

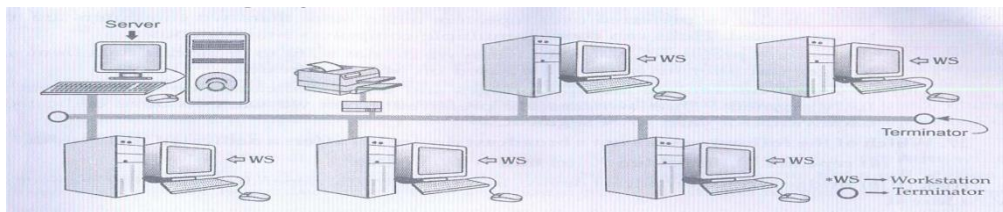
## UNIT I (NETWORKING AND OPEN STANDARDS)

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### Answers To One Mark Questions

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1. It modulates / converts a digital signal into analog signal and vice versa.
2. 198.162.1.1
3. Domain Name Resolution is the process of getting corresponding IP address from a domain name.
4. (iii) set of popular technologies and standards for wireless computer networking
5. Firewall
6. (i) FTP (File Transfer Protocol) (ii) HTTP (Hyper Text Transfer Protocol)
7. (i) Ring Topology (Loop) (ii) Star Topology (Radial)
8. LAN (Local Area Network)
9. TCP/IP (Transmission Control Protocol/Internet Protocol)
10. SMTP (Simple Mail Transfer Protocol)
11. Dos (Denial of Service) attack.
12. Domain Name
- 13.



14. He should install Firewall.
15. GNU, BOSS
16. National Resource Centre for Free and Open Source Software (NRCFOSS) is the government organization that contributes to the growth of FOSS in India.

17. FTP.
18. PAN(Personal Area Network).
19. Telephone Cable, Ethernet Cable, Co-Axial Cable, Optical Fibre.
20. It is owned by a company or an individual.
21. HTTP(Hyper Text Transfer Protocol).
22. Satellite transmission.
23. Repeater
24. Linux and MySQL.
25. Firewall or Intrusion Detection System
26. Repeater
27. Uninterrupted power supply
28. Devnagari, Bengali, Gurmukhi, Gujarati, Kannada, Malayalam, Oriya, Tamil, Arabic, Telugu
29. (i) Bus Topology  
(ii) Star Topology
30. Co-axial Cable
31. Open source software: Linux ,My Sql  
Proprietary Software : Microsoft Office,Oracle
32. Mozilla Firefox, Internet Explorer
33. (i) Repeater  
(ii) LAN
34. Domain Name : cbse.nic.in
35. Function of switch is similar to hub that is to connect different types of devices and computers in network but switch have some advance feature like – monitor and manage network traffic, they also check and monitor the passing IP addresses from them.

36. Unicode provides a unique number for every character, no matter what the platform, no matter what the program, no matter what the language.

OR

Unicode is intended to be a universal character set supporting every written script used in the world. It is a character encoding standard developed by the Unicode consortium. The aim of the standard is to provide universal way of encoding characters of any language, regardless of the computer system or platform, being used.

37. (i)OSS –Open Source Software (ii) ODF –Open Document file Format

38. Repeaters are used in transmission systems to regenerate analog or digital signals distorted by transmission loss.

39. (i) Gateway (ii) Modem

40. Internally computer follows a mechanism to obtain IP address of a website from a URL. This mechanism is known as Domain Name Resolution.

41. Satellite

42. Repeater

43. The above address wrong as number assigned should be in the range 0 to 255 and separated by dot/period (.)

44. FTP (File Transfer Protocol).

45. No, because Source Codes of these demo versions are not available to the public

46. (i) **WAN** Wide Area Network (ii) **OSS** Open Source Software

47. GNU- GNU's Not Unix  
W3C- World Wide Web Consortium

48. MySQL is an OSS supported by almost all major platforms including Linux, Windows, Mac, etc.

49. (i) Windows, Apache ,MySQL, PHP (ii) Linux, Apache ,MySQL, PHP

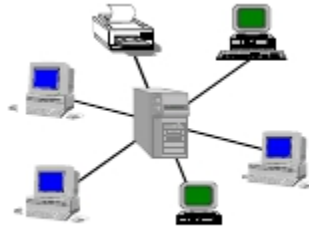
50. A switch is a networking device which is used to connect different LAN segments of a network. A switch also supports packet filtering and forwarding between LAN segments.

