OBE

REFNO048599

MCA (TWO YEAR) I SEMESTER and M.Sc. in COMPUTER SCIENCE I SEMESTER EXAMINATION 2021-22

CS - 206 : Computer Networks

Time : 4.30 hours **Max. Marks : 70**

Instructions

1. **The Question Paper contains 08 questions out of which you are required to answer any 04 questions. The question paper is of 70 marks with each question carrying 17.5 marks.**

   प्रश्नपत्र में आठ प्रश्न पूँछे गये हैं जिनमें से 4 प्रश्नों का उत्तर देना है। प्रश्नपत्र 70 अंकों का है, जिसमें प्रत्येक प्रश्न 17.5 अंक का है।

2. The total duration of the examination will be **4.30 hours** (Four hours and thirty minutes), which includes the time for downloading the question paper from the Portal, writing the answers by hand and uploading the hand-written answer sheets on the portal.

   परीक्षा का कुल समय 4.30 घंटे का है जिसमें प्रश्नपत्र को पोर्टल से डाउनलोड करके पुनः हस्तलिखित प्रश्नों का उत्तर पोर्टल पर अपलोड करना है।

3. For the students with benchmark disability as per Persons with Disability Act, the total duration of examination shall be **6 hours** (six hours) to complete the examination process, which includes the time for downloading the question paper from the Portal, writing the answers by hand and uploading the hand-written answer sheets on the portal.

   दिब्यांग छात्रों के लिये परीक्षा का समय 6 घंटे निर्धारित हैं जिसमें प्रश्नपत्र को पोर्टल से डाउनलोड करना एवं हस्तलिखित उत्तर को पोर्टल पर अपलोड करना है।

4. Answers should be hand-written on a plain white A4 size paper using black or blue pen. Each question can be answered in upto 350 words on 3 (Three) plain A4 size paper (only one side is to be used).
   हस्तलिखित प्रश्नों का उत्तर सादे सफेद A4 साइज के पन्ने पर काले अथवा नीले कलम से लिखा होना चाहिये। प्रत्येक प्रश्न का उत्तर 350 शब्दों तक तीन सादे पृष्ठ A4 साइज में होना चाहिये। प्रश्नों के उत्तर के लिए केवल एक तरफ के पृष्ठ का ही उपयोग किया जाना चाहिए।

5. Answers to each question should start from a fresh page. All pages are required to be numbered. You should write your Course Name, Semester, Examination Roll Number, Paper Code, Paper title, Date and Time of Examination on the first sheet used for answers.
   प्रत्येक प्रश्न का उत्तर नये पृष्ठ से शुरू करना है। सभी पृष्ठों को पृष्ठांकित करना है। छात्र को प्रथम पृष्ठ पर प्रश्नपत्र का विषय, सेमेस्टर, परीक्षा अनुक्रमांक, प्रश्नपत्र कोड, प्रश्नपत्र का शीर्षक, दिनांक एवं समय लिखना है।

Questions

1.

a. What are the limitations of Classful IP addressing? In a block of addresses, we know the IP address of one host is 25.34.12.56/16. What are the first address (network address) and the last address in this block? (6)

b. What is the difference between connectionless and connection-oriented services? Which type of service is provided by IPv4? Which type of service is provided by IPv6? (5.5)

c. What do you mean by private IP addresses? How these addresses are used to resolve address depletion problem? (6)

2.

a. Define fragmentation and explain why the IPv4 and IPv6 protocols need to fragment some packets. Is there any difference between the two protocols in this matter? (5)

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b. List three transition strategies to move from IPv4 to IPv6. Explain the difference between tunneling and dual stack strategies during the transition period. When is each strategy used? (7.5)

c. Explain the role of various query messages used in ICMP. (5)

3.

a. What is the role of IGMP protocol at Network Layer? Explain various IGMP query messages? Change the IPv4 multicast addresses 237.18.6.88 to Ethernet multicast addresses. (7.5)

b. Compare and contrast Distance Vector Routing and Link State Routing algorithms? Which algorithm is preferable for large size network, and why? (6)

c. Explain Path Vector routing algorithm with suitable diagram. (4)

4.

a. List six flags included in TCP Header format. How these flags are used in TCP connection? Explain each one with suitable example. (7)

b. Explain different policies used by TCP for Error Control. Distinguish between the two retransmission policies used by TCP with suitable diagram. (7)

c. What do you mean by 'half close' while using TCP? When it is needed? (3.5)

5.

a. Define Network Congestion. How it affects network performance? (4)

b. What is the role of 'Additive Increase Multiplicative Decrease' (AIMD) mechanism in Congestion control? Explain with suitable example. (7)

c. What do you mean by Packet Scheduling? Where it is needed? Explain any two methods used for packet scheduling (6.5)

6.

a. What do you mean by Quality of service? Explain Token Bucket approach with suitable example. (7.5)

b. What is the role of Resolver in DNS? Explain different techniques used for address resolution in DNS. (5)

c. Explain SNMP protocol architecture with its components. (5)

7.

a. What do you mean by Message Transfer Agent (MTA) and Message Access Agent (MAA) used in Email system? Explain their roles in email system with suitable diagram. (7)

b. What is the difference between Local login and Remote login? Which application layer protocol provides remote-login service? What is the role of Network Virtual Terminal (NVT) in remote login? (7)

c. Want do mean by Anonymous FTP? (3.5)

8.

a. Differentiate between Symmetric-key and Asymmetric-Key Cryptography. (5)

b. What do you mean by Digital Signature? Explain with suitable diagram. (5)

c. What do you mean by Entity Authentication? Explain Challenge response method using Symmetric Key Cryptography. (5)

d. What is the role of PGP protocol? (2.5)

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