UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, July 2020

Course: Data Communication and Computer Networks 　　　　**Semester: IV**

Course Code: CSEG 2009 　　　　　　　　　　　　　**Time: 2 Hrs.**

Programme: B Tech (CSE+IFM) 　　　　　　　　　**Max. Marks: 100**

Total questions-60

Instructions: Attempt All Questions

SN	Type	Question	Options								Points
1	MC	Which of the following is not a layer of the original OSI reference model? (CO1)	Application	Incorrect	Network	Incorrect	Transport	Incorrect	Internet	Correct	0.5
2	MC	Which of the following sentences are correct? (CO1) (i) Analog data is continuous (ii) Analog Signals are always periodic while digital signals are always nonperiodic (iii) Analog to digital	(i) & (iii)	Correct	(i) & (ii)	Incorrect	only (ii)	Incorrect	(ii) & (iii)	Incorrect	1

		conversion of data is done using Sampling		Incorrect							
3	MC	Consider a communication channel with highest and lowest frequencies as 1000 Hz and 3000 Hz. The signal-to-noise ratio is 127. The channel capacity is _____ (CO1)	13977.4 bps	Incorrect	27952 bps	Incorrect	14000 bps	Correct	8 kbps	Incorrect	1
4	MC	Which of the following sentences best defines a coaxial cable? (CO1)	A pair of insulated conductors	Incorrect	An inner conductor insulated and covered by an outer conductor shield	Correct	An inner conductor insulated by an outside nonconducting layer	Incorrect	An inner nonconductor covered by an outer nonconductor shield	Incorrect	0.5
5	MC	Which type of transmission media the following types of communication mainly use? (CO1) (i) Satellite communication (ii) Celluler telephone networks	(i) guided, (ii) & (iii) unguided	Incorrect	All use guided	Incorrect	(i) & (ii) unguided, (iii) guided	Correct	(i) & (ii) guided, (iii) unguided	Incorrect	1

#	Type	Question									Marks
		(iii) Local telephone system									
6	TF	Coaxial cable is capable of transmitting data with higher speed and longer distances compared to twisted pair cable (CO1)	TRUE	FALSE							0.5
7	MC	Which of the following sentences are true? (CO1) (i) A node in a circuit switched network can be part of at most one connection at a time (ii) A node in a virtual circuit packet switched network can be part of multiple virtual connections at a time (iii) Data packets use a fixed sequence of intermediate nodes in a datagram network	(i) & (iii)	Incorrect	(i) & (ii)	Correct	(ii) & (iii)	Incorrect	(i), (ii) & (iii)	Incorrect	1
8	TF	A hub operates on Data Link layer of the TCP/IP protocol	FALSE	TRUE							0.5

9	MC	Which of the following sentences are true for Datagram packet switched networks? (CO1) (i) Efficiency is better than the circuit switched networks (ii) Have uniform delays at the nodes as each node handles equal number of packets	(i) only	Correct	(ii) only	Incorrect	(i) & (ii)	Incorrect	None	Incorrect	1
10	MC	Which of the following types of networks does not need a connection set up phase? (CO1)	Circuit switched network	Incorrect	Virctual circuit network	Incorrect	Datagram network	Correct	Both Virtual circuit network and Datagram network	Incorrect	0.5
11	MC	Due to close proximity of two communication channels, their original data signals get manipulated. Which of the following terms best defines this manipulation? (CO1)	Noise	Correct	Distortion	Incorrect	Attenuation	Incorrect	Amplification	Incorrect	0.5
12	MC	A periodic signal has a bandwidth of 9 kHz. The highest frequency is 14 kHz. What is the lowest frequency?(CO1)	5000 Hz	Correct	900 Hz	Incorrect	23 kHz	Incorrect	2.3 MHz	Incorrect	0.5
13	MC	Which of the following layers of TCP/IP model defines the transmission rate (number of bits	Physical layer	Correct	Data Link layer	Incorrect	Trnasport Layer	Incorrect	None of the options	Incorrect	1

