BIRLA INSTITUTE OF TECHNOLOGY
MESRA – 835215, RANCHI, INDIA

UG

Name: …… Roll No.: ……..

Branch: …… Signature of Invigilator: ……

Semester: VIth Date: 02/05/2022 (MORNING)

Subject with Code: **EC367 COMPUTER NETWORKING**

Marks Obtained	Section A (30)	Section B (20)	Total Marks (50)

INSTRUCTION TO CANDIDATE

1. The booklet (question paper cum answer sheet) consists of two sections. First section consists of MCQs of 30 marks. Candidates may mark the correct answer in the space provided / may also write answers in the answer sheet provided. The Second section of question paper consists of subjective questions of 20 marks. The candidates may write the answers for these questions in the answer sheets provided with the question booklet.
2. The booklet will be distributed to the candidates before 05 minutes of the examination. **Candidates should write their roll no. in each page of the booklet.**
3. Place the Student ID card, Registration Slip and No Dues Clearance (if applicable) on your desk. All the entries on the cover page must be filled at the specified space.
4. Carrying or using of mobile phone / any electronic gadgets (except regular scientific calculator)/chits are strictly prohibited inside the examination hall as it comes under the category of unfair means.
5. No candidate should be allowed to enter the examination hall later than 10 minutes after the commencement of examination. Candidates are not allowed to go out of the examination hall/room during the first 30 minutes and last 10 minutes of the examination.
6. Write on both side of the leaf and use pens with same ink.
7. The medium of examination is English. Answer book written in language other than English is liable to be rejected.
8. All attached sheets such as graph papers, drawing sheets etc. should be properly folded to the size of the answer book and tagged with the answer book by the candidate at least 05 minutes before the end of examination.
9. The door of examination hall will be closed 10 minutes before the end of examination. Do not leave the examination hall until the invigilators instruct you to do so.
10. Always maintain the highest level of integrity. Remember you are a BITian.
11. Candidates need to **submit the question paper cum answer sheets before leaving the examination hall**.

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
END SEMESTER EXAMINATION

CLASS: B. TECH.	**SEMESTER: VI**
BRANCH: ECE	**SESSION: SP/2022**

SUBJECT: EC367 COMPUTER NETWORKING

TIME:2 HOURS	**FULL MARKS: 50**

INSTRUCTIONS :

1. **The question paper has two parts, A and B, respectively.**
2. **There are *thirty* MCQ questions each of 1 mark, and all are compulsory.**
3. **Students may attempt *any four* out of *six* in Part-B.**
4. **Select the most appropriate option for the MCQs and mention it in the space provided against each question.**
5. **The missing data, if any, may be assumed suitably.**

Part-A **Mention the correct option in the space provided against each question.**					**Correct Option**
Q1	Which MAC protocol will you prefer for bursty traffic and light load conditions?				
	a)	Contention	b)	TDM	
	c)	Round-robin	d)	Reservation	
Q2	The network layer is implemented in				
	a)	Routers only.	b)	Hosts and Routers.	
	c)	Hosts only.	d)	Hosts and Bridges.	
Q3	An original datagram of 960 octets has been fragmented into 4 segments of 320, 264,192, and 184 octets. The offset values of these fragments will be				
	a)	40,33, 24, 23	b)	0,40,73,97	
	c)	40,73,97,120	d)	0, 40,73,97	
Q4	Which one of the following is an example of Inelastic traffic?				
	a)	E-mail	b)	Real-time traffic	
	c)	File transfer	d)	Network management messages	
Q5	There is a minimum limitation to the length of the frame in CSMA/CD, because				
	a)	the collision detection time shall be more.	b)	then the transmission time of frame shall be less than collision detection time.	
	c)	the transmission time of frame shall be less than propagation time.	d)	then the transmission time of frame shall be more than collision detection time.	
Q6	Which of the following is an example of Fast Ethernet?				
	a)	1000 BASE-SX	b)	100 BASE-T4	
	c)	10G BASE-S	d)	10 BASE 5	
Q7	A half-open connection is that				
	a)	which is in the process of opening a connection.	b)	in which one side is closed but the other side is sending.	
	c)	which is in the process of closing a connection.	d)	in which one side is closed and the other side has sent the connection close request.	
Q8	Find out the number of segments TCP is allowed to send without receiving further acknowledgements at the start of a connection if the granted credit (in segments) is 2000 and the congestion window (in segments) is set to 1200.				
	a)	1200	b)	600	
	c)	2000	d)	1000	
Q9	In Spanning tree algorithm, a designated port is meant for				
	a)	Each bridge	b)	Each LAN	
	c)	All bridges and all LAN's	d)	the root bridge only	
Q10	Which one of the following statements is correct in connection with the "Source quench" message used in ICMP?				
	a)	It informs the source that the datagram is discarded.	b)	It only informs the source about the congestion in the path.	
	c)	It requests the source to slow down the sending process.	d)	All the given options.	
Q11	In transition from IPv4 to IPv6, name the strategy used when two hosts using IPv6 wish to communicate with each other, and the packet must pass through a router that uses IPv4.				
	a)	Dual stack	b)	Header Translation	
	c)	Tunnelling	d)	None of the given options	

