

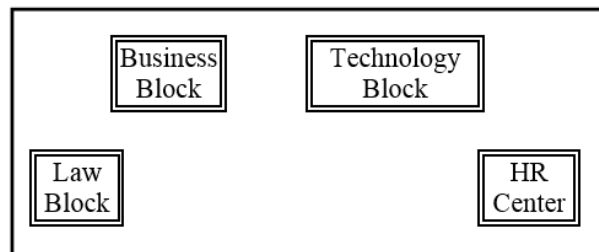
Computer Networks – Descriptive questions

1. What is a computer network?
2. Expand the terms: HTTP, HTTPS, SSH, SCP, POP, IMAP, SMTP, FTP, VoIP, URL
3. What is **VoIP**? (CBSE 2011)
4. What, out of the following, will you use to have an audio-visual chat with an expert sitting in a faraway place to fix-up a technical issue? (CBSE 2012)
Email, VoIP, FTP
5. Give one suitable example of each – URL and Domain Name. (CBSE 2012)
6. What is the difference between domain name and IP address? (CBSE 2013)
7. Write two advantages of using an optical fiber cable over an Ethernet cable to connect two service stations, which are 190m away from each other. (CBSE 2013)
8. Write one characteristic each for 2G and 3G Mobile technologies. (CBSE 2014)
9. Which type of network (out of LAN, PAN, MAN) is formed when you connect two mobiles using Bluetooth to transfer a picture file? (CBSE 2014)
10. Write any two important characteristics of Cloud Computing. (CBSE 2014)
11. Differentiate between ftp and http. (CBSE 2015)
12. Out of the following, which is the fastest (i) wired and (ii) wireless medium of communication? (CBSE-Delhi, Outside Delhi 2015)
Infrared, Coaxial Cable, Ethernet Cable, Microwave, Optical Fiber
13. Give two examples of PAN and LAN type of networks. (CBSE- Delhi 2016)
14. Which protocol helps us to browse through web pages using internet browsers? Name any one internet browser. (CBSE- Delhi 2016)
15. Write two advantages of 4G over 3G Mobile Telecommunication Technologies in terms of speed and services. (CBSE- Delhi 2016)
16. Differentiate between PAN and LAN types of networks. (CBSE-Outside Delhi 2016)
17. Which protocol helps us to transfer files to and from a remote computer? (CBSE-Outside Delhi 2016)
18. Write two advantages of 3G over 2G Mobile Telecommunication Technologies in terms of speed and services. (CBSE-Outside Delhi 2016)
19. What do you understand by IoT?
20. Define client-server model of a computer network.
21. What is cloud computing? What are the three types of services provided on cloud?
22. Write any two advantages and two disadvantages of cloud computing.
23. Differentiate between private cloud and public cloud with one example of each.
24. What is attenuation?
25. What is secure connection? How can it be achieved?
26. Differentiate between IPv4 and IPv6 addresses with an example of each.
27. Differentiate between carrier waves and signal waves.
28. Define the terms modulation and demodulation w.r.t. unguided media.
29. Differentiate between AM and FM.
30. What is meant by collision in a network? How does it affect the performance of a network?
31. How is collision prevention different from collision resolution?
32. What is a routing table?

33. Explain the following network tools:
(i) ping (ii) traceroute (tracert) (iii) ipconfig (iv) nslookup (v) whois (vi) speed-test
34. Which network tool should be used in the following situations:
- To check how long it takes for packets to reach a host
 - To test the connectivity between two nodes on a network
 - To trace the route of packets from source host to destination host
 - To look up DNS record
 - To check the contact information for an IP or domain
 - To check the IP configuration of your computer
 - To control the network connections on your computer
 - to lookup the specific IP address(es) associated with a domain name
 - to determine the Internet bandwidth available to a specific host
 - To determine the quality of Internet connection being used
35. Differentiate between physical address and logical address of a node in a computer network.
36. Differentiate between Guided media and Unguided media with an example of each.
37. Explain the terms: (i) remote login (ii) remote desktop
38. What is Application layer in a computer network?
39. Explain the terms: (i) Wi-Fi (ii) Access Point?
40. Expand and explain the term DNS.

