

## SOLVED QUESTIONS

### NETWORKING (4 MARKS QUESTIONS)

1. Multipurpose Public School, Bengaluru is setting up the network between its different wings of school campus. There are 4 wings named as: -

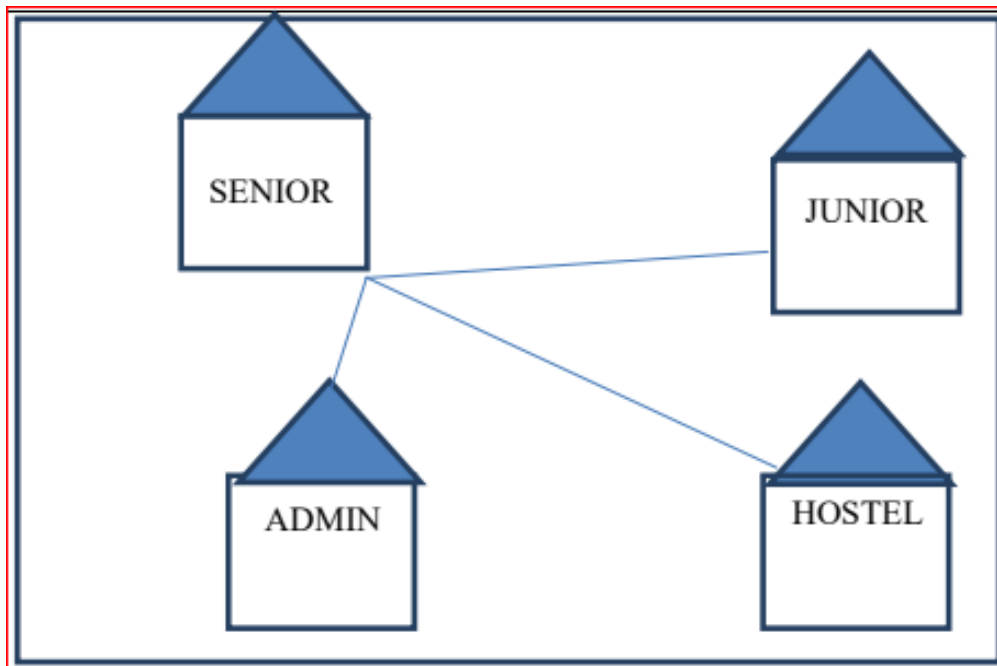
**SENIOR(S), JUNIOR(J), ADMIN(A) and HOSTEL(H)**

- (i) Suggest the best wired medium and draw the cable layout to efficiently connect various wings of Multipurpose Public School, Bengaluru.
- (ii) Name the most suitable wing where the servers should be installed. Justify your answer.
- (iii) Suggest a device/software and its placement that would provide data security for the entire network of the school.
- (iv) Suggest a device and a protocol that shall be needed to provide wireless internet access to all smartphone/laptop users in the campus of Multipurpose Public School, Bengaluru.

**b**

- (i) Best wired medium: Optical fibre/CAT5/CAT6/CAT7/CAT8/Ethernet Cable.

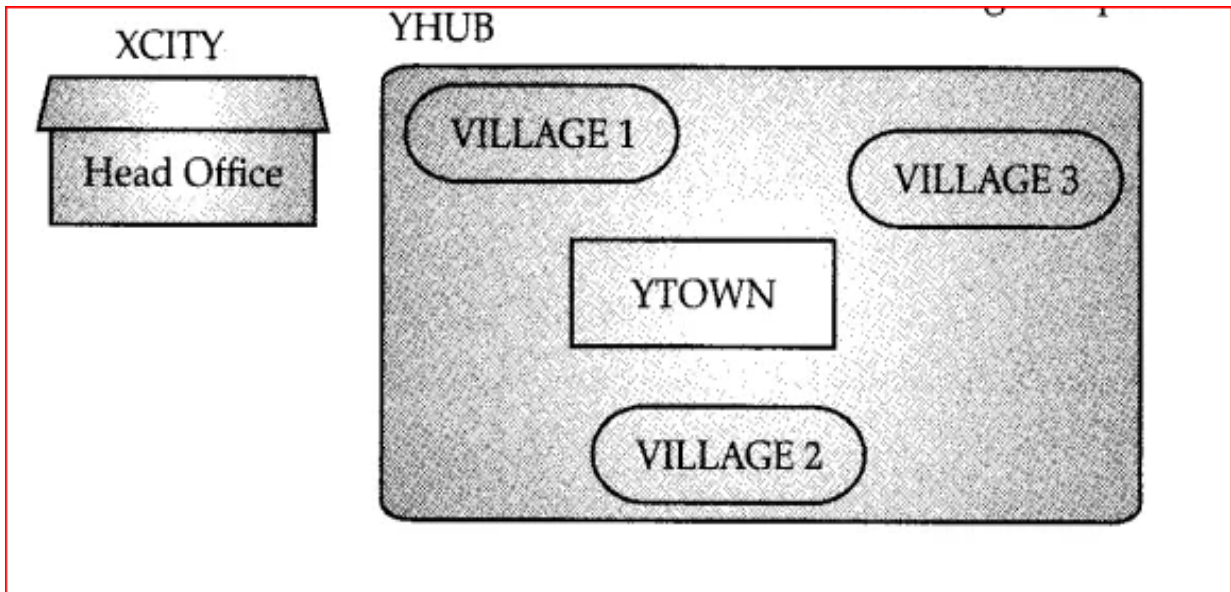
Layout:



- (ii) Wing Senior (S)- Because it has maximum number of computers.
- (iii) Firewall- Placed with the Server at SENIOR(S).
- (iv) DEVICE NAME: WiFi Router/WiMax/Wireless modem  
Protocol: WAP/TCP-IP/VoIP/MACP

**2. Intelligent Hub India is a knowledge community aimed to uplift the standard of skills and knowledge in the society. It is planning to setup its training centres in multiple towns and villages pan India with its head offices in the nearest cities. They have created a model of their network with a city, a town and 3 villages as given.**

**As a network consultant, you have to suggest the best network related solution for their issues/problems raised in (i) to (iv) keeping in mind the distance between various locations and given parameters.**



**Shortest distance between various locations:**

VILLAGE 1 To YTOWN	2 KM
VILLAGE 2 To YTOWN	1.2 KM
VILLAGE 3 To YTOWN	3 KM
VILLAGE 1 To VILLAGE 2	3.5 KM
VILLAGE 1 To VILLAGE 3	4.5 KM
VILLAGE 2 To VILLAGE 3	3.5 KM
CITY Head office to YHUB	30 KM

**Number of computers installed at various locations are as follows:**

YTOWN	100
VILLAGE 1	10
VILLAGE 2	15
VILLAGE 3	15
CITY OFFICE	5

**Note:**

- In Villages, there are community centres, in which one room has been given as training center to this organization to install computers.
- The organization has got financial support from the government and top IT companies.

1. Suggest the most appropriate location of the SERVER in the YHUB (out of the 4 locations), to get the best and effective connectivity. Justify your answer.
2. Suggest the best wired medium and draw the cable layout (location to location) to efficiently connect various locations within the YHUB.

3. Which hardware device will you suggest to connect all the computers within each location of YHUB?
4. Which server/protocol will be most helpful to conduct live interaction of Experts from Head office and people at YHUB locations?

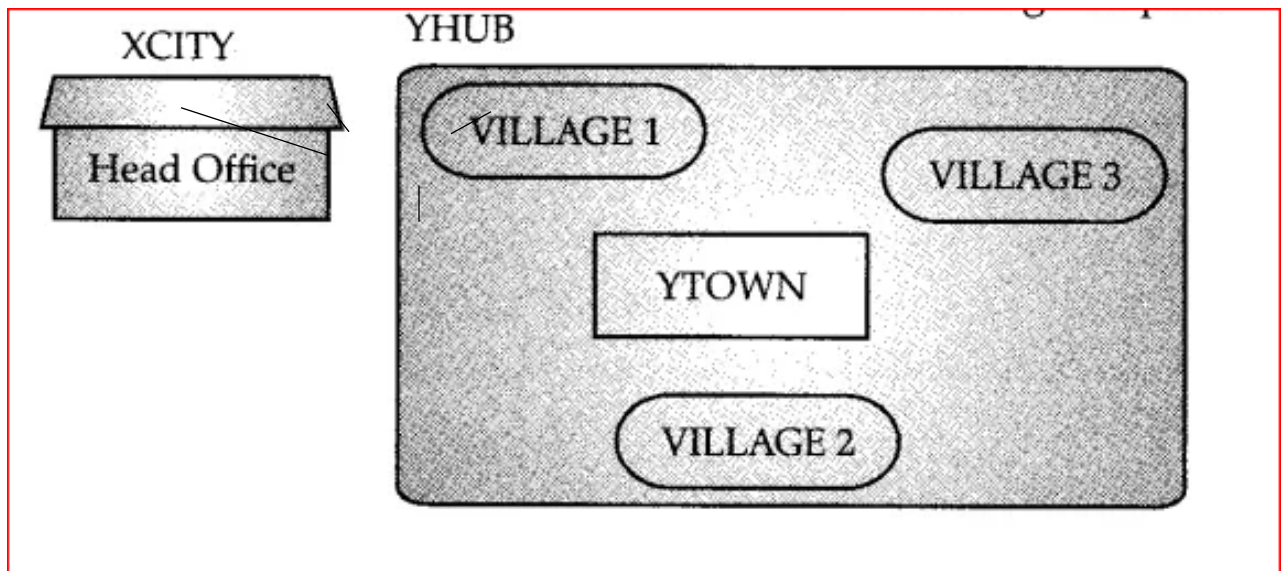
**Answers:**

(i) YTOWN  
Justification

1. Since it has the maximum number of computers.
2. It is closet to all other locations.

(ii) Optical Fiber

Layout:



(iii) Switch or Hub

(iv) Video conferencing or VoIP or any other correct service/protocol

- 
3. Indian School, in Mumbai is starting up the network between its different wings. There are four Buildings named as SENIOR, JUNIOR, ADMIN and HOSTEL as shown below:

SENIOR
JUNIOR
ADMIN
HOSTEL

**The distance between various buildings is as follows:**

ADMIN TO SENIOR	200m
ADMIN TO JUNIOR	150m
ADMIN TO HOSTEL	50m
SENIOR TO JUNIOR	250m
SENIOR TO HOSTEL	350m
JUNIOR TO HOSTEL	350m