51. Trojan Horse like a virus or worm. At the backend, these perform some malicious activities like upload (send) some security files and information from the computer and at the same time download some unwanted files onto the computer.

OR

Trojan Horse- Appears to perform a desirable function for the user steals information through a 'backdoor' /Records browsing activities without the knowledge of the user. Causes system crash or freeze

52.



53. (i) Satellite Communication

(ii) Bluetooth or Infrared whichever is supported by the phone.

54. The economical cable with high speed data transfer can be **Co-axial Cable**.

55. (i) [www.Google.com](http://www.Google.com) (ii) [www.Bing.com](http://www.Bing.com)

56. IP address is 59.181.154.88

URL is <http://www.w3schools.com/home.htm>

57. The MAC (Media Access Control) address refers to the physical address assigned by NIC manufacturer. Example of MAC address is :

12:C8:05:67:2D: FB

58. The first three bytes (parts) of a MAC address represent manufacturer-id and the last three bytes (parts) of a MAC address represent card number.

59. IP address.

60. Domain Name Resolution

61. The system designed to prevent unauthorized access to or from a private network is called firewall.

62. FSF – Free Software Foundation

GPL – General Public Licence

63. A standard refers to an established set of rules, which are approved by a recognized body and is widely used across various software platforms. Different types of standards are:  
(i) Proprietary standards      (ii) Open standards
64. (i) UNICODE    (ii) ISCII (Indian Standard Code for Information Intercange)
65. (i) Using phonetic based text entry    (ii) Using keymap based entry
66. Four bytes( 32 bits). As IP address has four parts and each part consumes one byte.
67. Six bytes (48 bits). As MAC address has six parts and each part consumes one byte.
68. (i) Global System for Mobile Communication  
(ii) Advanced Research Project Agency Network
69. Modem stands for Modulator / Demodulator which converts analog signals into digital signals and vice versa. It is used to connect the computers and transmit data using telephone lines.
70. A hacker is a person who is interested in gaining knowledge about the computer system and gaining unauthorized access to computer system for playful pranks. Whereas; crackers are the programmers with malicious mentality who break into secured system for the purpose of stealing and corrupting data.
71. Cyber law is related to all legal and regulatory aspects of internet and the world wide web. Cyber law works as a regulatory mechanism for electronic commerce. We can say cyber laws are used to control cybercrime.
72. (i) Co-axial cable    (ii) optical fiber
73. (i) Satellite (ii) Radio Waves
74. Cookies also known as browser cookies or tracking cookies are small often encrypted text files. Cookies are created when a user's browser loads a particular website. The website sends information to the browser which then creates a text file.
75. Mesh topology is a group of nodes which are all connected to each other. Every single node is connected to the other nodes in a mesh topology and the chances of connection break downs are minimal in mesh topology.
76. (i) Router    (ii) Modem
77. (i) switch    (ii) Repeater
78.      Star topology.

79. **Denial of service:** DoS attacks are those attacks that prevent the legitimate users of the system, from accessing or using the resources, information, or capabilities of the system.

80. **Authorization :** Authorization confirms the service requestor's credentials.

**Authentication :** Authentication ensures that each entity involved in using a web service- the requestor, the provider etc. – is what it actually claims to be.

Some other network security measures are: Encrypted smart cards, Biometric systems and firewall.

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### Answers To Two Marks Questions

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1. (i) Repeater (ii) Type of network is LAN (Local Area Network)

2. (i) Resource sharing – Both Hardware and Software.

(ii) Cost Saving

(iii) Time saving

(iv) Increased storage

3.

	LAN	WAN
Stands For	Local Area Network	Wide Area Network
Covers	Limited geographical area within an organization or campus only	Very large geographic Area
Example	Network in an office building.	Internet
Ownership	Single person or organization	Collective or distributed ownership.