Q12	Jacobson's Algorithm for calculation of RTO is based on calculation of				
	a)	simple average of RTT.	b)	probabilistic estimation of RTT.	
	c)	exponential average of RTT.	d)	variance estimation of RTT.	
Q13	The _____ address uniquely identifies a running application program on a host.				
	a)	IP	b)	MAC	
	c)	Socket	d)	NIC	
Q14	AES uses a _____ bit block size and a key size of _____ bits.				
	a)	128; 128, 192, or 256	b)	256; 128, 192, or 256	
	c)	64; 128 or 192	d)	128; 128 or 256	
Q15	Which of the following LLC services could be used in a terminal controller that have very little software operating at higher level?				
	a)	Unacknowledged connectionless service	b)	Connection Mode Service	
	c)	Acknowledged Connectionless Service	d)	Unacknowledged connection mode service	
Q16	_____ is a flow characteristic in which the delay varies for packets belonging to the same flow.				
	a)	Additive increase	b)	Throughput	
	c)	Jitter	d)	Reliability	
Q17	Karn's algorithm dictates the use of RTO for each retransmitted segment must be based on				
	a)	Exponential back off	b)	Exponential averaging of RTT	
	c)	Average RTT	d)	RTT variance	
Q18	BGP (Border Gateway Protocol) is an example of following routing approach.				
	a)	Distance-vector Routing	b)	Link-state Routing	
	c)	Path-vector Routing	d)	Intra-state Routing	
Q19	Which of the following statement is incorrect for connection establishment/termination using a three-way handshake?				
	a)	Problem with obsolete SYN segment persists.	b)	Each FIN is explicitly acknowledged.	
	c)	None of the given option.	d)	Each SYN is explicitly acknowledged.	
Q20	How many subnetworks can exist in a Class-C network, with a subnet mask of 255.255.255.248 and how many hosts can be there per subnetwork?				
	a)	16 and 16	b)	30 and 6	
	c)	32 and 6	d)	32 and 8	
Q21	An Ethernet MAC sublayer receives 32 bytes of data from the upper layer. How many minimum bytes of padding must be added to the data?				
	a)	32 bytes	b)	64 bytes	
	c)	14 bytes	d)	16 bytes	
Q22	A web client sends a request to a web server. The web server transmits a program to that client and is executed at the client. It creates a web document. What are such web documents called?				
	a)	Active	b)	Passive	
	c)	Static	d)	Dynamic	
Q23	Suppose 1MByte of application data (including application layer header) must be sent out of a host attached to Ethernet. Assume the application uses TCP protocol and that the IP as well as TCP header is 20 bytes each. Further assume that Ethernet MTU size is 1500 and TCP uses segments of size 1480. How many datagrams are sent out of the host?				
	a)	685	b)	675	
	c)	667	d)	658	
Q24	Identify the incorrect statement for private-key encryption				
	a)	It is symmetric.	b)	Algorithms are based on simple operations on bit patterns.	
	c)	Algorithms are based on mathematical functions.	d)	It is a block cipher.	
Q25	Cryptanalysis deals with _____ without using keys.				
	a)	Decrypting	b)	Authenticating	
	c)	Encrypting	d)	Regenerating	
Q26	Which of the following attacks is a threat to confidentiality?				
	a)	Snooping	b)	Masquerading	
	c)	Repudiation	d)	Denial of Service	
Q27	Which one of the following is not a party in SNMPv2?				
	a)	Local	b)	Proxied	
	c)	Remote	d)	Tunnel	

Q28	During communication between Hosts X and Y, at any point of time, if the transmitter receives a segment with an ACK = 2000, it always means that. (i) The receiver has successfully received 1999 bytes. (ii) The receiver demands a new segment starting from SN=2000. (iii) The receiver demands a new segment starting from SN=2001. (iv) The receiver has successfully received 2000 bytes.				
	a)	i only	b)	i and ii	
	c)	ii only	d)	iii and iv	
Q29	Consider different activities related to email. m1: Send an email from a mail client to a mail server. m2: Download an email from mailbox server to a mail client. m3: Checking email in a web browser. Which is the application-level protocol used in each activity?				
	a)	ml: HTTP m2: SMTP m3: POP	b)	ml: SMTP m2: FTP m3: HTTP	
	c)	ml: SMTP m2: POP m3: HTTP	d)	ml: POP m2: SMTP m3: IMAP	
Q30	In a network that has a maximum packet size of 128 bytes, a maximum packet lifetime of 30 seconds, and an 8-bit sequence number, what is the maximum data rate per connection?				
	a)	8738 bps	b)	1092 bps	
	c)	68 bps	d)	34 bps	
PART-B **Attempt any four questions.**					
Q31. (a)	Explain the possible problem caused by 'closed loop' in routing with the help of an example. How is it solved?				**[2]**
(b)	Differentiate between FDDI and Token Ring. Why there is a Ratchet effect in the priority scheme used in IEEE 802.5 Token Ring and how is it overcome?				**[3]**
Q32. (a)	Compare the individual fields of the IPv4 header with the IPv6 header.				[2]
(b)	What is IGMP? Why is it required? Explain the procedure for joining and leaving a multicast group as specified in IGMPv3.				**[3]**
Q33. (a)	Why three-way handshake is preferred over two-way handshake for connection establishment and termination in a failure prone network?				**[2]**
(b)	How is the congestion control affected in TCP using window management? Explain how dynamic window sizing refines the window management.				**[3]**
Q34. (a)	List and briefly define categories of passive and active security threats.				**[2]**
(b)	Differentiate between Link encryption and End to End encryption by highlighting the merits and demerits. Which attack is possible if both are used together?				**3**
Q35. (a)	How MIME addresses the limitations of Simple mail transfer protocol (SMTP)?				**[2]**
(b)	Briefly explain the following key elements in a network management system i) Manager, ii) Agent iii) Management Information Base, iv) Network management protocol.				**[3]**
Q36. (a)	What are the pros and cons of intermediate reassembly of an internet segmented datagram versus reassembly at the destination?				**[2]**
(b)	Briefly describe the credit scheme used by TCP for flow control.				**[3]**

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