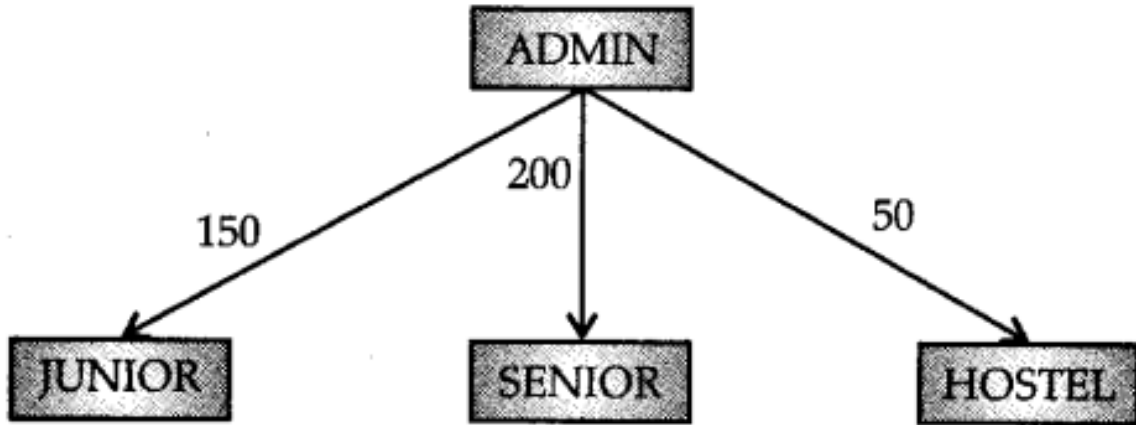
**Number of Computers in Each Building:**

SENIOR	130
JUNIOR	80
ADMIN	160
HOSTEL	50

1. Suggest the cable layout of connections between the buildings.
2. Suggest the most suitable place (i.e., building) to house the server of this school, provide a suitable reason.
3. Suggest the placement of the following devices with justification.
  - Repeater
  - Hub/Switch
4. The organization also has inquiry office in another city about 50-60 km away in hilly region. Suggest the suitable transmission media to interconnect to school and inquiry office out of the following:
  - Fiber optic cable
  - Microwave
  - Radiowave

**Answers:**

1.



- 2. Server can be placed in the ADMIN building as it has the maximum number of computers.
- 3. Repeater can be placed between ADMIN and SENIOR building as the distance is more than 110 m.
- 4. Radiowaves can be used in hilly regions as they can travel through obstacles.

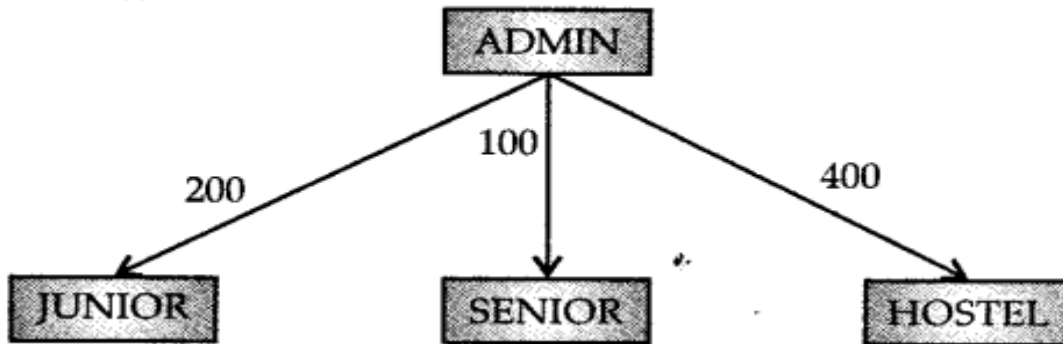
**4) Vidya Senior Secondary Public School in Nainital is setting up the network between its different wings. There are 4 wings named as SENIOR(S), JUNIOR(J), ADMIN(A) and HOSTEL(H). Distance between various wings are given below:**

Wing A to Wing S	100 m
Wing A to Wing J	200 m
Wing A to Wing H	400 m
Wing S to Wing J	300 m
Wing S to Wing H	100 m
Wing J to Wing H	450 m

Wing	Number of Computers
Wing A	20
Wing S	150
Wing J	50
Wing H	25

1. Suggest a suitable Topology for networking the computers of all wings.
2. Name the most suitable wing where the Server should be installed. Justify your answer.
3. Suggest where all should Hub(s)/Switch(es) be placed in the network.
4. Which communication medium would you suggest to connect this school with its main branch in Delhi?

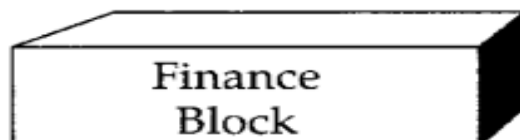
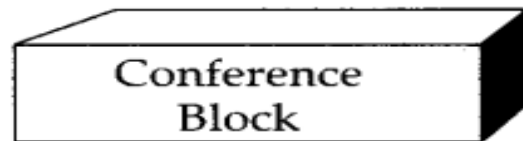
**Answers:**



- 1.
2. Server should be in Wing S as it has the maximum number of computers. 1
3. All Wings need hub/switch as it has more than one computer.
4. Since the distance is more, wireless transmission would be better. Radiowaves are reliable and can travel through obstacles.

**5) Trine Tech Corporation (TTC) is a professional consultancy company. The company is planning to set up their new offices in India with its hub at Hyderabad. As a network adviser, you have to understand their requirement and suggest them the best available solutions. Their queries are mentioned as (i) to (iv) below.**

**Physical Locations of the blocks of TTC**



## Block to Block distances (in Mtrs.)

Block (From)	Block (To)	Distance
Human Resource	Conference	110
Human Resource	Finance	40
Conference	Finance	80

**Expected number of computers to be installed in each block.**

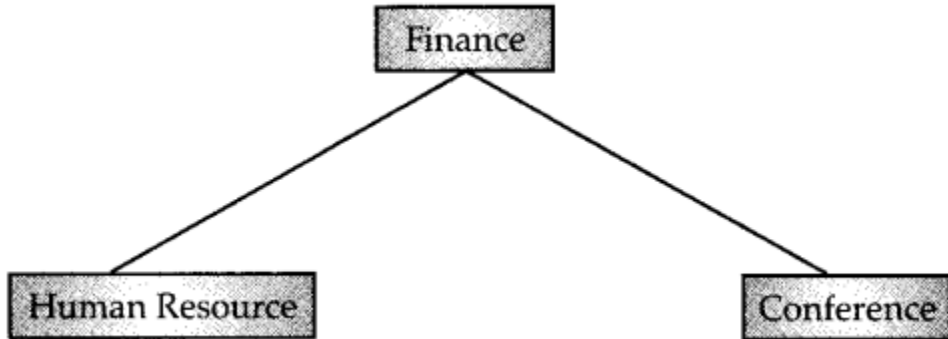
Block	Computers
Human Resource	25
Finance	120
Conference	90

1. What will be the most appropriate block, where TTC should plan to install their server?
2. Draw a block to cable layout to connect all the buildings in the most appropriate manner for efficient communication.
3. What will be the best possible connectivity out of the following, you will suggest to connect the new setup of offices in Bangalore with its London based office:
  - Satellite Link
  - Infrared
  - Ethernet Cable
4. Which of the following device will be suggested by you to connect each computer in each of the buildings:
  - Switch
  - Modem
  - Gateway
  -



**Answers:**

1. Finance block because it has maximum number of computers.



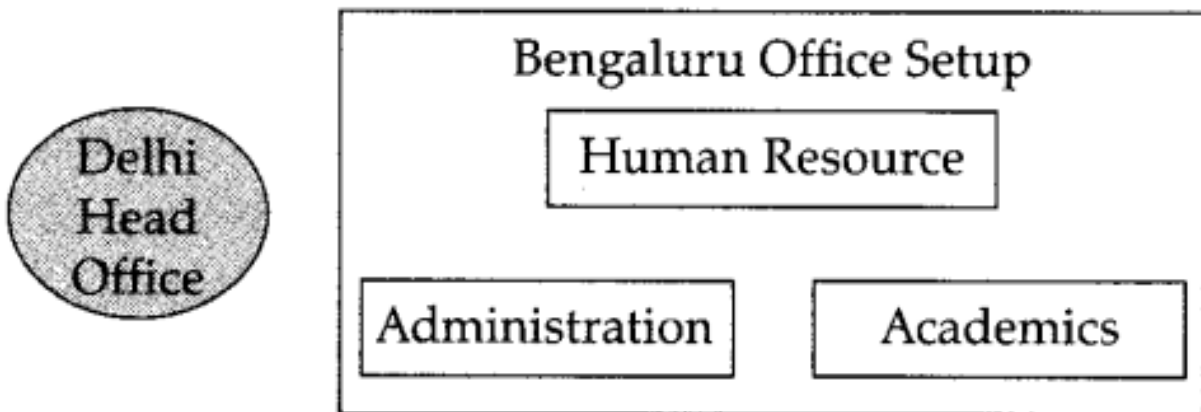
2. Satellite link
3. Switch

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**6) G.R.K International Inc. is planning to connect its Bengaluru Office Setup with its Head Office in Delhi. The Bengaluru Office G.R.K. international Inc. is spread across and area of approx. 1 square kilometer, consisting of 3 blocks – Human Resources, Academics and Administration.**

**You as a network expert have to suggest answers to the four queries (i) to (iv) raised by them.**

**Notes: Keep the distance between blocks and number of computers in each block in mind, while providing them the solutions.**



### Shortest distances between various blocks:

Human Resources to Administration	100 m
Human Resources to Academics	65 m
Academics to Administration	110 m
Delhi Head Office to Bengaluru Office Setup	2350 km

Number of computers installed at various blocks are as follows:

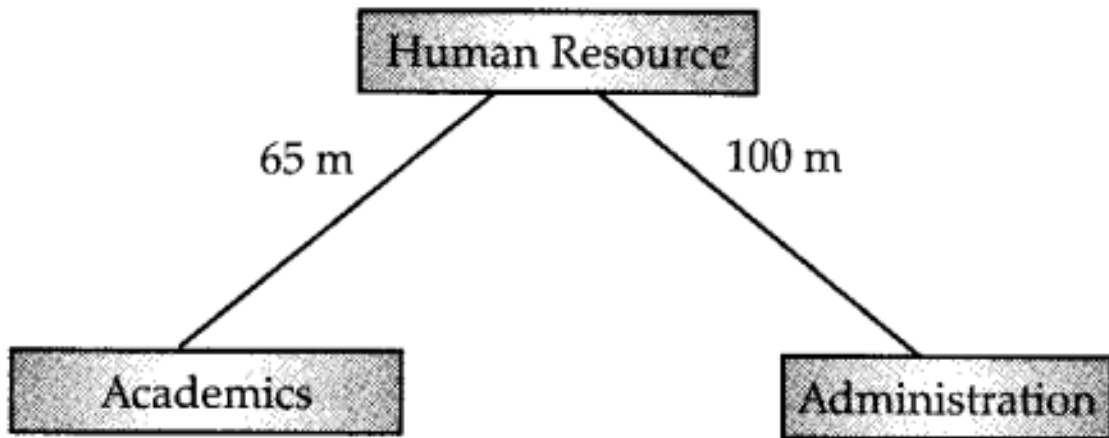
BLOCK	No. of Computers
Human Resources	155
Administration	20
Academics	100
Delhi Head Office	20

1. Suggest the most suitable block in the Bengaluru Office Setup, to host the server.  
Give a suitable reason with your suggestion.
2. Suggest the cable layout among the various blocks within the Bengaluru Office Setup for connecting the Blocks.
3. Suggest a suitable networking device to be installed in each of the blocks essentially required for connecting computers inside the blocks with fast and efficient connectivity.
4. Suggest the most suitable media to provide secure, fast and reliable data connectivity between Delhi Head Office and the Bengaluru Office Setup.