4. Threats to security in a network:

- Virus / Malicious software.
- Denial of service (DoS) attack
- Snooping
- Eavesdropping

**Role of firewall in Network security:**

A Firewall permits only that data to enter or leave a computer/network for which permissions have been granted by the computer / network administrator.

5. Advantages of Open Source software over Proprietary software:

- Free to use, distribute and modify.
- No dependence on the developer for updates, support and fixes.
- Uses Open Standards

Disadvantages of Open Source software over Proprietary software:

- Lack of Software Support
- Generally low security.

6. Open Standards- OGG and PNG

Proprietary standards- RM and DOC

7. On Analog - Baud  
On Digital - bps (bits per second)
8. This is MAC address.  
MAC address refers to the physical address assigned by NIC manufacturer.
9. Hubs should be preferred over repeaters when more than two computers are to be networked.  
A hub is a hardware device used to connect several computers together.  
Repeater is a device that is used to amplify the signals to reach successfully to the destination.
10. **Telnet (Terminal emulation protocol)** enables an internet user to log on to a remote computer or network and use it as if it were under his or her direct control. Telnet is a member of TCP/IP family of internet protocols and allows communication with any computer linked over the internet even if it does not support TCP/IP specifications.
11. (i) Source code is available and can be customized as per one's requirement.  
(ii) OSS can be freely used, modified and redistributed without any restrictions.
12.  
Font refers to a set of displayable text characters called glyphs, having specific style and size.  
There are two categories of font: **True Type Font** and **Open Type Font**.  
**True Type Font:** It is developed by Apple and licensed to Microsoft. It is 8 bit font which is compatible with Microsoft Windows and MAC OS.  
**Open Type Font:** It is the extension of the True Type Font Format which is 16 bits font and support 65536 characters (Unicode characters).
13. Various protection methods such as (i) Authorization (ii) Authentication (iii) Firewall etc. can be used.
14. (i) Snooping (ii) Eavesdropping (iii) Eavesdropping. (iv) Snooping.
15. URL (Uniform Resource Locator) is the complete address of a document on the web, whereas a domain name specifies the location of document's web server. A domain name is a component of the URL used to access web sites.  
  
For example the web address <http://www.cbse-international.com/help.htm> is a URL. In this URL [www.cbse-international.com](http://www.cbse-international.com) is the domain name.
16. It is phonetic text entry.  
It is different from keymap based text entry as in the keymap based text entry keyboard keys are mapped to specific characters using a keymap whereas in phonetic text entry text translation is done by some software based on probable pronunciation of the entered text.

17. A URL (Uniform Resource Locator) is the complete address of a document on the web, whereas a domain name specifies the location of document's web server. A domain name is a component of the URL used to access web sites. For example the web address <http://www.example.net/index.html> is a URL. In this URL [www.example.net](http://www.example.net) is the domain name

18. (i) **Snooping** refers to unauthorized access of someone else's data, e-mail, computer activity or data communication.

(ii) **Eavesdropping** is the act of secretly listening/ intercepting someone else's private communication/ data/ information.

(iii) Denial- of- Service (DoS) attacks are those that prevent the legitimate users of the system, from accessing or using the resources, information or capabilities of the system.

19. **Star Topology:** It is characterized by central switching node (communication controller) and unique path (point to point link) for each node. It is easy to add and remove nodes.

**Bus Topology:** It is characterized by common transmission medium shared by all the connected nodes. It offers simultaneous flow of data and control.

20. Source code of Open Source software is available to the user and therefore the user can customize it according to his/her own requirements and capability. Whereas the source code of Proprietary software is available only with its vendor/developer. Therefore, it cannot be customized by the user as per his/her requirements.

21. Devanagari, Bengali, Gurumukhi, Gujarati, Oriya, Tamil.

22. The above address is called an IP Address or Internet Protocol Address. It is a numerical label that is assigned to devices participating in network.

23.

