No. of Printed Pages : 4

Sl. No.

C2-R4 : ADVANCED COMPUTER NETWORKS

DURATION : 03 Hours **MAXIMUM MARKS : 100**

Roll No. : | | | | | | |

Answer Sheet No. : | | | | | | |

Name of Candidate : _____ **; Signature of Candidate :** _____

INSTRUCTIONS FOR CANDIDATES :

- Carefully read the instructions given on Question Paper, Answer Sheet.
- Question Paper is in English language. Candidate has to answer in English Language only.
- **Question paper contains Seven questions. The Question No. 1 is compulsory. Attempt any FOUR Questions from Question No. 2 to 7.**
- **Parts of the same question should be answered together and in the same sequence.**
- **Questions are** to be answered in the **ANSWER SHEET** only, supplied with the Question Paper.
- **Candidate cannot leave the examination hall/ room without signing on the attendance sheet and handing over his/her Answer Sheet to the Invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.**
- After receiving the instruction to open the booklet and before answering the questions, the candidate should ensure that the Question Booklet is complete in all respects.

DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.

1. (a) With the Slotted ALOHA protocol, how long does a node wait once it gets a new frame to transmit ? Can there be collisions, and if so, what does the node do when there is a collision ?

(b) What is Remote Procedure Call ? What is the sequence of events during Remote Procedure Call ?

(c) If K queues and M jobs are given, then create Closed Queuing Network.

(d) Draw and explain the three-way handshake process used by TCP to establish a virtual circuit.

(e) What are the two most basic forms of multiplexing ? Briefly explain.

(f) I have a subnet mask 255.255.255.248 set up in my machine with IP 10.5.5.20. What IP address should I ping to, so that I get response from all machines on my LAN subnet ?

(g) Differentiate between IPV4 and IPV6 with header formats. **(7x4)**

2. (a) Explain the functionalities of various layers in the OSI model.

(b) What is IP ? Discuss the different classes of IP addressing. Explain classful and classless routing.

(c) What is the significance of Jackson's theorem for network of queues ? Explain the theorem in detail. **(6+6+6)**

3. (a) Explain the difference between traffic shaping and traffic policing.

(b) Compare Pure ALOHA, Slotted ALOHA, and Non-persistent CSMA.

(c) State the steady-state parameters of M/G/1 queue. Explain M/G/1 queue with an example. **(4+6+8)**

4. (a) List TCP congestion control approaches. Explain any one.

(b) What is QoS ? Explain various parameters for QoS in IP Network.

(c) How ATM Network differ from MPLS ? Explain ATM reference model with various services provided by it. **(4+6+8)**

5. (a) Briefly explain Continuous State Leaky-Bucket Algorithm.

(b) How will multicasting be achieved by the Distance Vector Multicast Routing Protocol (DVMRP)?

(c) What is Virtual Private Network (VPN) ? List various activities performed by VPN. Discuss its components and types. **(4+6+8)**

6. (a) What are the services provided by ATM AAL3/4 ?

(b) Companies that have offices in several countries around the globe need to create a private corporate network that is able to connect these sites together and transport traffic of different types between them. An increasingly popular way of providing such a network is to use Multiprotocol Label Switching (MPLS) data services. Briefly explain how MPLS works and how it is able to support different traffic types.

(c) What is Reverse Path Multicast (RPM) and Protocol Independent Multicast (PIM) ? Explain. **(4+6+8)**

7. (a) What are the pros and cons of Multicast Backbone (MBONE) ?

(b) What is Real Time Streaming Protocol (RTSP), and explain how it is being used for Audio and Video streaming ?

(c) Discuss the quality of service requirements of a Voice-over-IP (VoIP) application and how they differ from those of a video-based application. Draw a VoIP network architecture. **(4+6+8)**

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SPACE FOR ROUGH WORK