**Answers:**

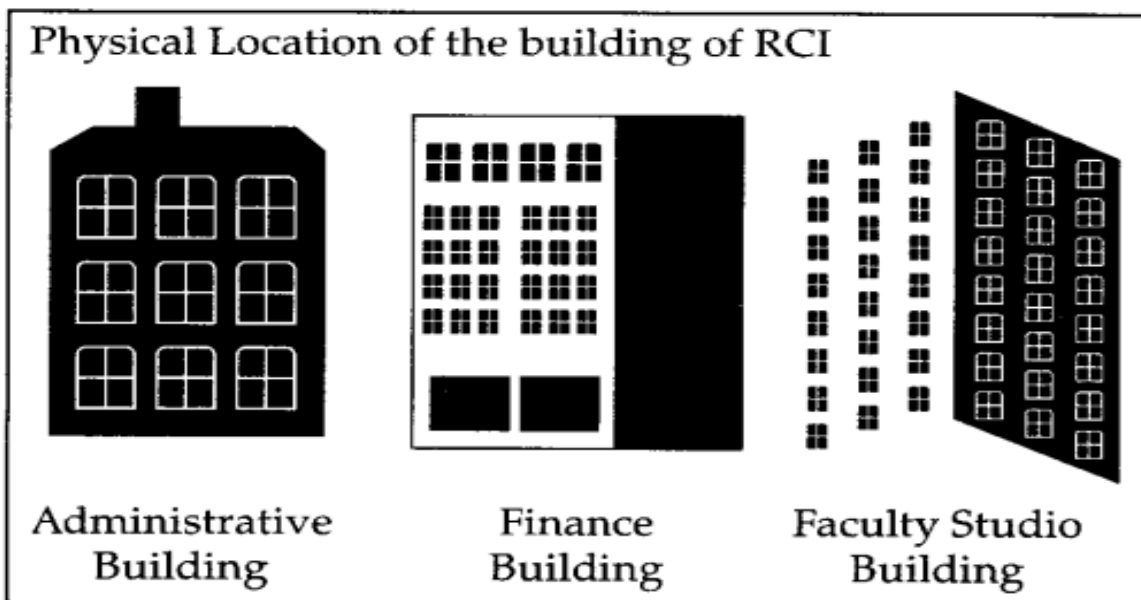
1. Human Resources because it has maximum number of computers.

(ii)



2. Switch 1
3. Satellite link

**7) Rovenza Communications International (RCI) is an online corporate training provider company for IT related courses. The company is setting up their new campus in Kolkata. You as a network expert have to study the physical locations of various blocks and the number of computers to be installed. In the planning phase, provide the best possible answers for the queries (i) to (iv) raised by them.**



**Block to Block Distances (in Mtrs.)**

<b>From</b>	<b>To</b>	<b>Distance</b>
Administrative Building	Finance Building	60
Administrative Building	Faculty Studio Building	120
Finance Building	Faculty Studio Building	70

**Expected computers to be installed in each block**

<b>Buildings</b>	<b>Computers</b>
Administrative Building	20
Finance Building	40
Faculty Studio Building	120

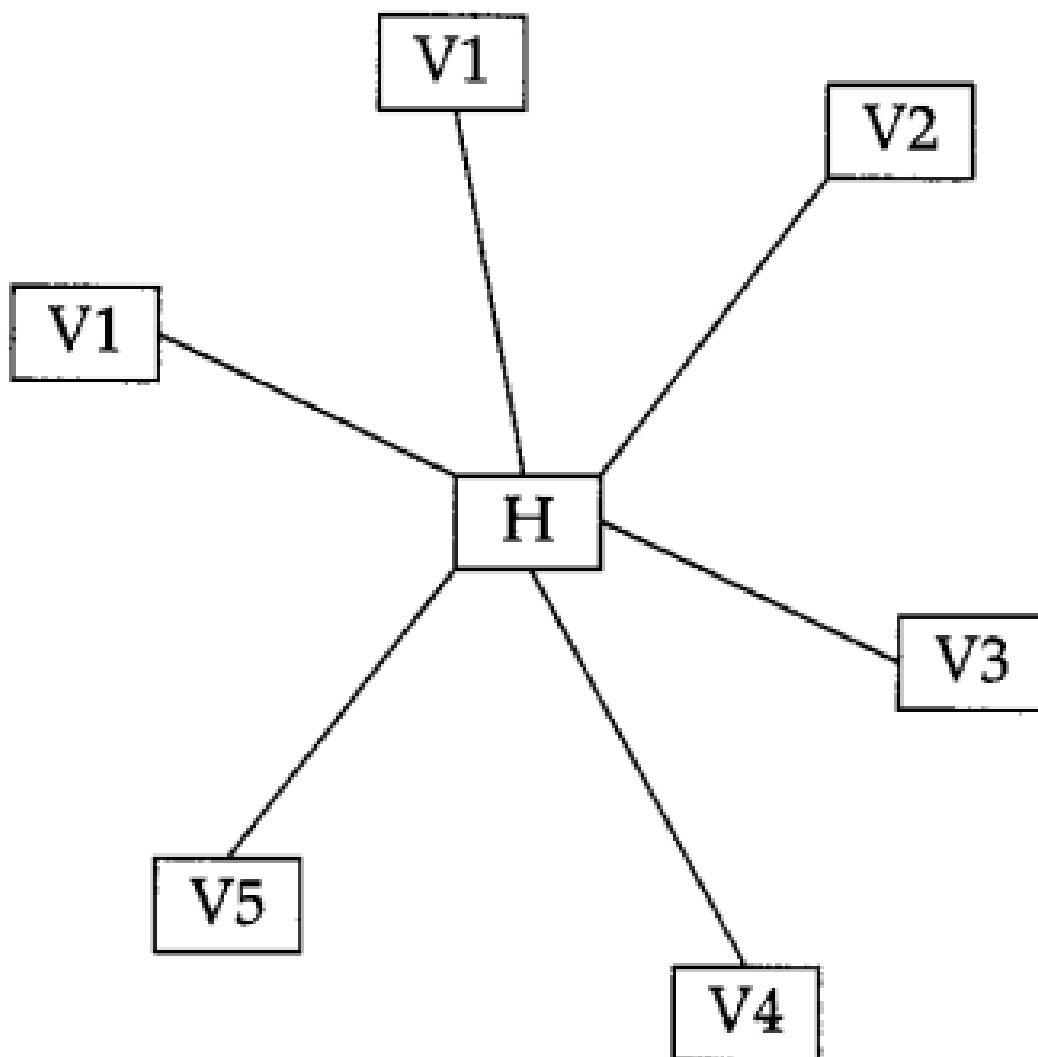
1. Suggest the most appropriate block, where RCI should plan to install the server.
2. Suggest the most appropriate block to block cable layout to connect all three blocks for efficient communication.
3. Which type of network out of the following is formed by connecting the computers of these three blocks?
  - o LAN
  - o MAN
  - o WAN
4. Which wireless channel out of the following should be opted by RCI to connect to students from all over the world?
  - o Infrared
  - o Microwave
  - o Satellite

**Answers:**

1. Faculty Recording Block.
2. Star topology
3. LAN
4. Satellite connection

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**8) To provide telemedicine faculty in a hilly state, a computer network is to be setup to connect hospitals in 6 small villages (V1, V2, ..., V6) to the base hospital (H) in the state capital. This is shown in the following diagram.**



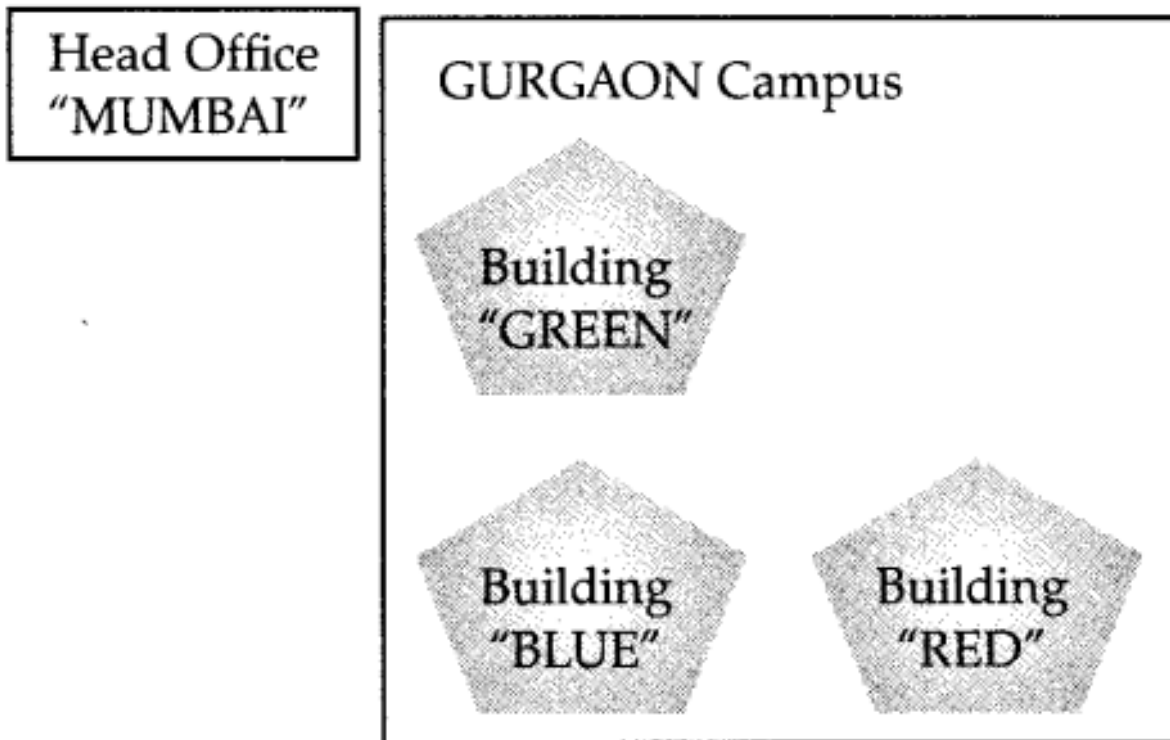
No village is more than 20 km away from the state capital. Imagine yourself as a computer consultant for this project and answer the following questions with justification:

1. Out of the following what kind of link should be provided to setup this network: Microwave link, Radio Link, Wired Link?
2. What kind of network will be formed; LAN, MAN, or WAN?
3. Many times, doctors at village hospital will have to consult senior doctors at the base hospital. For this purpose, how should they contact them: using email, SMS, telephone, or video conference?