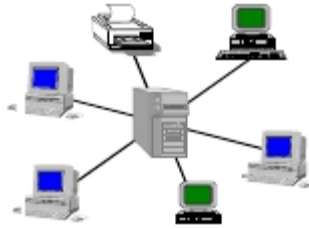
Proprietary software	Open Source software
1. Has to be paid for	1. Free and therefore neednot be paid for
2. Source code not available	2. Source code available for change
3. Cannot be copied / distributed	3. Can be copied and distributed

24. (i) Worm :Self-replicating malware without user intervention and consumes high volume of bandwidth leading to Denial of service (DoS)

(i) Trojan Horse- Appears to perform a desirable function for the user steals information through a 'backdoor'/records browsing activities without the knowledge of the user. Causes system crash or freeze.

25. In star topology, Failure of one node or link doesn't affect the rest of network whereas in the bus topology, if the network cable breaks, the entire network will be down.





26. URL - <http://www.microsoft.com/default.aspx>  
 Domain- <http://www.microsoft.com>

27. (i) Satellite (ii) Bluetooth

28. (i) FLOSS : Free Libre and Open Source Software  
 (ii) HTTP : Hyper Text Transfer Protocol

29. Network security is needed to protect data during their transmission and to guarantee that data transmissions are authentic. (i) Trojan horse programs (ii)Worms (iii) Snooping (iv) Eavesdropping

30. Advantage of Star Topology over Bus Topology:

In Star Topology, failure of one node or link doesn't affect the rest of network whereas; In Bus Topology, if the main cable (i.e. bus) encounters some problem, whole network breaks down.

Advantages of Bus Topology Over Star Topology:

Bus Topology requires less cable length than a star topology.

31. A Media Access Control address (MAC address) is a unique identifier assigned to most network adapters or network interface cards (NICs) by the manufacturer for identification, and used in the Media Access Control protocol sub-layer.

Difference between MAC address and an IP address:

(i) MAC address is unique to each network interface card while an IP address is usually replaced.

(ii) An IP address reveals which element on which network it is; while the same cannot be extracted from a MAC address.

(i) IP address consists of four parts, all numerics separated by dot (.), whereas; MAC address has six parts, consist of numbers and alphabets separated by colon (:)

32. Advantages :

(i) Secure transmission.

(ii) Very high transmission capacity.

(iii) Used for broadband transmission and possible to mix data transmission channels with channels for TV etc.

Disadvantages :

(i) Expensive.

(ii) Hard to install.

33. Source code of Open Source software is available to the user and therefore the user can customize it according to his/her own requirements and capability. Whereas the source code of proprietary software is available only with its vendor/developer. Therefore, it cannot be customized by the user as per his/her requirements.

34. **Bus topology:** All devices are connected to a single cable, called the bus or backbone. Bus networks are inexpensive and easy to install for small networks. Ethernet systems use a bus topology.

**Star topology:** All devices are connected to a central hub. Star networks are relatively easy to install and manage, but bottlenecks can occur because all data must pass through the hub.

35. (i) FTP: File Transfer Protocol  
(ii) TTF: True Type Font  
(iii) OSI: Open Source Initiative  
(iv) FLOSS: Free Libre and Open Source Software

36. Facilities provided by the SERVER in a network environment are as follow-

- Resource Sharing
- Centralized database storage
- Internet Sharing with authentication
- Account Monitoring

37. Linux—Linux is a popular operating system. It is an example of free software and open source development. It is not only freely available for use, but also its code is freely available for use and modification and for redistribution. It was originally written by Linus Trovals.

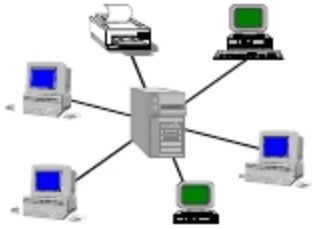
FSF – FSF stands for Free Software Foundation. FSF is a non-profit organization created for the purpose of supporting free software movement.

38. Source code of Open Source software is available to the user and therefore the user can customize it according to his/her own requirements and capability. Whereas the source code of proprietary software is available only with its vendor/developer. Therefore, it cannot be customized by the user as per his/her requirements.

