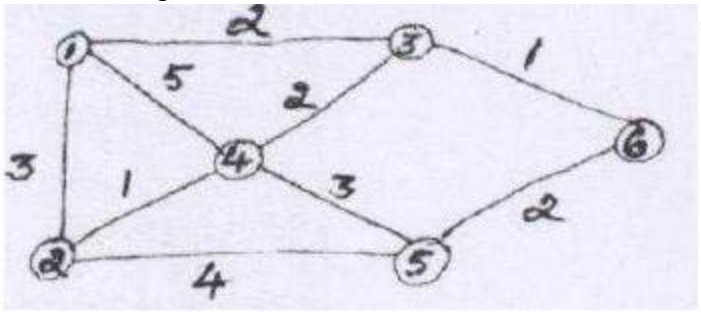
computer networks and cyber security question bank

QUESTION BANK

Unit -1 PACKET SWITCHING NETWORKS-I:

1.	Explain and derive delays in Datagram packet switching and compare it with message switching	10marks*
2.	What are datagram and virtual circuits? Distinguish between them.	10marks*
3.	Consider the network given below in figure .i) Use the Dijkstra's Algorithm to find the shortest path from source node 5 to all other destination node.  es.	10marks*
4.	Why is packet switching more suitable than message switching for interactive applications? Compare the delays in datagram packet switching and message switchin g.	06marks*
5.	Compare Bellman-Ford Algorithm and DijKstra's algorithm for finding the shortest paths from a source node to all other nodes in the network.	08marks*
6.	Define the two types of network services and distinguish between both.	06marks* 06marks
7.	Explain with a neat diagram the service offered by the network and its internal operation ?	
8.	State and explain end to end argument for system design.	06marks
9.	Explain with an example how oversubscription is used to access portion of packet switching networks and to optimize the use of bandwidth resources.	05marks.
10	With reference to Campus network, explain how LAN's Provide access to packet switching networks in many environments.	06marks.
11.	a) State and explain Message switching with diagram.	08marks
12.	a) State and explain datagram packet switching with diagram.	10marks

13.	Explain packet switching network with external view and internal view.	5marks
14.	What are VCIs? Explain virtual circuit packet switching with a diagram.	10marks
15.	Differentiate between intra domains and inter domain networks.	5marks
16.	Compare the operations of the layer 3 entities in the end systems and in the routers inside the network.	6marks
17.	What are the goals of routing algorithms?	7marks
18.	Classify the routing algorithms with brief explanation.	4marks
19.	Explain hierarchical routing with example.	10marks
20.	State and explain how flooding occurs when initiated from one node say node 1 as example.	6 marks
21.	Explain the concept of deflection routing.	6marks
22.	Explain with an example the working principle of Bellman-Ford algorithm.	10marks
23.	Compare source routing versus Hop-by-Hop routing.	5marks
24.	Compare link-state routing versus distance vector routing.	5marks
25.	Explain Dijkstra's Algorithm with an example.	8marks
26.	Compare between : circuit switching , packet switching and message switching.	10 marks
27.	When two routers use a routing protocol to exchange routing information, must they share a common information ?	5 marks
28.	Explain why the distance in hops from your ISP to a NAP isvery important.What happens if a NAP becomes congested.	8marks

Unit -11 PACKET SWITCHING NETWORKS-II:.

1.	Explain the FIFO and priority queue scheduling for managing traffic at packet level.	10marks*
2.	Explain the Leaky bucket algorithm for policing the traffic at flow level.	10marks*
3.	With a neat diagram explain leaky bucket policy.	08marks*
4	Explain the following fields in the IP Packet header i) time to live ii) fragment offset iii)header checksum	06marks*
5.	A large number of consecutive IP address are available starting at 200.40.160.0. Suppose that 3 organizations A,B,&C request 4000 , 2000 and 1000 addresses respectively in that order. For each of these , give the first IP address assigned ,the last IP address assigned and the mark in the w.x.y.z/s Notation	06marks*
6.	Explain identification, flags and fragment offset field in the IP version 4 header.	06marks*
7.	An university has 150 LANs with 100 hosts in each LAN. i) Suppose the university has one class B address .Design an appropriate subnet addressing scheme. ii) Design an appropriate CIDR addressing scheme.	04marks*
8.	What is the meaning of traffic management?	2marks
9.	Explain FIFO queuing with priority?	5marks
10.	What are the strategies used in the internet to provide Qos at flow level.	4marks
11.	Write a note on random early detection.	5marks
12.	Write a note on closed loop control.	10marks