**Answers:**

1. Radio Link
2. MAN
3. e-mail

**9) Workalot Consultants are setting up a secured network for their office campus at Gurgaon for their day-to-day office and web-based activities. They are planning to have connectivity between three buildings and the head office situated in Mumbai. Answer the questions (i) to (iv) after going through the building positions in the campus and other details, which are given below:**



## Distances between various buildings:

Building "GREEN" to Building "RED"	110 m
Building "GREEN" to Building "BLUE"	45 m
Building "BLUE" to Building "RED"	65 m
Gurgaon Campus to Head Office	1760 km

## Number of computers

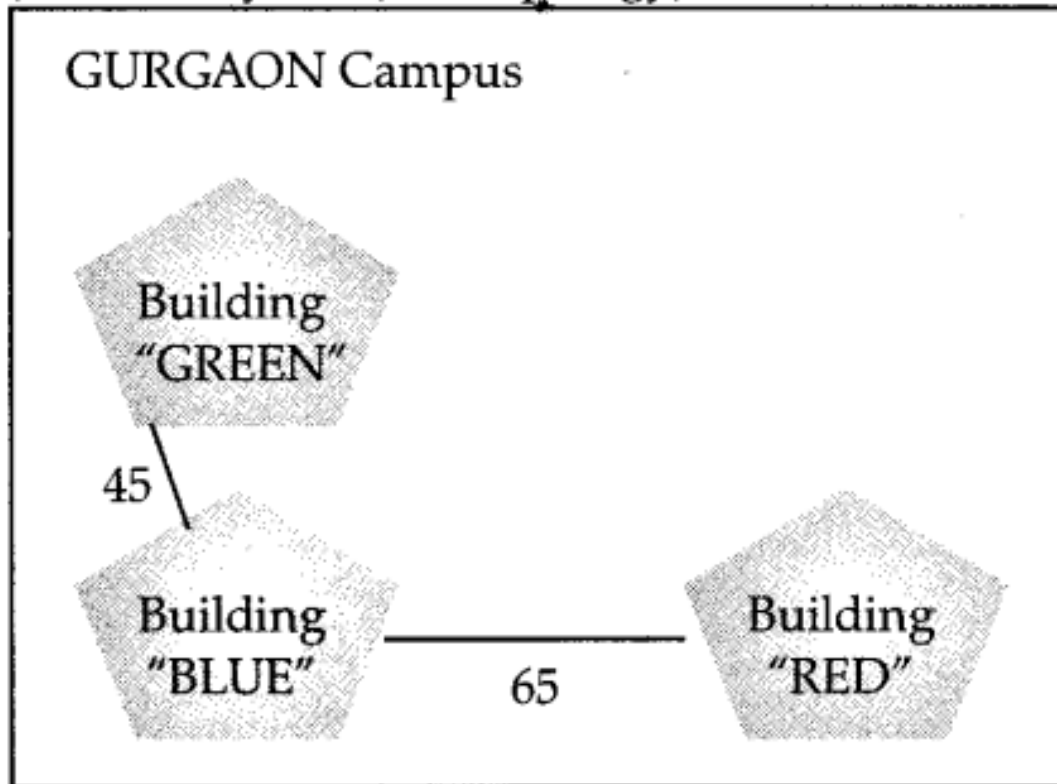
Building "GREEN"	32
Building "RED"	150
Building "BLUE"	45
Head Office	10

1. Suggest the most suitable place (i.e., building) to house the server of this organization. Also give a reason to justify your suggested location.
2. Suggest a cable layout of connections between the buildings inside the campus.
3. Suggest the placement of the following devices with justification:
  - o Repeater.
  - o Switch.
4. The organization is planning to provide a high-speed link with its head office situated in Mumbai using a wired connection. Which of the following cables will be most suitable for this job?
  - o Optical Fiber
  - o Co-axial Cable
  - o Ethernet Cable

**Answer:**

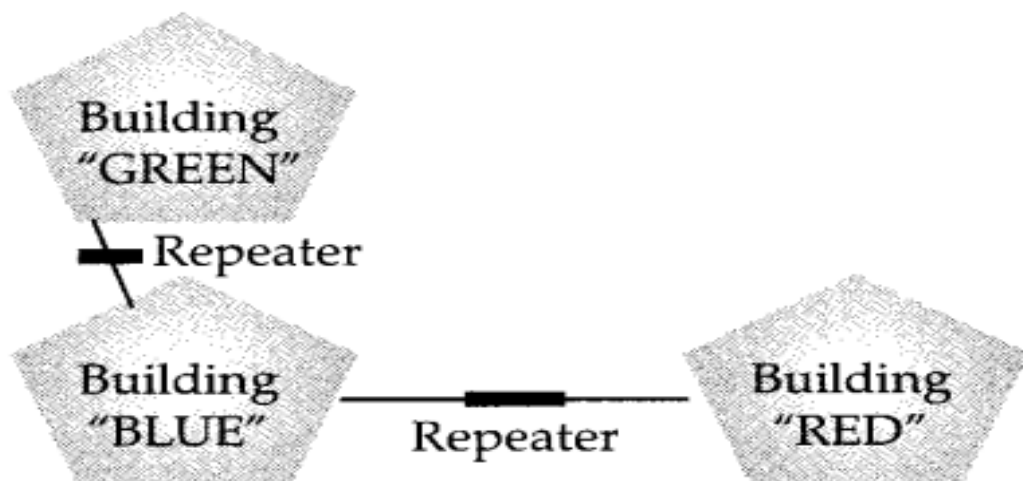
1. The most suitable place to install server is building "RED" because this building has maximum computer which reduce communication delay.

(ii) Cable layout. (Bus topology).



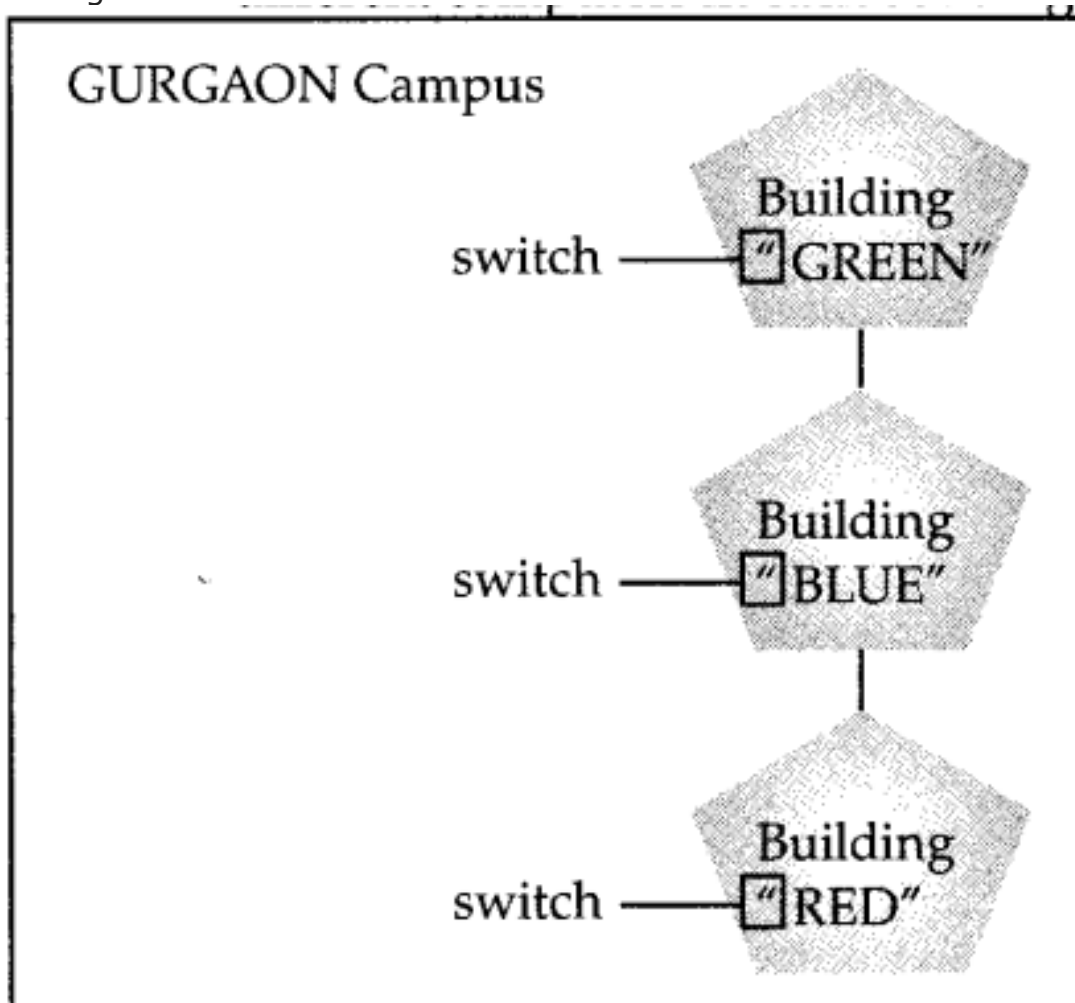
2. (a) Since the cabling distance between buildings GREEN, BLUE and RED are quite large, so a repeater each, would ideally be need along their path to avoid loss of signals during the course of data flow in their routes.

GURGAON Campus



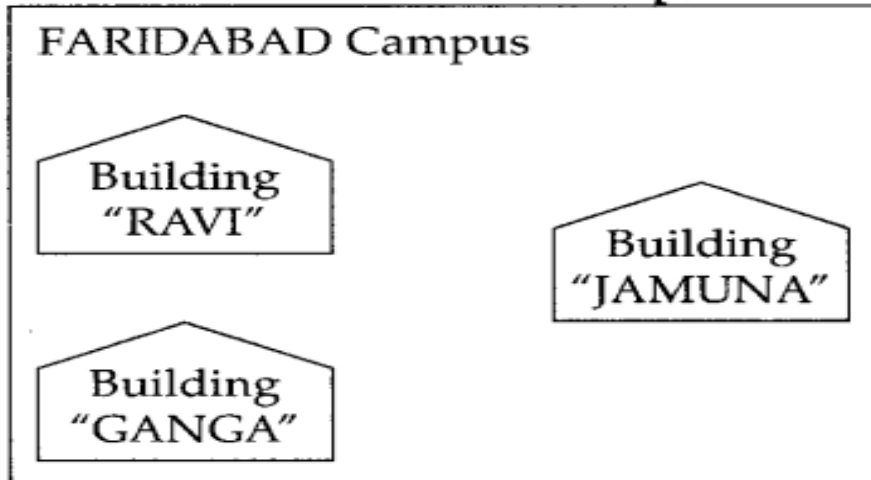


(b) In the layout a switch each, would be needed in all the buildings, to interconnect the group of cables from the different computers in each building.