Computer Networks - Network Setup

- (i) Quick Learn University is setting up its academic blocks at Prayag nagar 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: (CBSE 2011)



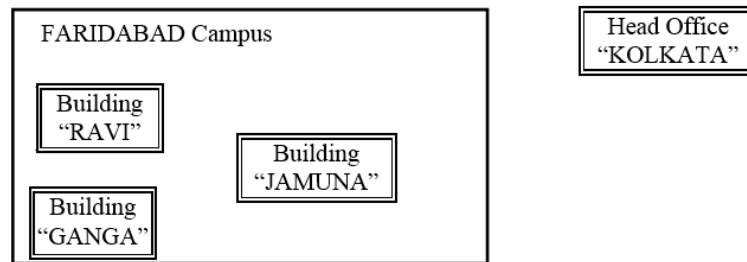
Center to Center distances between various blocks/center is as follows:

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

Number of computers in each of the blocks/Center is as follows:

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

- a) Suggest the most suitable place (i.e., Block/Center) to install the server of this University with a suitable reason.
- b) 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) The university is planning to connect its admission office in the closest big city, which is more than 250km from university. Which type of network out of LAN, MAN, or WAN will be formed? Justify your answer.
- (ii) 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 buildings and the head office situated in Kolkata. Answer the questions (a) to (d) after going through the building positions in the campus and other details, which are given below: (CBSE 2012)



Distances between various buildings:

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

Number of computers:

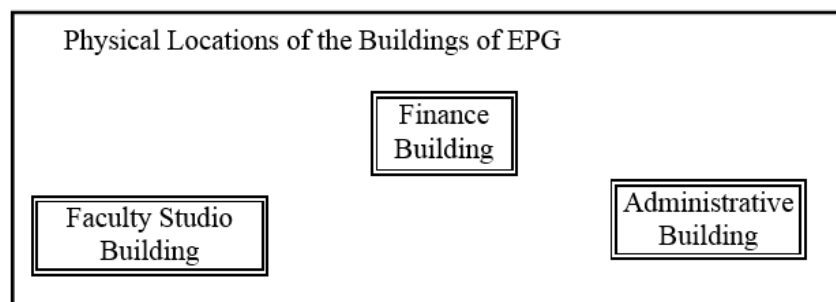
Building "RAVI"	25
Building "JAMUNA"	150
Building "GANGA"	51
Head Office	10

- a) Suggest the most suitable place (i.e. block) to house the server of this organization. Also give a reason to justify your suggested location.
- b) Suggest a cable layout of connections between the buildings inside the campus.
- c) Suggest the placement of the following devices with justification:
- (i) Switch
 - (ii) Repeater

d) The organization is planning to provide a high speed link with its head office situated in KOLKATA using a wired connection. Which of the following cable will be most suitable for this job?

- (i) Optical Fiber
- (ii) Co-axial cable
- (iii) Ethernet cable

(iii) Expertia Professional Global (EPG) is an online corporate training provider company for IT related courses. The company is setting up their new campus in Mumbai. You as a network expert have to study the physical locations of various buildings and the number of computers to be installed. In the planning phase, provide the best possible answers for the queries (a) to (d) raised by them. (CBSE 2013)



Building to Building distances (in Mtrs.)

FROM	To	Distance
Administrative Building	Finance Building	60
Administrative Building	Faculty Studio building	120
Finance Building	Faculty Studio building	70

Number of computers in each of the blocks/Center is as follows:

Administrative Building	20
Finance Building	40
Faculty Studio building	120

- a) Suggest the most appropriate building, where EPG should plan to install the server.
- b) Suggest the most appropriate building to building cable layout to connect all three buildings for efficient communication.
- c) Which type of network out of the following is formed by connecting the computers of these three buildings?

LAN, MAN, WAN

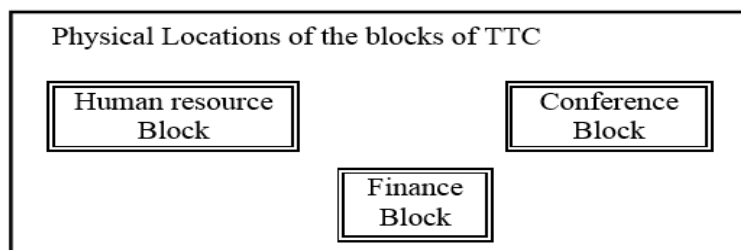
- d) Which wireless channel out of the following should be opted by EPG to connect to students of all over the world?

