S-72.1130 Telecommunication Systems

Select true (T), false (F) or unknown (U). Correct answer yiels +1 point, wrong answer -1 point and unknown answer 0 points. Please, select (U) if you don't know the answer. Collect and return your answers in the supplied form.

1 MANs are networks between a LAN and WAN. They are a type of interconnecting networks for big businesses in a metropolitan area.

2 Network Layer provides specifications for managing the communication between two applications across an OSI network by facilitating the dialogue and inserting checkpoints in a large sequence of data bits.

3 MPLS is called multi-protocol because it works with the Internet Protocol (IP), Asynchronous Transport Mode (ATM), and frame relay network protocols.

4 The ringing voltage is often about 12V ac with a 50-Hz frequency, which is high enough to activate the bell on any telephone.
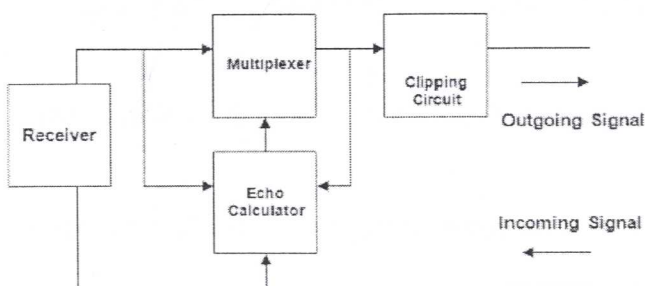
5 Authentication is the process of granting or denying a user access to network resources.

6 Routers read the IP of each packet to tell where it is going. If it is destined for an immediate network it has access to, it will strip the outer IP packet, re-address the packet to the proper MAC address, and transmit it on that network.

7 Carrier sense multiple access with collision avoidance (CSMA/CA) is an access protocol (MAC scheme) used in networks such as 802.3 and 802.11 networks.

8 Suppose that all of the network sources are bursty—that they only occasionally have data to send. Then circuit switching would be more desirable than packet switching.

9 The following block diagram shows how Network Echo Canceler works.

10 Voice over IP uses UDP instead of TCP, since retransmissions does not make sense in a voice call since voice services are delay constrained.

11 The number of channels in 802.11b is 13 (Europe). Any two channels in 802.11b can be termed as non-overlapping if the spacing between their center frequencies is at least 25 MHz. Therefore channels 1, 7 and 13 are non-overlapping channels.

12 The three physical layer options for 802.11 are

- Direct Sequence Spread Spectrum (DSSS)
- Frequency Hopping Spread Spectrum (FHSS)
- Carrier Sense Multiple Access (CSMA)

13 The Short Inter Frame Space (SIFS) is the smallest Inter Frame Space (IFS) followed by Distributed coordinated Function IFS (DIFS) and then Point Co-ordination Function IFS (PIFS).

14 RTS/CTS can effectively eliminate hidden as well as exposed terminal problem

15 Although infrared has its drawbacks, it is still suitable for most mobile applications and not hampered by its LOS requirements.

16 Guard interval provides robustness to rms delay spreads of up to several hundred nanoseconds, depending on the coding rate and modulation used

17 IEEE 802.11 defines two subtypes of authentication service: open system and shared key

18 Optical fiber may carry signals on a single or on many wavelengths using wavelength division multiplexing.

19. 1800 samples/sec is applicable sample rate (no spectral folding) for a signal that has bandwidth of 8000 Hz (1000 to 9000 Hz)

20 Wavelength of red light (very near to ultraviolet) in the air with frequency 4×10^{14} Hz is 0.75µm.

21 In WDM systems, optical couplers are used for multiplexing while optical filters are used for the demultiplexing.

22 SDH enables dynamic drop-and-insert capabilities on the payload without having to demultiplex and remultiplex the higher rate signal, causing delays and requiring additional hardware.

23 Operational functionality of Wide Area Networks (WAN) lies on OSI physical and data link layer.

24 Point-to-Point (PPP), Frame relay and HDLC encapsulations are used on layer 2 for Wide Area Network link.

25 Transport layer uses both software and hardware ports for communicating to a particular process or application within machine.

26 For every out going datagram, NAT replaces source IP address and port number and it also modifies the IP checksum and TCP checksum.

27 Initialization, data transfer and disconnection are operational steps of HDLC whereas normal response, asynchronous response and asynchronous balance are three different balance modes of data transfer.

28 For ensuring end to end and error free delivery of messages, transport layer protocol doesn't manage connection while transporting data.

29 The telephone network provides a dialed-up or circuit-switched service that enables the subscriber to initiate and terminate calls.

30 In ISDN, each S interface port can operate in full duplex mode over 4-wire twisted pairs.

name:_____ student number:_____

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