(iv) Optical fiber

10) Granuda Consultants are setting up a secured network for their office campus at Faridabad for their day to day office and web-based activities. They are planning to have connectivity between 3 building and the head office situated in Kolkata. Answer the questions (i) to (iv) after going through the building positions in the campus and other details, which are given below:



**Distances between various buildings:**

Building "RAVI" to Building "JAMUNA"	120 m
Building "RAVI" to Building "GANGA"	50 m
Building "GANGA" to Building "JAMUNA"	65 m
Faridabad Campus to Head Office	1460 km

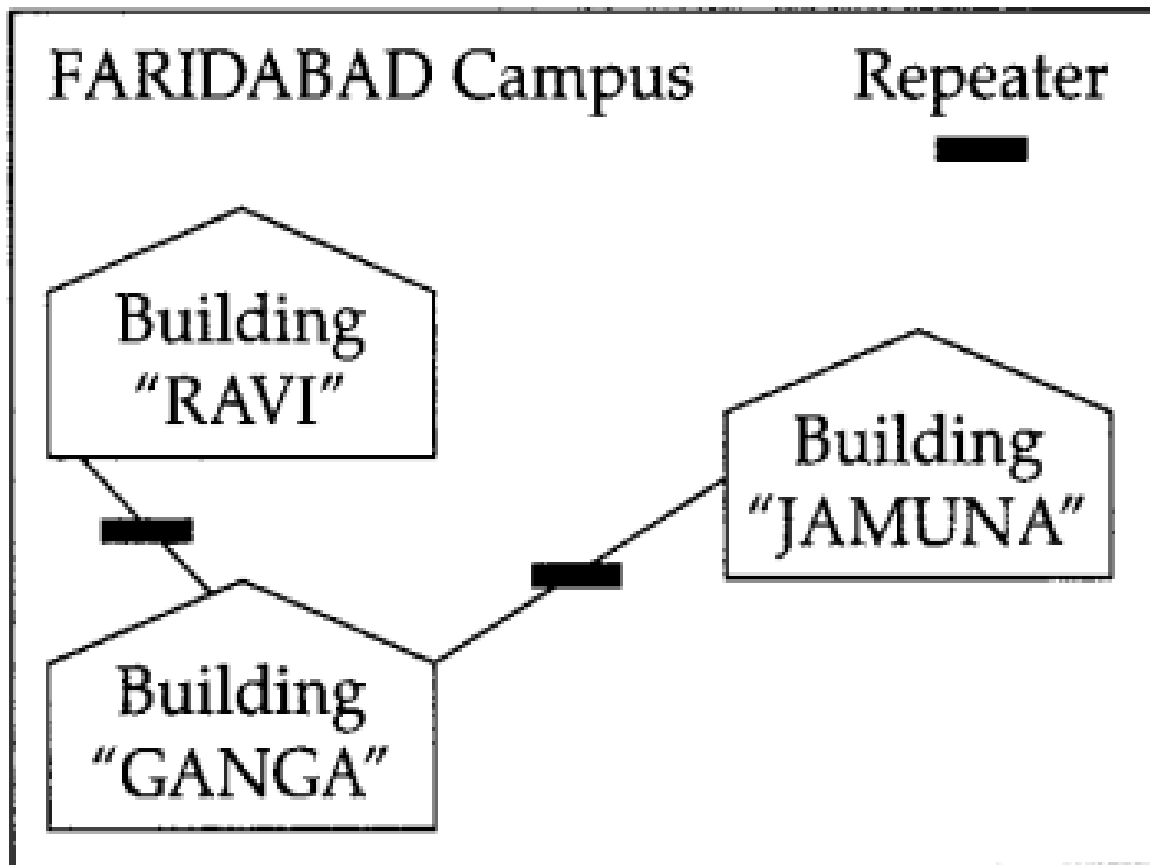
**Number of Computers:**

Building "RAVI"	25
Building "JAMUNA"	150
Building "GANGA"	51
Head Office	10

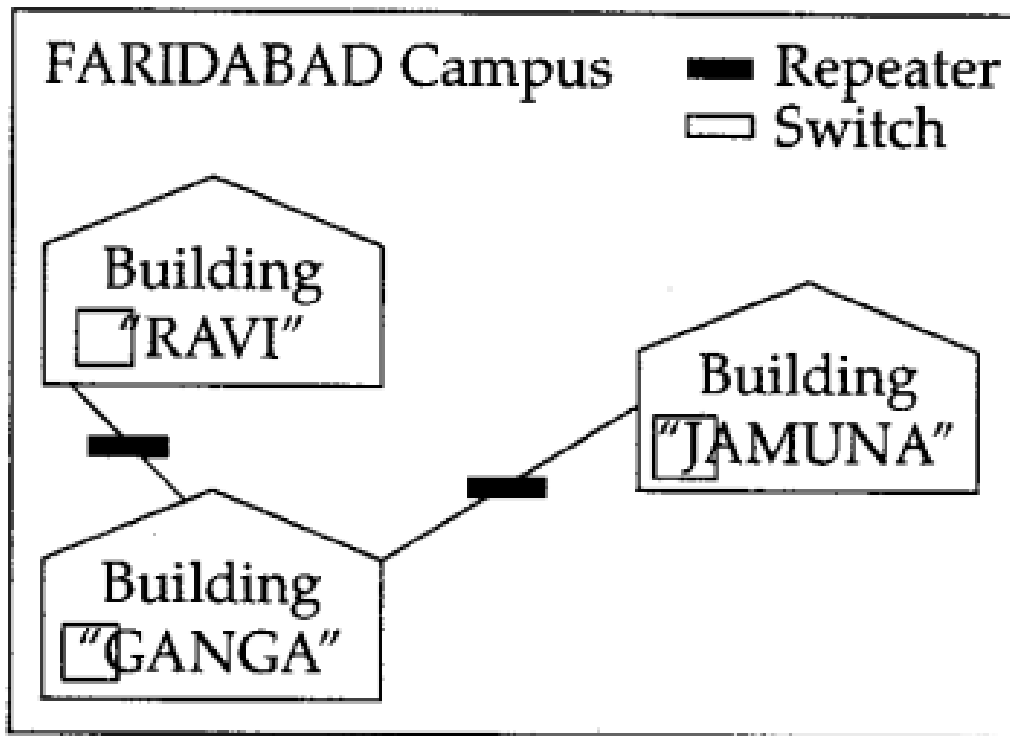
1. Suggest the most suitable place (i.e., block) to house the server of this organization. Also give a reason to justify your suggested location.
2. Suggest a cable layout of connections between the buildings inside the campus.
3. Suggest the placement of the following devices with justification:
  - o Repeater
  - o Switch
4. The organization is planning to provide a high-speed link with its head office situated in the KOLKATA using a wired connection. Which of the following cable will be most suitable for this job?
  - o Optical Fibre
  - o Co-axial Cable
  - o Ethernet Cable

**Answer:**

1. The most suitable place to install server is building "JAMUNA" because this building has maximum computer which reduce the communication delay.
2. Cable layout. (Bus topology).



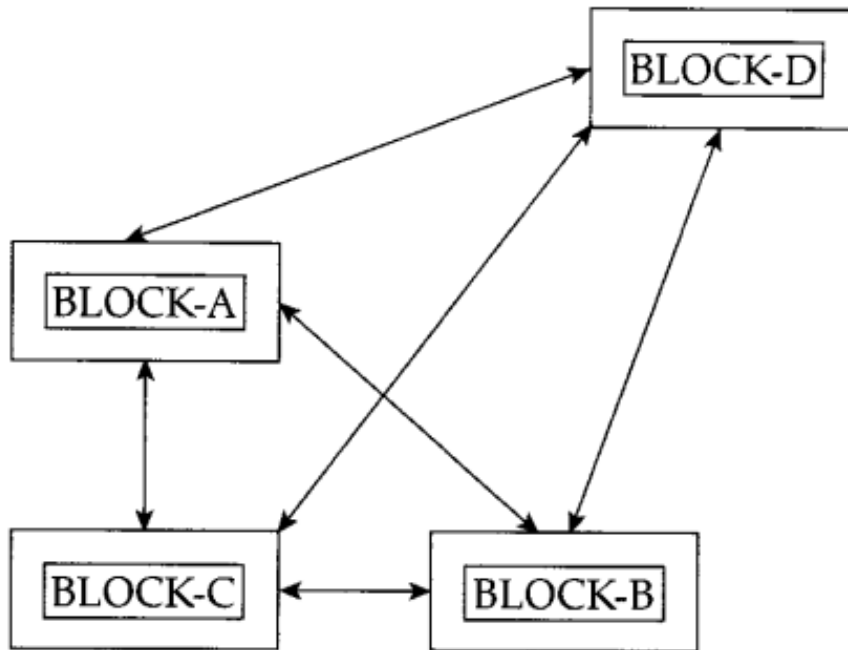
3. (a) Since the cabling distance between buildings GANGA and JAMUNA are quite large, so a repeater each, would ideally be needed along their path to avoid loss of signals during the course of data flow in these routes.
- (b) In the layout a switch each would be needed in all the building, to interconnect the group of cables from the different computers in each building.



#### 4. Optical fiber

11) Mudra publishing is a group of companies engaged in publishing IT related books located in the hilly area of Shimla. The companies are located in four different, blocks whose layout is shown in the following figure. Answer the questions (i) to (iv) with the relevant justify-cations.

#### **Mudra publishing**



**Distance between various Blocks:**

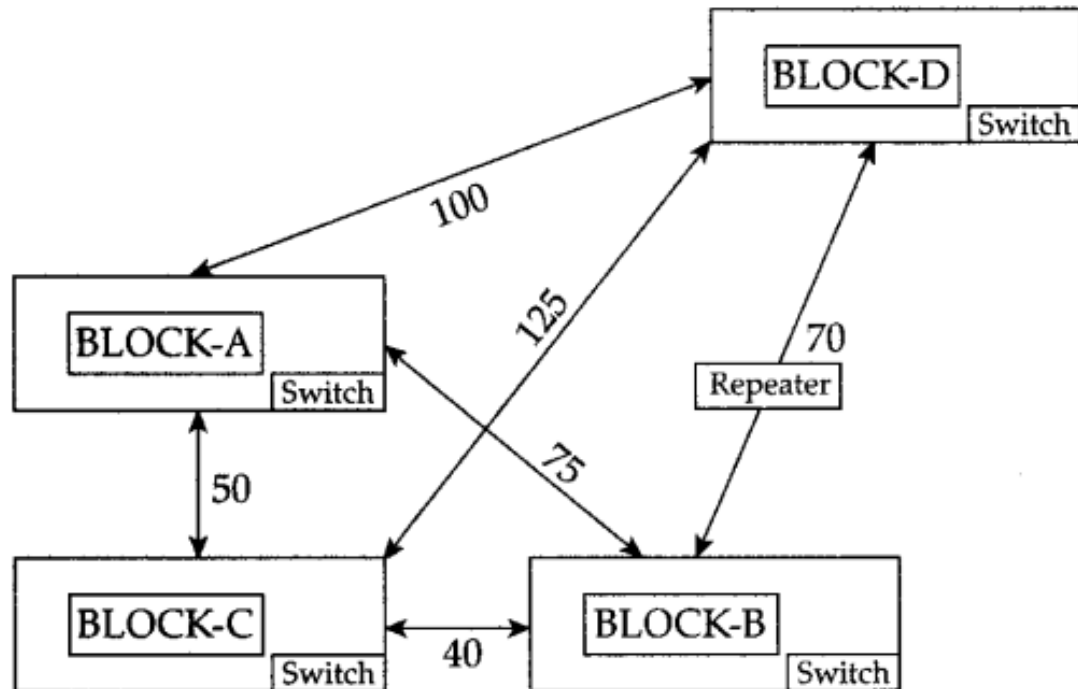
1. Block A to Block C is 50 m
2. Block A to Block D is 100 m
3. Block B to Block C is 40 m
4. Block B to Block D is 70 m
5. Block C to Block D is 125 m
- Number of Computers
6. Block A is 25
7. Block B is 50
8. Block C is 20
9. Block D is 120

1. Suggest a suitable network topology between the blocks.
2. Which is the most suitable block to house the server of this organization?
3. Suggest the placement of the following devices with justification
  - o Repeater
  - o Switch

4. The organization is planning to link the whole blocks to its marketing Office in Delhi. Since cable connection is not possible from Shimla, suggest a way to connect it with high speed.