13.	Explain head-of-line priority queuing.	8marks
14.	Explain fluid –flow and packet by packet fair queuing.	8marks
15.	Write in brief about weighted fair queuing.	6marks
16.	Explain policing and traffic shaping with respect to leaky bucket.	10marks
17.	Describe the traffic engineering Or traffic management at flow aggregate level.	7marks
18.	What are the approaches to congestion control at network layer?	8marks
19.	Explain implicit vs explicit feedback.?	5marks
20	With a schematic explain the TCP/IP architecture.	10marks
21	Explain IP packet header.	10marks
22	Explain the need for classification of IP Addressing and Subnet addressing?	5marks
23	Explain with an example the role of Subnet mask.	4marks
24	Write a short note on Classless Inter domain routing.	10marks
25	Explain ARP and RARP.	10marks
26	Write a short note on fragmentation and reassembly.	5marks
27	Explain Internet control message protocol.	5marks
28.	Explain the IP address classification. Identify the following IP addresses and their address class: 200.58.20.165 128.127.23.20 16.196.128.50 150.156.10.10	10marks*
29.	Give the format of IPV6 basic header.Explain the importance.	10marks*
30.	What is the need to change from Ipv4 to Ipv6? Write the Ipv6 basic header and describe its fields.	10marks*
31.	What are the changes from Ipv4 to Ipv6?	8marks
32.	What is the role of extension headers in Ipv6?	4marks
33.	Write short note on user datagram protocol.	5marks
34.	Explain the UDP datagram.	5marks
35	Explain the OSPF protocol and its operation	10marks*
36	What is routing information protocol (RIP) ?what is the maximum width of a RIP network.	02marks*
37	Explain the operation of routing information protocol.	5marks
38.	List in brief the features of OSPF.	10marks
39	Explain the following i) Unicast Addressing ii) Multicast Addressing iii) Anycast Addressing	6marks
40.	Explain the migration issues from Ipv4 to Ipv6?	6marks
41	Explain how the use of hierarchy enhances the scalability in the following aspects of internet a) domain name system b) IP addressing c) OSPF addressing d) Interdomain routing	12marks
42.	Suppose a network uses Distance Vector routing,what happens if the router sends a Distance vector with all 0's	5 marks
43.	Perform a CIDR aggregation on the following /24 IP addresses:128.56.24.0/24,	6marks

	128.56.25.0/24, 128.56.26.0/24, 128.56.27.0/24,	

Unit-3: Applications, Network Management, Network Security :

1.	Give the comparison between public key and secret key cryptographic systems	10marks*
2.	Apply RSA and do the following : i) Encrypt a=3 ,b=11 , x=3 , and m=9 ii)Find the corresponding y iii) Decrypt the cipher text.	06marks*
3.	Explain the detail, any two major categories of threat to network security.	08marks*
4.	Write a short note on SNMP.	06marks*
5.	What are the functions performed by a network management system.	05marks*
6.	What are SNMP, SMI and MIB?	03marks*
7.	Explain the RSA algorithm .Using the encrypt the following : p=5, q=11,e=7,P=18	12marks*
8.	With schematic, explain the elements by network management system.	05marks
9.	Explain the components of SNMP.	05marks
10.	Explain the structure of management information SNMP.	10marks
11.	What are the typical security threats that can arise in a network setting.	05marks
12.	Explain the security requirements for information transmitted over network.	05marks
13.	Explain the basic building blocks of cryptography.	04marks
14.	Explain the secret key cryptography.	05marks
15.	With an example, explain public key cryptography.	05marks
16.	With an example ,explain RSA algorithm	10marks
17.	What are the responsibilities of network administrator?	5marks
18.	What is the necessity of network management?	3marks
19	What is the goal of security management?	04marks
20	Explain the role played by MIB.	07marks
21	List the roles played by the network management protocol.	05marks
22	Compare and contrast simple network management and Internet Management.	06marks
23	Describe SNMP in request-response mode.	05marks
24	Explain SNMP PDU format.	05marks
25	Justify the suitability of SNMP over UDP.	04marks
26	List and explain different types of PDUs.	06marks
27	Why do we need a command generator in SNMP applications?	04marks
28	Explain the support of SNMP towards security.	05marks
29.	Explain trap message in SNMP.	04marks
30.	What is meant by ‘SNMP engine’?	03marks
31.	Explain DES Algorithm.	08marks
32.	What are the applications of network management?	05marks