		transmitted in a second) of a network link		Correct							
14	MC	Intermediate nodes with devices like switches and routers are called hops. Which of the following layers of the TCP/IP model is responsible for hop to hop delivery of data units	Physical layer	Incorrect	Data Link layer	Correct	Transport layer	Incorrect	Application layer	Incorrect	1
15	MC	Consider the following mappings of protocols and their TCP/IP layer of functionaing. Which of the following mappings are correct? (CO2) (i) UDP -> Network Layer (ii) SMTP -> Application Layer (iii) ICMP -> Transport Layer	All three are correct	Incorrect	(i) & (ii)	Incorrect	(ii) & (iii)	Incorrect	only (ii)	Correct	1
16	MC	Which of the following network topologies requires all hosts to be connected to a central hub with a point-to-point connection(CO2)	Bus Topology	Incorrect	Star Topology	Correct	Ring Topology	Incorrect	All of the given options	Incorrect	0.5
17	MC	Which of the following sentences are true?(CO2) (i) Both ATM and Frame Relay are Virtual Circuit Networks (ii) Both ATM and Frame	Only (i)	Correct	Only (ii)	Incorrect	(i) & (ii)	Incorrect	None of the both	Incorrect	1

		Relay have fixed data unit size		Incorrect						
18	MC	An ISDN H channel is composed of 23 B channels. What data speed this link can provide? (CO2)	64 kbps	Incorrect	736 kbps	Incorrect	1472 kbps	Correct	16 kbps	Incorrect	1
19	MC	Which of the following is not part of the Frame Relay header? (CO2)	Forward Explicit Error Notification bit	Incorrect	Discard Eligibility bit	Incorrect	Carry bit	Correct	Extended Addres bit	Incorrect	1
20	MC	Following are few Ethernet standards and their corresponding Data rate mappings. Which of the following mappings are correct? (CO2) (i) Standard Ethernet - 1 Mbps (ii) Fast Ethernet - 100 Mbps (iii) Gigabit Ethernet - 1 Gbps	only (iii)	Incorrect	(ii) & (iii)	Correct	(i) & (iii)	Incorrect	(i), (ii) & (iii)	Incorrect	1
21	MC	Which of the following sentences are correct in terms of upgradation of Standard Ethernet to Fast Ethernet (CO2) (i) Both use the same frame format (ii) Both can provide	(i) only	Correct	(ii) only	Incorrect	(i) & (ii)	Incorrect	None of the both	Incorrect	1

#	Type	Question									Score
		same maximum data rate									
22	MC	The function of ensuring the right of a device to use a link at an allotted time is called (CO2)	Error control	Incorrect	Flow control	Incorrect	Line Discipline	Correct	Topology management	Incorrect	0.5
23	TF	In layered architecture of data communicaiton, one layer at a host communicates with the same layer of the remote host(CO2)	TRUE	FALSE							0.5
24	MC	The address field of a Frame Relay frame is 0101100011001111 (in binary). What is the decimal value of its DLCI?(CO2)	416	Incorrect	22	Incorrect	88	Incorrect	364	Correct	1
25	MC	In a Block Coding method, if the datawords length is 4 bits and the codewords length is 6 bits, what is the number of invallid codewords? (CO3)	48	Correct	2	Incorrect	16	Incorrect	32	Incorrect	1
26	MC	Consider the following list of valid codewords of a linear block code {1011, 1101, 0110, 0001}. What is the maximum number of bit	1	Correct	2	Incorrect	3	Incorrect	0	Incorrect	1.5