**Answer:**

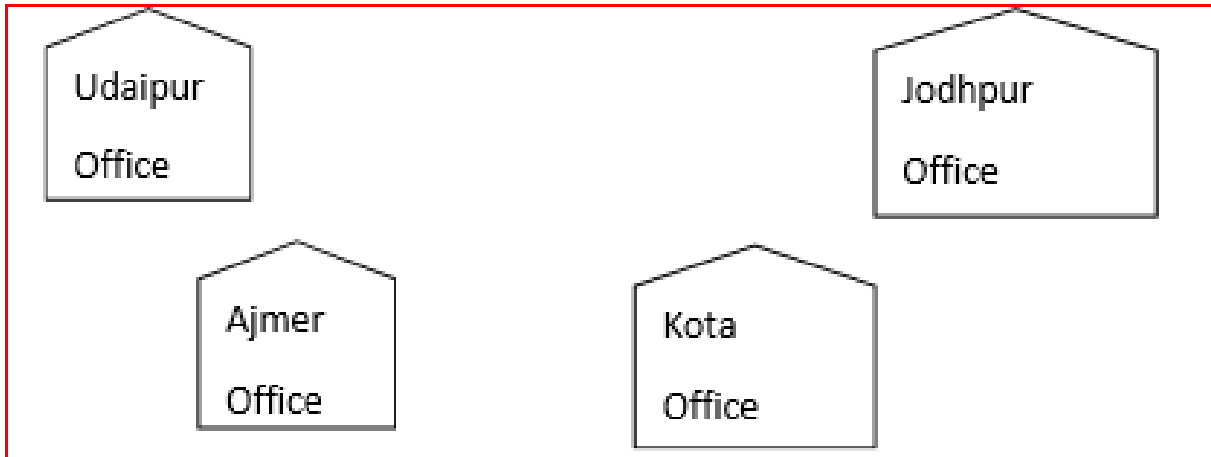
1. Suitable topology is bus topology.
2. The most suitable block for hosting server is BLOCK-D because this block has maximum number of computers.  
Mudra Publishing



3. Switch is a device used to segment network into different sub-networks so switch will exist in all the blocks. Since distance between BLOCK-D and BLOCK-C is large so repeater will be install between BLOCK-D and BLOCK-C.
4. The most economical way to connect it with a reasonable high speed would be the use radio wave transmission, as they are easy to install, can travel long distance and penetrate buildings easily, so they are used for communication, both indoors and outdoors. Radio waves also have the advantage of being Omni-directional. They can travel in all the directions from the source, so that the transmitter and receiver do not have to be carefully aligned physically.

**4 Marks Unsolved Questions**  
**[ CASE STUDY ]**

1) Laxmi Marketing Ltd. has four branches in its campus named Udaipur, Kota, Jodhpur and Ajmer. Laxmi Marketing Ltd. wants to establish the networking between all the four offices.



Approximate distances between these offices as per network survey team are as follows:

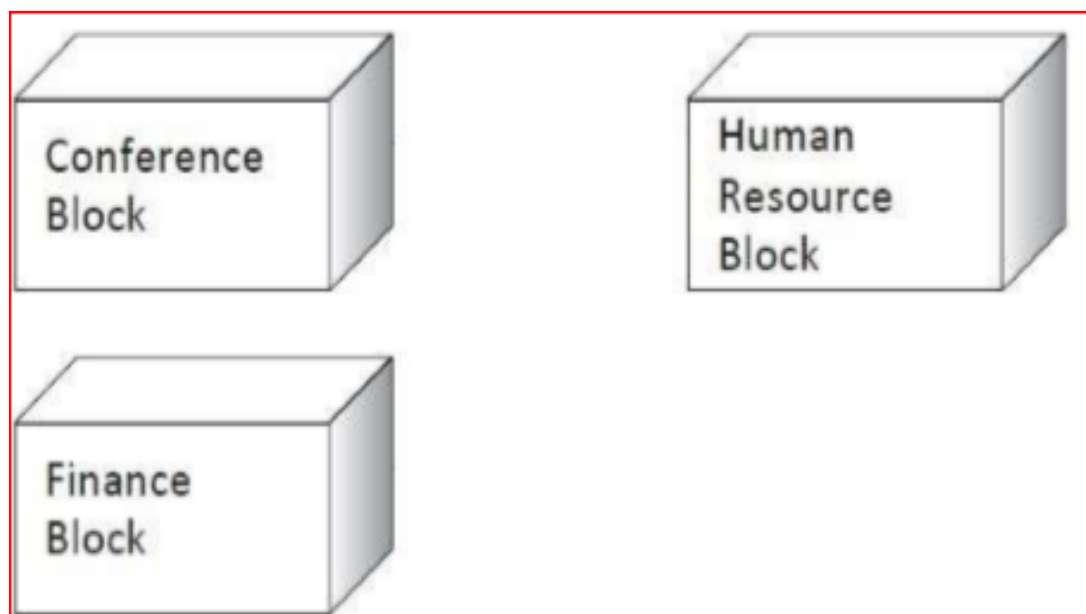
Place From	Place To	Distance
Udaipur	Jodhpur	30 m
Jodhpur	Kota	40 m
Kota	Ajmer	25 m
Udaipur	Ajmer	150 m
Jodhpur	Ajmer	105 m
Udaipur	Kota	60 m

City	No. of Computers
Udaipur	40
Jodhpur	80
Kota	200
Ajmer	60

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

- i. Suggest the most suitable place (i.e., Block/Center) to install the server of this organization with a suitable reason.
- ii. Suggest an ideal layout for connecting these blocks/centers for a wired connectivity.
- iii. Which device will you suggest to be placed/installed in each of these offices to efficiently connect all the computers within these offices?
- iv. Suggest the placement of a Repeater in the network with justification.
- v. The organization is planning to connect its new office in Delhi, which is more than 1250 km current location. Which type of network out of LAN, MAN, or WAN will be formed? Justify your answer.

**2. ABC CONSULTANTS is a professional consultancy company. The company is planning to set up new offices in India with its hub at Gurugram. As a network adviser, you have to understand their requirements and suggest to them the best available solutions.**





**Block-to-Block distance (in Mtrs.):**

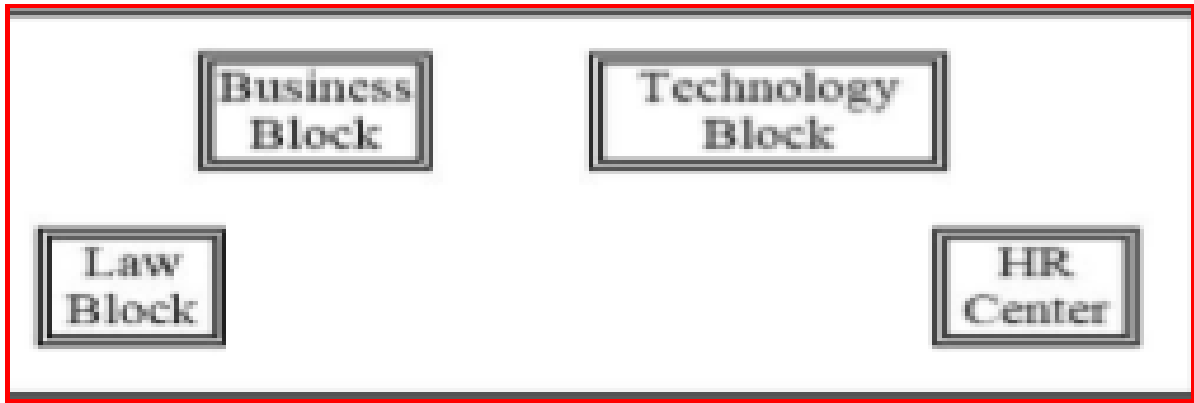
Block (From)	Block (To)	Distance
Human Resources	Conference	60
Human Resources	Finance	60
Conference	Finance	120

**Expected Number of Computers to be installed in each block:**

Block	Computers
Human Resources	125
Conference	25
Finance	60

- (a) What will be the most appropriate block where organization should plan to install their server?
- (b) Draw a block-to-block cable layout to connect all the buildings in the most appropriate manner for efficient communication.
- (c) Which of the following devices will you suggest to connect each computer in each of the above buildings?
- (i) Gateway
  - (ii) Switch
  - (iii) Modem
- (d) Write names of any two popular web browsers.

**3. MyPace University is setting up its academic blocks at Naya Raipur and is planning to set up a network. The University has 3 academic blocks and one Human Resource Center as shown in the diagram below:**



Center to Center distances between various blocks/center is as follows

Law Block to business Block	40m
Law block to Technology Block	80m
Law Block to HR center	105m
Business Block to technology Block	30m
Business Block to HR Center	35m
Technology block to HR center	15m

Law Block	15
Technology Block	40
HR center	115
Business Block	25

- Suggest the most suitable place (i.e., Block/Center) to install the server of this University with a suitable reason.
- Suggest an ideal layout for connecting these blocks/centers for a wired connectivity.

c) Which device will you suggest to be placed/installed in each of these blocks/centers to efficiently connect all the computers within these blocks/centers.