Infrared, Microwave, Satellite

(iv) 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 (a) to (d) below.

(CBSE 2014)



Block to Block distances (in Mtrs.)

FROM	To	Distance
Human resource	Conference	110
Human resource	Finance	40
Conference	Finance	80

Number of computers in each of the blocks/Center is as follows:

Human resource	25
Finance	120
Conference	90

- What will be the most appropriate block, where TTC should plan to install the server?
- Draw a block to block cable layout to connect all the buildings in the most appropriate manner for efficient communication.
- 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?

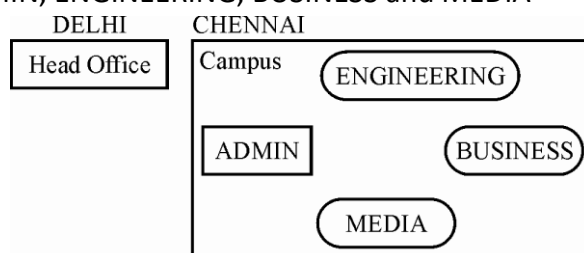
Satellite Link, Infrared, Ethernet cable

- Which of the following devices will be suggested by you to connect each computer in each of the buildings.

Switch, modem, Gateway

- Perfect Edu Services Ltd. is an educational organization. It is planning to setup its India campus at Chennai with its head office at Delhi. The Chennai campus has 4 main buildings – ADMIN, ENGINEERING, BUSINESS and MEDIA

(CBSE 2015)



Shortest distances between various buildings:

ADMIN to ENGINEERING	55 m
ADMIN to BUSINESS	90 m

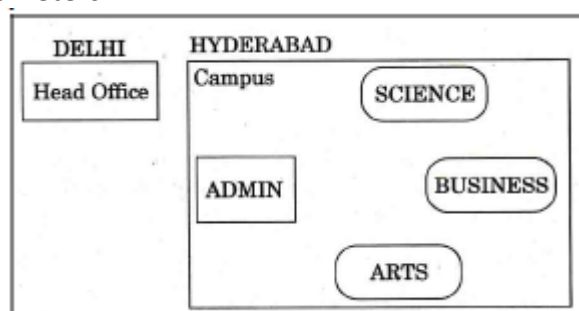
ADMIN to MEDIA	50 m
ENGINEERING to BUSINESS	55 m
ENGINEERING to MEDIA	50 m
BUSINESS to MEDIA	45 m
DELHI Head Office to CHENNAI Campus	2175 km

Number of Computers installed at various buildings are as follows:

ADMIN	110
ENGINEERING	75
BUSINESS	40
MEDIA	12
DELHI Head Office	20

- Suggest the most appropriate location of the server inside the CHENNAI campus (out of the 4 buildings), to get the best connectivity for maximum no. of computers. Justify your answer.
 - Suggest and draw the cable layout to efficiently connect various buildings within the CHENNAI campus for connecting the computers.
 - Which hardware device will you suggest to be procured by the company to be installed to protect and control the internet uses within the campus?
 - Which of the following will you suggest to establish the online face-to-face communication between the people in the Admin Office of CHENNAI campus and DELHI Head Office?
 - Cable TV
 - Email
 - Video Conferencing
 - Text Chat
- (vi) Xcelencia Edu Services Ltd. is an educational organization. It is planning to set up its India campus at Hyderabad with its head office at Delhi. The Hyderabad campus has 4 main buildings -
- ADMIN, SCIENCE, BUSINESS and MEDIA. (CBSE-Outside Delhi 2015)

You as a network expert have to suggest the best network related solutions for their problems raised in (a) to (d), keeping in mind the distances between the buildings and other given parameters.



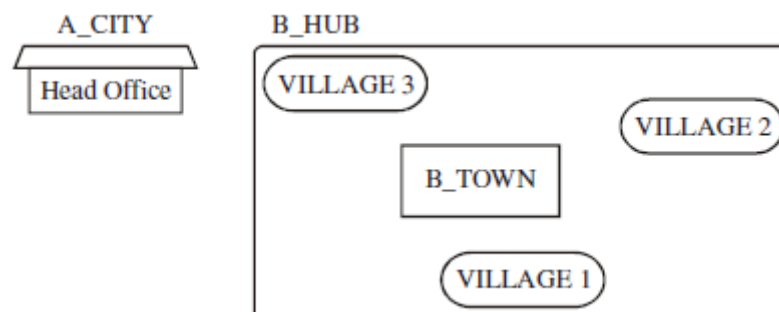
Shortest Distances between various buildings:

