in descending order of ISSUEDATE.

(ii) To display the DCODE and DTITLE of all Folk Type DVDs from the table DVD.

(iii) To display the DTYPE and number of DVDs in each DTYPE from the table DVD.

(iv) To display all NAME and ISSUEDATE of those members from the table MEMBER who have DVDs issued

(i.e., ISSUEDATE) in the year 2017.

(v) SELECT MIN (ISSUEDATE) FROM MEMBER;

(vi) SELECT DISTINCT DTYPE FROM DVD;

(vii) SELECT D.DCODE, NAME, DTITLE '

FROM DVD D, MEMBER M WHERE D.DC0DE=M.DCODE;

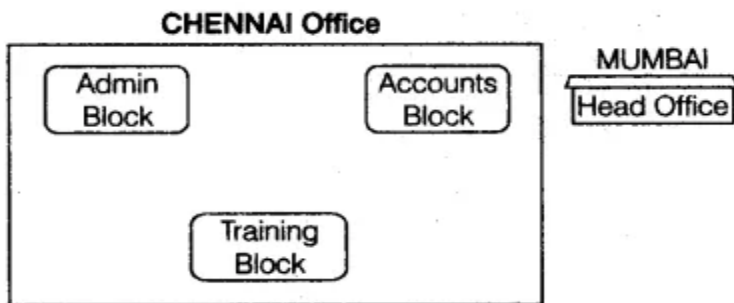(viii) SELECT DTITLE FROM DVD

WHERE DTYPE NOT IN ("Folk", "Classical");

2. (a) Write any two differences between twisted pair and coaxial pair cable   **(2)**

(b) Janish Khanna used a pen drive to copy files from his friend's laptop to his office computer. Soon his computer started abnormal functioning. Sometimes it would restart by itself and sometimes it would stop different applications running on it. Which of the following options out of (i) to (iv), would have caused the malfunctioning of the computer? Justify the reason for your chosen option: **(2)**

1. Computer Virus
2. Spam Mail
3. Computer Bacteria
4. Trojan Horse

(c) Differentiate between communication using Optical Fiber and Ethernet Cable in context of wired medium of communication technologies.   **(2)**

(d) Hi Standard Tech Training Ltd. is a Mumbai based organization which is expanding its office set-up to Chennai. At Chennai office compound, they are planning to have 3 different blocks for Admin, Training and Accounts related activities. Each block has a number of computers, which are required to be connected in a network for communication, data and resource sharing.

As a network consultant, you have to suggest the best network related solutions for them for issues/problems raised by them in (i) to (iv), as per the distances between various blocks/locations and other given parameters.

CHENNAI Office

Admin Block   Accounts Block   MUMBAI Head Office

Training Block

Shortest distances between various blocks/locations:

Admin Block to Accounts Block	300 Metres
Accounts Block to Training Block	150 Metres
Admin Block to Training Block	200 Metres
MUMBAI Head Office to CHENNAI Office	1300 Km

Number of computers installed at various blocks are as follows:

Training Block	150
Accounts Block	30
Admin Block	40

1. Suggest the most appropriate block/location to house the SERVER in the CHENNAI office (out of the 3 blocks) to get the best and effective connectivity. Justify your answer.
2. Suggest the best wired medium and draw the cable layout (Block to Block) to efficiently connect various blocks within the CHENNAI office compound.
3. Suggest a device/software and its placement that would provide data security for the entire network of the CHENNAI office.
4. Suggest a device and the protocol that shall be needed to provide wireless Internet access to all smartphone/laptop users in the CHENNAI office.

3. (a) Observe the following tables BOOK and MEMBER carefully and write the name of the RDBMS operation out of (i) SELECTION (ii) PROJECTION (iii) UNION (iv) CARTESIAN PRODUCT, which has been used to produce the output as shown in RESULT ? Also, find the Degree and Cardinality of the RESULT. **(2)**

TABLE: BOOK

BNO	BNAME	TYPE
C101	Red Scorpion	Comic
F101	The Last Wish	Fiction
L102	French in a week	Literature

TABLE: MEMBER

MNO	MNAME
M101	Ritu Oberoi
M102	Fatima
M103	Jenny DeSouza

TABLE: RESULT

BNO	BNAME	TYPE	MNO	MNAME
C101	Red Scorpion	Comic	M101	Ritu Oberoi
C101	Red Scorpion	Comic	M102	Fatima
C101	Red Scorpion	Comic	M103	Jenny DeSouza
F101	The Last Wish	Fiction	M101	Ritu Oberoi
F101	The Last Wish	Fiction	M102	Fatima
F101	The Last Wish	Fiction	M103	Jenny DeSouza
L102	French in a week	Literature	M101	Ritu Oberoi
L102	French in a week	Literature	M102	Fatima
L102	French in a week	Literature	M103	Jenny DeSouza

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

TABLE : CUSTOMER

CNO	CNAME	ADDRESS
101	Richa Jain	Delhi
102	Surbhi Sinha	Chennai
103	Lisa Thomas	Bangalore
104	Imran Ali	Delhi
105	Roshan Singh	Chennai

TABLE : TRANSACTION

TRNO	CNO	AMOUNT	TYPE	DOT
T001	101	1500	Credit	2017-11-23
T002	103	2000	Debit	2017-05-12
T003	102	3000	Credit	2017-06-10
T004	103	12000	Credit	2017-09-12
T005	101	1000	Debit	2017-09-05