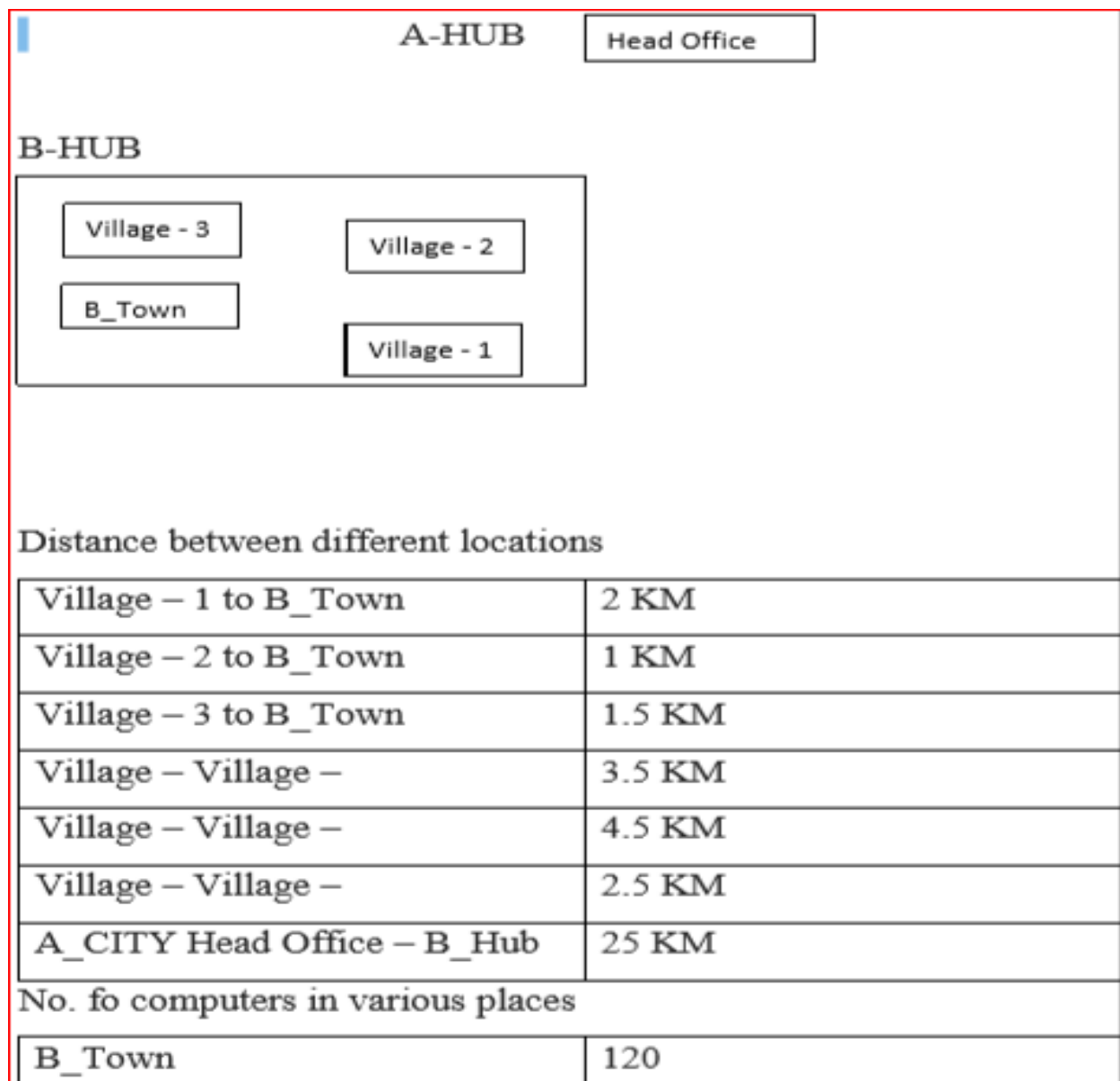
d) Suggest the placement of a Repeater in the network with justification.

e) The university is planning to connect its admission office in Delhi, which is more than 1250km from university.

Which type of network out of LAN, MAN, or WAN will be formed? Justify your answer.

**4) Zigma is a knowledge and skill community which has an aim to uplift the standard of knowledge and skills in the society. It is planning to set-up its training centers in multiple towns and villages in India with its head offices in the nearest cities. They have created a model of their network with a city, a town and 3 villages as follows. As a network consultant, you have to suggest the best network related solutions for their issues/problems raised in (i) to (v) keeping in mind the distances between various locations and other given parameters.**

Village - 1	15	
Village - 2	10	
Village - 3	15	
A_City Head Office	6	



**5)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 Centre as shown in the diagram given below:**

Business

Technology Block

Law Block

HR Centre

Centre-to-Centre distance between various blocks is as follows:

Law block to business block	40 m
Law block to technology block	80 m
Law block to HR block	105 m
Business block to technology block	30 m
Business block to HR block	35 m
Technology block to HR block	15 m

Number of computers in each of the buildings is as follows:

Law block	15
Technology block	40
HR Centre	115
Business block	25

- Suggest a cable layout of connection between the blocks.
- Suggest the most suitable place to house the server of the organization with suitable reason.
- Which device should be placed/installed in each of these blocks to efficiently connect all the computers within these blocks?

(d) The university is planning to link its sales counters situated in various parts of the other cities. Which type of network out of LAN, MAN or WAN will be formed?

(e) Which network topology may be preferred in each of these blocks?

**6) Rehaana Medicos Center has set up its new center in Dubai. It has four buildings as shown in the diagram given below:**



Distance between various building are as follows:

Accounts to research Lab	55m
Accounts to store	150m
Store to packaging unit	160m
Packaging unit to research lab	60m
Accounts to packaging unit	125m
Store to research lab	180m

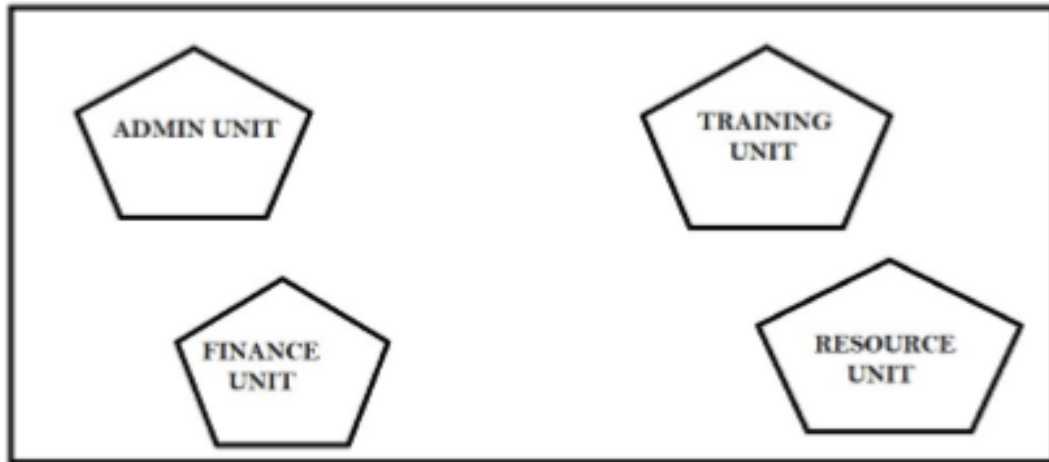
Number of Computers

Accounts	25
Research Lab	100
Store	15
Packaging Unit	60

As a network expert, provide the best possible answer for the following queries:

- 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 following device with justification: a) Repeater b) Hub/Switch

**7) "VidyaDaan" an NGO is planning to setup its new campus at Nagpur for its web-based activities. The campus has four (04) UNITS as shown below:**



→ Distances between above UNITs are given here s under:

UNIT-1	UNIT-2	DISTANCE(In mtrs.)
ADMIN	TRAINING	65
ADMIN	RESOURCE	120
ADMIN	FINANCE	100
FINANCE	TRAINING	60
FINANCE	RESOURCE	40
TRAINING	RESOURCE	50

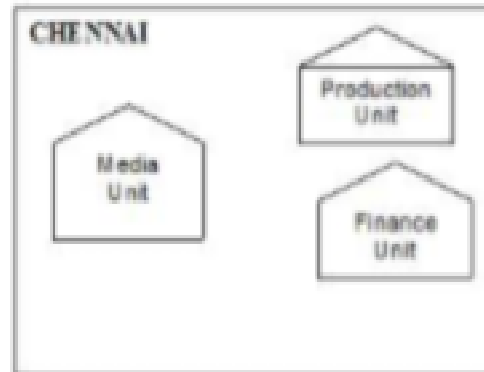
→ No. of Computers in various UNITs are:

UNIT	NO. OF COMPUTERS
ADMIN	150
FINANCE	25
TRAINING	90
RESOURCE	75

- (i) Suggest an ideal cable layout for connecting the above UNITS.
- (ii) Suggest the most suitable place i.e. UNIT to install the server for the above NGO.
- (iii) Which network device is used to connect the computers in all UNITS?
- (iv) Suggest the placement of Repeater in the UNITS of above network.

**8) "China Middleton Fashion" is planning to expand their network in India, starting with two cities in India to provide infrastructure for distribution of their product. The company has planned to set up their main office units in Chennai at three locations and have named their offices as "Production Unit", "Finance Unit" and "Media Unit". The company has its corporate unit in New Delhi. A rough layout of the same is as follows: INDIA**





Approximate distances between these Units is as follows:

From	To	Distance
Production	Finance Unit	70 Mtr
Production	Media Unit	15 KM
Production	Corporate Unit	2112 KM
Finance	Media Unit	15 KM

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

Production Unit	150
Finance Unit	35
Media Unit	10
Corporate Unit	30

- i) Suggest the kind of network required (out of LAN, MAN, WAN) for connecting each of the following office units:
  - a. Production Unit and Media Unit
  - b. Production Unit and Finance Unit
- ii) Which of the following devices will you suggest for connecting all the computers within each of their office units?

\*Switch/Hub

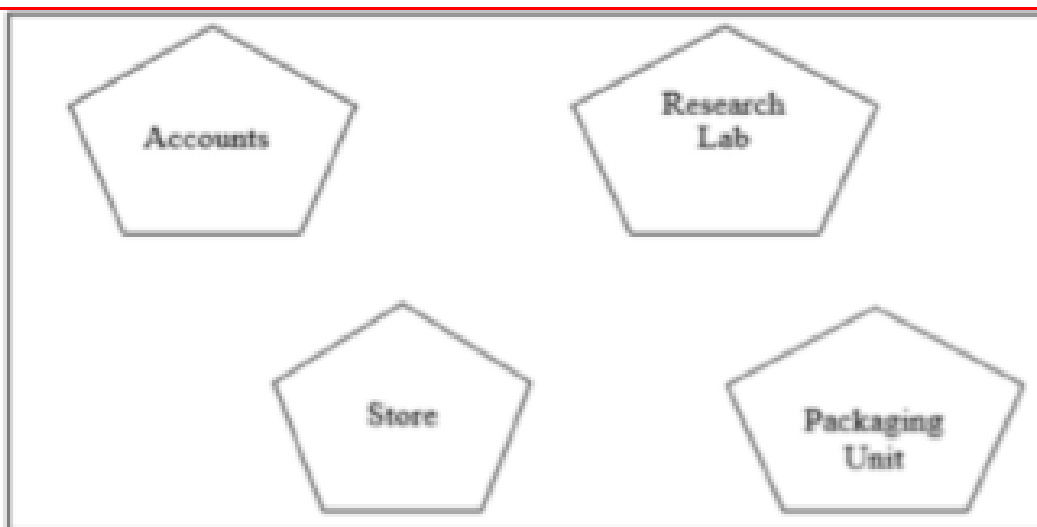
\*Modem

\*Telephone

iii) Suggest a cable layout for connecting the company's local office units in Chennai.

iv) Suggest the most suitable place to house the server for the organization with suitable reason.