ADMIN to SCIENCE	65M
ADMIN to BUSINESS	100m
ADMIN to ARTS	60M
SCIENCE to BUSINESS	75M
SCIENCE to ARTS	60M
BUSINESS to ARTS	50M
DELHI Head Office to HYDERABAD Campus	1600KM

Number of Computers installed at various building are as follows:

ADMIN	100
SCIENCE	85
BUSINESS	40
ARTS	12
DELHI Head Office	20

- Suggest the most appropriate location of the server inside the HYDERABAD campus (out of the 4 buildings), to get the best connectivity for maximum no. of computers. Justify your answer.
 - Suggest and draw the cable layout to efficiently connect various buildings 'within the HYDERABAD campus for connecting the computers.
 - Which hardware device will you suggest to be procured by the company to be installed to protect and control the internet uses within the campus?
 - Which of the following will you suggest to establish the online face-to-face communication between the people in the Admin Office of HYDERABAD campus and DELHI Head Office?
(a) E-mail (b) Text Chat (c) Video Conferencing (d) Cable TV
- (vii) Uplifting Skills Hub India 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 setup its training centers 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 follows:



As a network consultant, you have to suggest the best network related solutions for their issues/problems raised in (a) to (d) keeping in mind the distances between various locations and other given parameters.

Shortest distances between various locations:

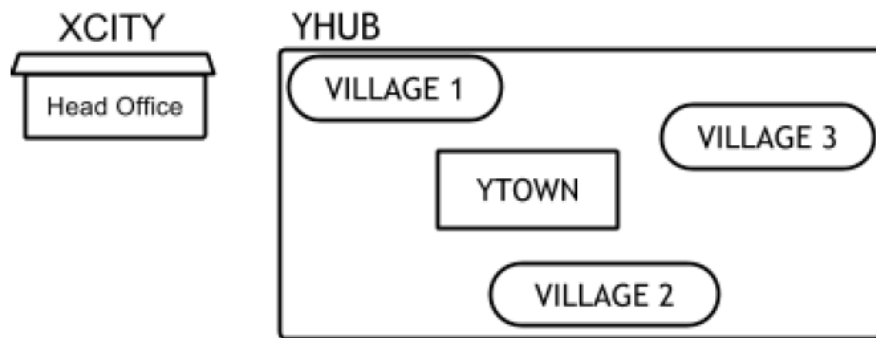
VILLAGE 1 to B_TOWN	2 KM
VILLAGE 2 to B_TOWN	1.0 KM
VILLAGE 3 to B_TOWN	1.5 KM
VILLAGE 1 to VILLAGE 2	3.5 KM
VILLAGE 1 to VILLAGE 3	4.5 KM
VILLAGE 2 to VILLAGE 3	2.5 KM
A_CITY Head Office to B_HUB	25 KM

Number of Computers installed at various locations are as follows:

B_TOWN	120
VILLAGE 1	15
VILLAGE 2	10
VILLAGE 3	15
A_CITY OFFICE	6

Note :

- In Villages, there are community centers, 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.
- a) Suggest the most appropriate location of the SERVER in the B_HUB (out of the 4 locations), to get the best and effective connectivity. Justify your answer.
 - b) Suggest the best wired medium and draw the cable layout (location to location) to efficiently connect various locations within the B_HUB.
 - c) Which hardware device will you suggest to connect all the computers within each location of B_HUB?
 - d) Which service/protocol will be most helpful to conduct live interactions of Experts from Head Office and people at all locations of B_HUB?
- (viii) 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 centers 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 follows.
- As a network consultant, you have to suggest the best network related solutions for their issues/problems raised in (a) to (d), keeping in mind the distances between various locations and other given parameters.



Shortest distance between various locations:

VILLAGE 1 to YTOWN	2 KM
VILLAGE 2 to YTOWN	1.5 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 centers, 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.
- a) 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.
 - b) Suggest the best wired medium and draw the cable layout (location to location) to efficiently connect various locations within the YHUB.
 - c) Which hardware device will you suggest to connect all the computers within each location of YHUB?
 - d) Which service/protocol will be most helpful to conduct live interactions of Experts from Head Office and people at YHUB locations?