33.	Differentiate between symmetric and asymmetric key cryptography	08marks
34.	If user A has public key Ya=9 ,primitive root =2. what is A's private key Xa ?	05marks
35	List the information processing functions the DNS server can handle	08marks
36	Explain domain name space with example	05marks
37	Explain DNS message format	06marks
38	What are the two remote login protocols and explain with example.	10marks
39	Explain how two users exchanging e-mail through SMTP	06marks
40	Explain the following protocol i) FTP ii) Secure Copy Protocol iii) HTTP	10marks
41	Explain the overview of AES protocol	10marks
42	Explain the secure hash algorithm	06marks

UNIT - 4
Chapter-1

1. Define Cyber Crime?How do you clarify cybercriminals?Explain each one in detail. 12M
2. Explain different types of Cyber criminals. 6M
3. Explain the difference b/w "Cybercrime" and "Cyber Fraud". 4M
4. Explain the following cybercrimes form with an example. 2/3M
    1. E-mail spoofing
    2. Spamming
    3. Cyber Defamation
    4. Internet time theft
    5. Salami attack / Salami Technique
    6. Data diddling
    7. Forgery & Web Jacking
    8. Newsgroup Spam
    9. Industrial Spying
    10. Hacking
    11. Online Frauds
    12. Pornographic Offence
    13. Software piracy
    14. Computer Sabotage
    15. E-mail Bombing / Mail bombs
    16. Computer N/w instruction
    17. Password Sniffing
    18. Credit card fraud
    19. Identity theft
2. Explain in your words what you understand about the global cooperation required in fighing against Cybercrime. 5M
3. How do you think cybercrime has relevance in the extended enterprise context.Explain.
4. Write a note on "Indian Legal perspective on Cybercrime" 3/4M
5. How do you think cybercrime has relevance in the extended enterprise context.Explain.

1. Explain how are cybercrime classified. Explain with example 10M
2. Explain the following.
    Hackers 6M
    Crackers 6M
    Phrehackers 6M
1. Differentiate Active n Passive attacks with example. 8M
2. Explain how criminals plan attacks. Explain phases involved in planning cybercrime. 6M
3. Define social engineering influence the people to obtain valuabe info or to perform some action with example. 5M
4. Briefly explain classification of Social Engineering techniques 10M
5. Define Cyberstalking as per it is a crime in Indian IT Act. 5M

UNIT -5 Chapter 4,5

1. Describe the different stages(phases) during the attack on N/W with ex. 10M
2. Compare & contrast - Proxy servers and Anonymizer 5M
3. Define Phishing. Explain how it works with an ex
4. Explain Password Hacking n the purpose of Password Cracking and also explain the steps to be followed by attackers to crack the password 6M
5. Give the classification of password cracking attacks 6M
6. What are keyloggers and spymaker. Demonstrate how can keyloggers can be used to commit a cybercrime. 10M
7. Define Virus and Worms. Give difference virus n worm.
8. Demonstrate how viruses spread with neat diagram 9M
   1.Through the internet
   2.Through a stand-computer system
   3.Through a local n/w
1. List and explain the difference types of viruses 8M
2. What are the difference b/w Trojan Horses and Backdoor 5M
3. Define Backdoor. What a backdoor does? Give ex of Backdoor Trojan. 8M
4. Explain the methods to protect from Trojan Horses and backdoor 6M
5. Define Steganography. What is the difference between Steganography and Cryptography. Describe how Steganography works with neat diagram. 10M