		errors that can be detected? (CO3)								
27	MC	Following are the sets of datawords and their corresponding parity check codes in the order (dataword, parity check code). Which of the sets are having correct dataword codeword combination? (CO3) (i) (10101, 101011) (ii) (11010, 110100) (iii) (10111, 101111)	only (i)	Correct	(ii) & (iii)	Incorrect	(i) & (iii)	Incorrect	(i) & (ii)	Incorrect	1
28	MC	In Cyclic Redundency Check, if the dataword is of 5 bits and codeword is of 8 bits, how many zeros need to be appended to the dataword to make the dividend? (CO3)	5	Incorrect	3	Correct	4	Incorrect	2	Incorrect	0.5
29	MC	Which of the following ARQ technique uses a sliding window of single bit at both the sender and the receiver side? (CO3)	Simple Protocol	Correct	Stop-and-Wait Protocol	Incorrect	Go-Back-N Protocol	Incorrect	Selective-Repeat Protocol	Incorrect	0.5

30	MC	In Go-Back-N ARQ, if frame numbers 7, 8 and 9 are received successfully, what will be the acknowledgement number(s) sent by the receiver? (CO3)	7	Incorrect	9	Incorrect	10	Correct	7, 8 and 9	Incorrect	1
31	MC	Four channels are created over a link using FDM. If bandwidth of the link is B and the bandwidths of the signals carried over channels is Ca, Cb, Cc and Cd respectively, which of the following statements is true? (CO3)	B <= Ca+Cb+Cc+Cd	Incorrect	B >= Ca+Cb+Cc+Cd	Correct	B < Ca+Cb+Cc+Cd	Incorrect	B = Ca*Cb*Cc*Cd	Incorrect	1
32	MC	Frame rate of a TDM link is 10 frames/second. Number of samples per frame is 4. What is the duration of the time slot allocated for each of the four channels? (CO3)	2.5 ms	Incorrect	25 ms	Correct	40 sec	Incorrect	0.4 sec	Incorrect	1
33	TF	In CSMA/CD, we continuosely detect the collision untill the complete frame is sent succesfully (CO3)	TRUE	FALSE							0.5
34	MC	Which of the following multiple access schemes senses the medium for collision?	Pure ALOHA	Incorrect	Slotted ALOHA	Incorrect	CSMA	Correct	All of the other options	Incorrect	0.5

#	Type	Question									Marks
35	TF	Energy level of the physical medium increases when there is a collision between multiple data frames being sent (CO3)	TRUE	FALSE							1
36	MC	Which of the following logical operation can be used to find out hamming distance between two codewords (CO3)	XOR	Correct	AND	Incorrect	OR	Incorrect	NOT	Incorrect	1
37	TF	Providing error control mechanism is the responsibiltiy of the Network Layer (CO4)	FALSE	TRUE							0.5
38	MC	Whcih of the following is not a field in the IPv4 datagram header (CO4)	Header Checksum	Incorrect	Source IP	Incorrect	Identification	Incorrect	Request Code	Correct	1
39	MC	The values of HLEN and Total Length fields of an IPv4 header are 110 (binary) and 0x0032 respectively. Number of bytes of data that this packet is carrying is (CO4)	26	Correct	24	Incorrect	50	Incorrect	20	Incorrect	1.5
40	MC	A router fragments an IPv4 datagram. Which of the following sets of datagram fields the router will need to modify? (CO4)	flags, fragmentation offset, total length, checksu	Correct	Protocol, fragmentation offset, total length, checksum	Incorrect	Protocol, flags, fragmentation offset, total length	Incorrect	HLEN,fragmentation offset, total length, checksum	Incorrect	1