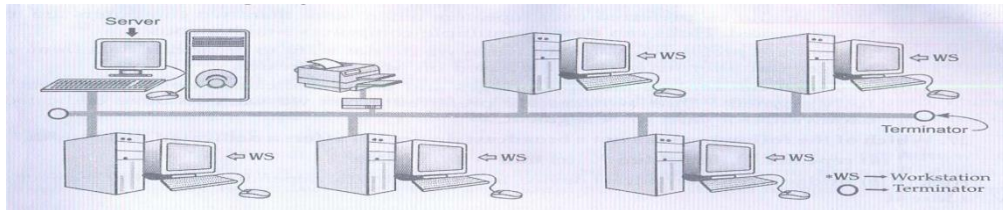
39. **Denial of Service:** It refers to any threat that prevents the legitimate users from accessing the network resources or processing capabilities.

**Snooping:** It refers to any threat that results in an unauthorized user obtaining information about a network or the traffic over that network.

40. **Star Topology:** In star topology each node is directly connected to a hub/switch.



**Bus Topology:** in bus topology all the nodes are connected to a main cable called backbone.



41. FOSS(Free and Open Source Software) is common in all given software (i.e. Firefox, Perl, PHP,OpenOffice.org).

**Feature of FOSS-** Free availability of the source code and the right to modify it.

42. Unicode is intended to be a universal character set supporting every written script used in the world. It is a character encoding standard developed by the Unicode consortium. The aim of the standard is to provide universal way of encoding characters of any language, regardless of the computer system or platform, being used.

Devanagari is supported by UNICODE.

- 43. (i) Free/Libre Open Source Software
- (ii) Hyper Text Transfer Protocol
- (iii) Bharat Operating System Software
- (iv) Internet Service Provider

44. Shareware is a type of software, which is available for a user with a right to redistribute for a certain period. It means officially the free use of software with a right to redistribute copies to others, available **only for a few days**. Thereafter, license fee is to be paid. Whereas; Open Source Software are those softwares, whose source codes are available openly to the users. The users can modify and redistribute them without any restriction and **can use it for unlimited time**.

45. Proprietary software is a software that is neither open nor freely available. Its use is regulated and further distribution and modification is either forbidden or requires special permission. Source code of such software is not available.

Whereas; Open Source Software is available with its source code. It provides freedom to run, use, modify and redistribute the copies without any restrictions.

46. (i) It stands for Personal Home Page (old) and Hypertext Preprocessor (new). It is a widely used programming language for the development of server side applications and dynamic web content.

PHP is easy to use and is similar to structured programming languages like C and Perl. It also allows interaction with many Relational Database Management System such as MySQL, Oracle, etc.

(ii) MySQL is one of the most popular Open Source database system. MySQL is available under General Public License (GPL). It is multi-user, multi-threaded, structured query language relational database system. MySQL is supported

47. (i) Apache web server or Apache HTTP server is an open source web server available for many platforms such as Linux, Unix, Windows etc.

(ii) Python is an interpreted, interactive programming language. Originally, it was developed as a scripting language for the Amoeba platform. But now, its new versions are compatible with Microsoft Windows, Linux etc. Python was developed and managed as an open source project by Python Software Foundation.

48. **Freeware** : Software that is available free of charge for personal use and cannot be redistributed. The author retains the copyright, which means that it cannot be modified (**source code is not available**).

**Free software**: Software that can be used, copied, studied, modified (**source code is available**) and redistributed. Example: GNU/Linux, Apache Web Server, MySQL, PHP, etc.

49. (i) Freeware refers to the software which is available for **unlimited time**, free of cost, allows copying, redistribution, but **not modification** and it's no source code is available. Example, Notepad, WordPad, Internet Explorer, etc.

(ii) Shareware is the trial version of software; which is made available for **limited time** with the right to redistribute copies, free of cost, no source code is available. After a certain period of time, license fees has to be paid. Shareware is also known as **try before you buy**.

50. (i) Information sharing with each other becomes easier.

(ii) Sharing of resources.

51. Open standards are internationally accepted technical standards that guarantee that data can be exchanged / accessed across platforms and applications, even as technologies change. In simple words Proprietary standards is open to all.

Examples: .HTML, .PNG, .JPEG are some examples of open standards.