**9)Rehaana Medicos Center has set up its new center in Dubai. It has four buildings as shown in the diagram given below:**



Distances between various buildings are as follows:

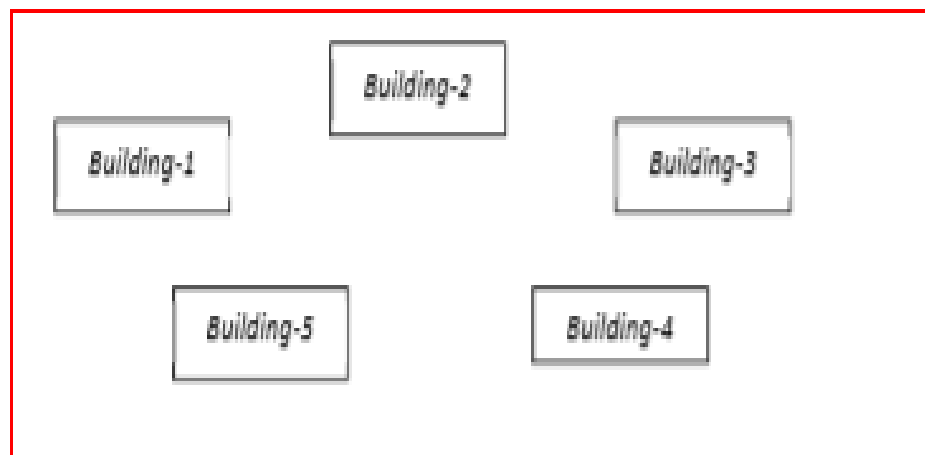
Accounts to Research Lab	55 m
Accounts to Store	150 m
Store to Packaging Unit	160 m
Packaging Unit to Research Lab	60 m
Accounts to Packaging Unit	125 m
Store to Research Lab	180 m

Accounts	25
Research Lab	100
Store	15
Packaging Unit	60

As a network expert, provide the best possible answer for the following queries:

- 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 the placement of the Hub/ Switch with justification.

**10) PVS Computers decided to open a new office at Ernakulum, the office consist of Five Buildings and each contains number of computers. The details are shown below.**



### Distance between the buildings

Building 1 and 2	20 Meters
Building 2 and 3	50 Meters
Building 3 and 4	120 Meters
Building 3 and 5	70 Meters
Building 1 and 5	65 Meters
Building 2 and 5	50 Meters

Building	No of computers
1	40
2	45
3	110
4	70
5	60

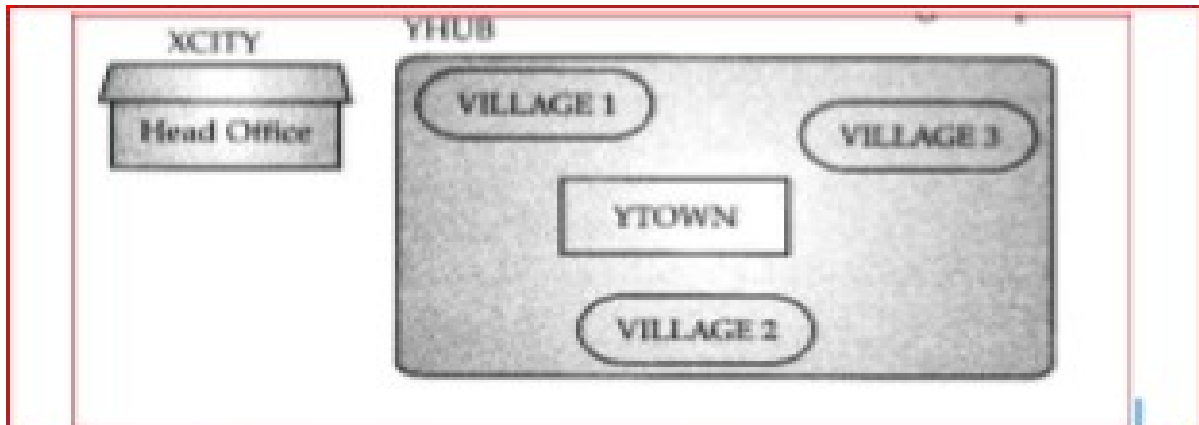
Computers in each building are networked but buildings are not networked so far. The Company has now decided to connect building also.

- (i) Suggest a cable layout for connecting the buildings
- (ii) Do you think anywhere Repeaters required in the campus? Why
- (iii) Where server is to be installed? Why?

**11) Intelligent Hub India is a knowledge community aimed to uplift the standard of skills and knowledge in the society. It is planning to setup its training centres in multiple towns and villages of India with its head offices in the nearest cities. They have created a model of their network with a city, a town and 3 villages as given. As a network consultant, you have to suggest the best network related solution for their issues/problems raised in (i) to (v) keeping in mind the distance between various locations and given parameters.**

Number of computers installed at various locations are as follows:

YTOWN	100
VILLAGE 1	10
VILLAGE 2	15
VILLAGE 3	15
CITY OFFICE	5



Shortest distance between various locations:

VILLAGE 1 To YTOWN	2 KM
VILLAGE 2 To YTOWN	1.2 KM
VILLAGE 3 To YTOWN	3 KM
VILLAGE 1 To VILLAGE 2	3.5 KM
VILLAGE 1 To VILLAGE 3	4.5 KM
VILLAGE 2 To VILLAGE 3	3.5 KM
CITY Head office to YHUB	30 KM

Note:

\* In Villages, there are community centres, in which one room has been given as training center to this organization to install computers.

\* The organization has got financial support from the government and top IT companies.

1. Suggest the most appropriate location of the SERVER in the YHUB (out of the 4 locations), to get the best and effective connectivity. Justify your answer.

2. Suggest the best cable layout (location to location) to efficiently connect various locations within the YHUB.

3. Which hardware device will you suggest to connect all the computers within each location of YHUB?

## **ABBREVIATIONS RELATED TO COMPUTER NETWORK**

<b>1</b>	<b>NIU</b>	<b>Network Interface Unit</b>
<b>2</b>	<b>MAC</b>	<b>Media Access Control</b>
<b>3</b>	<b>TCP/IP</b>	<b>Transmission Control Protocol/Internet Protocol</b>
<b>4</b>	<b>PAN</b>	<b>Personal Area Network</b>
<b>5</b>	<b>LAN</b>	<b>Local Area Network</b>
<b>6</b>	<b>MAN</b>	<b>Metropolitan Area Network</b>
<b>7</b>	<b>WAN</b>	<b>Wide Area Network</b>
<b>8</b>	<b>UTP</b>	<b>Unshielded Twisted Pair</b>
<b>9</b>	<b>STP</b>	<b>Shielded Twisted Pair</b>
<b>10</b>	<b>Mbps</b>	<b>Megabits per sec</b>
<b>11</b>	<b>EMI</b>	<b>Electro Magnetic Interference</b>
<b>12</b>	<b>RJ</b>	<b>Registered Jack</b>
<b>13</b>	<b>Wi-Fi</b>	<b>Wireless Fidelity</b>
<b>14</b>	<b>VPN</b>	<b>Virtual Private Network</b>
<b>15</b>	<b>IAAS</b>	<b>Infrastructure as A Service</b>
<b>16</b>	<b>PAAS</b>	<b>Platform as A Service</b>
<b>17</b>	<b>SAAS</b>	<b>Software as A Service</b>
<b>18</b>	<b>DAAS</b>	<b>Desktop as A Service</b>
<b>19</b>	<b>IOT</b>	<b>Internet Of Things</b>
<b>20</b>	<b>NIC</b>	<b>Network Interface Card</b>
<b>21</b>	<b>CSMA/CD</b>	<b>Carrier Sense Multiple Access/Collision Detection</b>
<b>22</b>	<b>CSMA/CA</b>	<b>Carrier Sense Multiple Access/Collision Avoidance</b>
<b>23</b>	<b>DNS</b>	<b>Domain Name System</b>
<b>24</b>	<b>DHCP</b>	<b>Dynamic Host Configuration Protocol</b>
<b>25</b>	<b>ISP</b>	<b>Internet Service Provider</b>
<b>26</b>	<b>URL</b>	<b>Uniform Resource Locator</b>

<b>27</b>	<b>HTTP</b>	<b>Hyper Text Transfer Protocol</b>
<b>28</b>	<b>FTP</b>	<b>File Transfer Protocol</b>
<b>29</b>	<b>FDMA</b>	<b>Frequency Division Multiple Access</b>
<b>30</b>	<b>TDMA</b>	<b>Time division Multiple Access</b>
<b>31</b>	<b>CDMA</b>	<b>Code Division Multiple Access</b>
<b>32</b>	<b>SIM</b>	<b>Subscriber Identity Module</b>
<b>33</b>	<b>EDGE</b>	<b>Enhanced Data rates for GSM Evolution</b>
<b>34</b>	<b>UMTS</b>	<b>Universal Mobile Telecommunications System</b>
<b>35</b>	<b>LTE</b>	<b>Long Term Evolution</b>
<b>36</b>	<b>GPRS</b>	<b>General Packet Radio Service</b>
<b>37</b>	<b>ICMP</b>	<b>Internet Control Message Protocol</b>
<b>38</b>	<b>OSI</b>	<b>Open Systems Interconnection</b>
<b>39</b>	<b>SMTP</b>	<b>Simple Mail Transfer Protocol</b>
<b>40</b>	<b>VoIP</b>	<b>Voice Over Internet Protocol</b>
<b>41</b>	<b>SIP</b>	<b>Session Initiation Protocol</b>
<b>42</b>	<b>QoS</b>	<b>Quality of Service</b>
<b>43</b>	<b>POP</b>	<b>Post Office Protocol</b>
<b>44</b>	<b>IMAP</b>	<b>Internet Mail Access Protocol</b>
<b>45</b>	<b>SCP</b>	<b>Secure Copy Protocol</b>
<b>46</b>	<b>SSH</b>	<b>Secure Shell</b>
<b>47</b>	<b>IEEE</b>	<b>Institute of Electrical &amp; Electronic Engineering</b>
<b>48</b>	<b>NFC</b>	<b>Near-Field Communication</b>
<b>49</b>	<b>NFS</b>	<b>Network File System</b>
<b>50</b>	<b>NTP</b>	<b>Network Time Protocol</b>
<b>51</b>	<b>SLIP</b>	<b>Serial Line Internet Protocol</b>
<b>52</b>	<b>PPP</b>	<b>Point to Point Protocol</b>
<b>53</b>	<b>UDP</b>	<b>User Datagram Protocol</b>
<b>54</b>	<b>SNMP</b>	<b>Simple Network Management Protocol</b>