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41	TF	In Distance Vector routing, each node has its own distance vector (CO4)	TRUE	FALSE							1
42	MC	Which of the following statements are true for Link-state routing (CO4) (i) Link State Database of each node is different from every other node on the network (ii) Link State Database contains the states of all the links over the network	only (ii)	Correct	only (i)	Incorrect	(i) & (ii)	Incorrect	None of the both	Incorrect	1
43	MC	Which of the following is an IPv4 multi-cast address? (CO4)	235.162.145.17	Correct	212.112.056.011	Incorrect	254.012.111.100	Incorrect	179.188.155.000	Incorrect	1
44	MC	Which of the following is not a type of packets used in OSPF (CO4)	Hello packet	Incorrect	Database Desciption	Incorrect	Link state update	Incorrect	Link state delete	Correct	1
45	MC	Which of the following is not true for ICMP (CO4)	ICMP reports errors	Incorrect	ICMP corrects errors	Correct	ICMP messages are not generated for multicast addresses	Incorrect	ICMP messages are not generated in response to an ICMP message	Incorrect	1
46	MC	What is the size of IPv6 address? (CO4)	4 bytes	Incorrect	8 bytes	Incorrect	16 bytes	Correct	32 bytes	Incorrect	0.5

47	MC	Which of the following is not a valid SNMP Protocol Data Unit? (CO4)	GetRequest	Incorrect	GetNextRequest	Incorrect	GetBulkRequest	Incorrect	GetBackRequest	Correct	1
48	MC	Which of the following is not a service provided by Transport layer of TCP/IP (CO4)	Error control	Incorrect	Flow control	Incorrect	Multiplexing/Demultiplexing	Incorrect	Node to node delivery	Correct	0.5
49	MC	Which of the following communications will not require a flow control mechanism in the TCP/IP?(CO5) (i) Application layer of the sender to the tranport layer of the sender (ii) Tranport layer of the sender to the transport layer of the receiver (iii) Tranport layer of the receiver to the application layer of the receiver	(i) & (iii)	Incorrect	(i) & (ii)	Incorrect	only (iii)	Correct	(ii) & (iii)	Incorrect	1
50	MC	Consider the following example content of a UDP header(in hexadecimal): CA420489AC0A7960 What is the length of the user datagram carried along this header? (CO5)	44042 bytes	Correct	51778 bytes	Incorrect	1161 bytes	Incorrect	310752 bytes	Incorrect	1.5

51	MC	A TCP connection has been established to transfer a file containing 6000 bytes. The first byte number is 3001. The data is transferred in equal segments of 2000 bytes each. What are the acknowledgement numbers received after successfull delivery of first two segments respectively? (CO5)	{3001, 5001}	Incorrect	{5001, 7001}	Correct	{5000, 7000}	Incorrect	{7001, 9001}	Incorrect	1
52	MC	Which of the following statements are correct for TCP? (CO5) (i) Its a Network layer protocol (ii) Its a connection oriented protocol (iii) It can provide full duplex communication	(ii) & (iii)	Correct	(i) & (ii)	Incorrect	(i) & (iii)	Incorrect	Onlly (ii)	Incorrect	1
53	TF	The Receive window of TCP will 'open' when the process pulls bytes from the buffer (CO5)	TRUE	FALSE							0.5
54	MC	Following is the mapping of a few protocols and their respective TCP well known port numbers. Which of the following mappings are correct? (CO5) (i) {HTTP, 80} (ii) {DNS,	(i) & (iii)	Incorrect	(i) & (ii)	Correct	(ii) & (iii)	Incorrect	only (i)	Incorrect	1

		53} (iii) {DHCP, 69}									
55	TF	An ACK segment in TCP does not consume any Sequence Number if it is not carrying any data (CO5)	TRUE	FALSE							0.5
56	MC	Which of the following is not a method for HTTP request message? (CO5)	GET	Incorrect	POST	Incorrect	PUT	Incorrect	SERVER	Correct	1
57	TF	A proxy server is a server that keeps copies of the responses to recent HTTP requests	TRUE	FALSE							0.5
58	MC	A protocol that maps a domain name to its corresponding IP address is called _____ . (CO5)	HTTP	Incorrect	TCP/IP	Incorrect	DNS	Correct	DRS	Incorrect	0.5
59	TF	A primary DNS server always loads zone files from a Secondary DNS server (CO5)	FALSE	TRUE							0.5
60	TF	SNMP Trap is sent from an a network agent to a network manager (CO5)	TRUE	FALSE							0.5