52. (i) .HTML (ii) .ODF (iii) .OGG (iv) .PNG (v) .SVG

53. Proprietary standards enforce restrictions thus data cannot be exchanged / accessed across platforms and applications, even as technologies change In simple words Proprietary standards is not open to all.

Examples: (i) .DOCX (ii) .XLSX

54. Protocol refers to the rules which are applicable for a network. These protocols define the standardised format for data packets to be transmitted over the network, techniques for detecting the errors and correcting them etc.

FTP (File Transfer Protocol) is used to upload/download a file on a network.

55. A Local Area Network (LAN) is a network which is spread over a small area such as a school campus. Whereas a Wide Area Network (WAN) is a network which is spread over entire world. A Wide Area Network (WAN) can include a group of LANs connected together. Example is Internet.

56. A co-axial cable consists of a solid core wire surrounded by foil or wire shield each separated by some plastic insulator. The inner core wire carries the signals and the outer wire shield provides the ground.

Whereas an optical fiber cable consists of a thin glass or plastic strands, which are capable of carrying light signals from a source at one end to another end. The main advantage of optical fiber over other cables is their complete immunity to noise and fast speed.

57. Topology means the pattern of interconnecting various nodes (work stations) in a network. Some of the network topologies are:

(i) Bus topology                      (ii) Star topology                      (iii) Ring topology                      (iv) Mesh topology

58. Advantages    (i) Ease of service                      (ii) Simple access protocols  
Disadvantages (i) Long cable length                      (ii) Central node dependency

59. Advantages    (i) Simulates Hierarchical flow of data                      (ii) Easy to extend  
Disadvantages (i) Long cable length                      (ii) Root node dependency

60. Advantages    (i) Short cable length                      (ii) Easy to extend  
Disadvantages (i) Fault diagnose is difficult                      (ii) Fault isolation is difficult

61. Advantages    (i) Short cable length                      (ii) No wiring closet space required  
Disadvantages (i) Node failure causes network failure                      (ii) Fault diagnose is difficult

62. **E-mail** stands for Electronic Mail. It is a text message that may contain files, images or other attachment sent through a network to a specified individual or group of individuals.

**SMS** stands for Short Message Service. Short text messages are transmitted to and from a mobile phone, fax machine etc. Message must not be longer than 160 alpha numeric characters and may also contain images or graphics.

63. **Advantage:** It is immune to electrical and magnetic interference i.e. noise in any form because the information travels on a modulated light beam.

**Disadvantage:** Connecting either two fibers together or a light source to a fiber is a difficult process.

64. (i) Global System for Mobile                      (ii) Code Division Multiple Access  
(iii) Wireless in Local Loop                      (iv) Transmission Control Protocol/ Internet Protocol

65. (i) File Transfer Protocol                      (ii) Point-to Point Protocol  
(iii) eXtensible Markup Language                      (iv) Hyper Text Markup Language

66. (i) Server: A computer that facilitates resource sharing on a network.

(ii) NIU stands Network Interface Unit. It is an interpreter that helps establish communication between server and the workstations (nodes). NIU is also known Terminal Access Point.

67. (i) Bps stands for Bytes Per Second. It refers to a thousand bytes transmitted per second.  
(ii) bps stands for bits Per Second. It refers to a thousand bits transmitted per second. It is the unit of measurement for measuring the speed of digital signals.
68. (i) Baud rate is the unit of measurement for measuring the speed of analog signals.  
(ii) Bandwidth refers to the amount of information travelling through a single communication channel at any one point of time.
69. Bridge is used to connect two **similar networks**. It is a functional unit that interconnects two LANs that use the same logical link control protocol but may use different medium access control protocol. Whereas; Gateway is a device that connects **dissimilar networks**.
70. (i) SMTP (Simple Mail Transfer Protocol) is a protocol that controls the transfer of email messages on internet.  
(ii) TCP/IP (Transmission Control Protocol/ Internet Protocol) is the most commonly used protocol on Internet that **ensures reliable end-to-end communications** across the Internet.
71. (i) DNS (Domain Name Service/System) is a network service that translates domain names to associated IP address. It is also known as Domain Name Resolution.  
  
(ii) FTP (File Transfer Protocol) is used to upload/download a file on a network.