

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2024

M.Tech-I Semester (CSE)

COURSE CODE(CREDITS): 3 10M1WCT131

MAX. MARKS: 15

COURSE NAME: System and Network Security Techniques

COURSE INSTRUCTORS: Kuntal Sarkar

MAX. TIME: 1 Hour

---

**Note: (a)** All questions are compulsory.

**(b)** Marks are indicated against each question in square brackets.

**(c)** The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

---

1. What is the difference between IP and ICMP? Explain working model of SMTP? [Marks: 1]
2. Suppose that two parties A and B wish to set up a common secret key (D-H key) between themselves using the Diffie Hellman key exchange technique. They agree on 17 as the modulus (P) and 5 as the primitive root (G). Party A chooses 4 and party B chooses 6 as their respective secrets. Their D-H key is? [Marks: 2]
3. IP = 203.83.73.117 and subnet mask = 255.255.255.224  
Find (i) subnet id, (ii) first host of that subnet, (iii) last host of that subnet?  
[Marks: 1]
4. What is the difference among polymorphic virus, metamorphic virus and multipartite virus? [Marks: 1]
5. Which is best for data transferring packet switching or circuit switching?  
[Marks: 1]
6. How do VPN and firewalls enhance security? [Marks: 1]



7. What is ARP spoofing? What is DNS spoofing? [Marks: 1]
8. Assume that a 12 bit Hamming codeword consisting 8 bit data and 4 parity bits is  $P_1P_2D_3P_4D_5D_6D_7P_8D_9D_{10}D_{11}D_{12}$ , where the data bits and parity bits are given 1010X011 and 010Y. Find the value of X and Y? [Marks: 2]
9. The message 1101011011 is to be transmitted using the CRC polynomial  $x^4+x+1$  to protect it from errors. What message should be transmitted? What is the generated CRC code (in decimal)? [Marks: 2]
10. The separation between Earth and a far off planet is roughly  $900000 \times 10^5$  meters. If an 8 MBPS point to point link employs a protocol for frame transfer, what is the channel utilization? Assume that there are 256 Kb of frames and travels at a speed of light. [Marks: 1]
11. What is Phishing attack? Give example. Calculate no of persistent HTTP and non persistent HTTP connections if the server contains 4 files and client wants to download all 4 files? [Marks: 1]
12. What is the formula to generate message data to cipher text and cipher text to message data according to RSA algorithm? [Marks: 1]