(i) To display details of all transactions of TYPE Credit from Table TRANSACTION.
(ii) To display the CNO and AMOUNT of all Transactions done in the month of September 2017 from table TRANSACTION.
(iii) To display the last date of transaction (DOT) from the table TRANSACTION for the customer having CNO as 103.
(iv) To display all CNO, CNAME and DOT (date of transaction) of those CUSTOMERS from tables CUSTOMER and TRANSACTION who have done transactions more than or equal to 2000.
(v) SELECT COUNT(*), AVG(AMOUNT) FROM TRANSACTION
WHERE DOT >= '2017-06-01';
(vi) SELECT CNO, COUNT(*), MAX (AMOUNT) FROM TRANSACTION
GROUP BY CNO HAVING COUNT(*)> 1;
(vii) SELECT CNO, CNAME FROM CUSTOMER
WHERE ADDRESS NOT IN ('DELHI', 'BANGALORE');
(viii) SELECT DISTINCT CNO FROM TRANSACTION;

4. (a) Differentiate between Packet and Circuit Switching techniques. **(1)**

(b) Differentiate between MAN and LAN with the help of an example. **(1)**

(c) Differentiate between Microwave and Radio Link in context of wireless communication medium. What are the advantages and disadvantages of using Microwave instead of Radio Link ? **(2)**

(d) Write the expanded names for the following abbreviated terms used in Networking and Communications: **(2)**

(i) GPRS (ii) WiFi (iii) POP (iv) SMTP
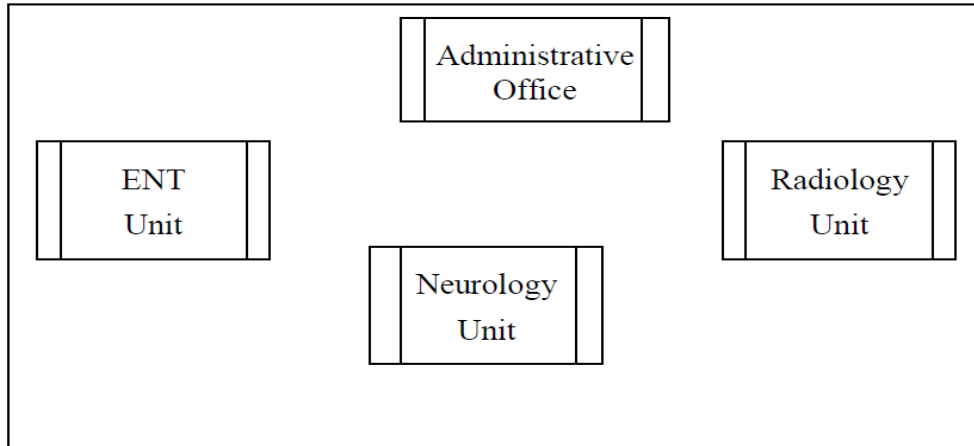
(e) CASE STUDY BASED QUESTION

Medico Training Educational Institute is setting up its centre in Poona with four specialised units for Radiology, Neurology and ENT along with an administrative office in separate buildings. The physical distances between these units and the number of computers to be installed in these units and administrative office as given as follows. You as a network expert have to answer the queries as raised by them in (i) to (iv).

Shortest distances between various locations in metres :

Administrative Office to Radiology Unit	60
Neurology Unit to Administrative Office	40
Radiology Unit to Neurology Unit	80
ENT Unit to Neurology Unit	60
ENT Unit to Administrative Office	30
ENT Unit to Radiology Unit	120

Number of Computers installed at various locations are as follows

ENT Unit	50
Radiology Unit	70
Administrative Office	120
Neurology	40

(i) Suggest the most suitable location to install the main server of this institution to get efficient connectivity. **(1)**

(ii) Suggest the best cable layout for effective network connectivity of the building having server with all the other buildings. **(1)**

(iii) Suggest the devices to be installed in each of these buildings for connecting computers installed within the building out of the following: **(1)**

• Modem

• Switch

• Gateway

(iv) Suggest the topology of the network and network cable for efficiently connecting each computer installed in each of the building out of the following : **(1)**

Topologies : Star Topology, Bus Topology

Network Cable : Co-axial Cable, Ethernet Cable, Single Pair Telephone Cable.

5. (a) Distinguish between Website and Web browser. **(2)**

(b) What is firewall? **(2)**

(c) What is protocol? Which protocol is used to copy a file from/to a remotely server **(2)**

6. (a) Expand the following abbreviations **(2)**

   1. HTTP   2. ARPANET

(b) In networking, what is WAN? How is it different from LAN? **(2)**

(c) Ms. Raveena Sen is an IT expert and a freelancer. She recently used her skills to access the Admin password for the network server of Super Dooper Technology Ltd. and provided confidential data of the organization to its CEO, informing him about the vulnerability of their network security. Out of the following options (i) to (iv), which one most appropriately defines Ms. Sen ? **(2)**

Justify the reason for your chosen option :

(i) Hacker
(ii) Cracker
(iii) Operator
(iv) Network Admin

7. (a)Arun opened his e-mail and found that his inbox was full of hundreds of unwanted mails. It took him around two hours to delete these unwanted mails and find the relevant ones in his inbox. What may be the cause of his receiving so many unsolicited mails? What can Arun do to prevent this happening in future? **(2)**

(b) Assume that 50 employees are working in an organization. Each employee has been allotted a separate workstation to work. In this way, all computers are connected through the server and all these workstations are distributed over two floors. In each floor, all the computers are connected to a switch. Identify the type of network? **(1)**

(c) Your friend wishes to install a wireless network in his office. Explain him the difference between guided and unguided media. **(1)**

(d) Write the expanded names for the following abbreviated terms used in Networkingand Communications: **(2)**
(i) CDMA (ii) HTTP (iii) XML (iv) URL

9. What is Modem? Explain the working of Modem. **(6)**
10. Write in detail about the Topologies. **(5)**
11. Give the difference between Guided Media. **(5)**
12. What do you understand by selection and projection operation in relational algebra? **(4)**