



TECNIA INSTITUTE OF ADVANCED STUDIES
NAAC ACCREDITED GRADE "A" INSTITUTE
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INSTITUTIONAL AREA MADHUBAN CHOWK, ROHINI, DELHI 110085
 Tel: 91-11-27555121-24, E-Mail : directortias@tecnia.in, Website: www.tiaspg.tecnia.in



1.1.1 - The Institution ensures effective curriculum delivery through a well planned and documented process Additional Information

Department of Information, Communication and Technology Academic Session 2021-22

Program: BCA		Course: Computer Networks				Course Type: Core Theory				Credits: 4	
Lecture No.	Unit No.	Lecture Contents	Lecture Outcome (Student would be able to)	Problem Solving Methodologies	Participative Learning	Experiential Learning	ICT Tools and e-resources	Mapping with / Corresponding CO	Class Material	Additional Material	Mode of Assessment
L1	1	Introduction to computer networks and its components	Understand the basics of computer networks and components of data communication		Lecture through PPT		https://www.youtube.com/watch?v=InU-Zw3NEEQ&list=PLbRMhDVUMngf-peFloB7kyiA40EptH1up&index=2	CO1	PPT_1	https://www.ibm.com/topics/networking	
L2	1	Distributed processing, Line configuration	Describe distributed processing and line configuration techniques in computer networks		Lecture through PPT		https://aws.amazon.com/what-is/distributed-computing/	CO1	PPT_2	https://www.ibm.com/docs/en/txseries/8.2?topic=overview-what-is-distributed-computing	Viva Voce
L3	1	Transmission modes	Distinguish among Simplex, Half-Duplex and Full Duplex modes		Lecture through PPT	Role Play	ov.in/gorakhpur/sites/default/files/Gorakhpur/Olevel_ICT_2_14MAY_AB.pdf	CO1, CO3	PPT_3	/Adminpanel/AdminUpload/Studyaterial/Transmission%20Modes%20in%20Computer%20Networks.pdf	Role Play
L4	1	Bus, Mesh and Tree Network Topologies	Differentiate among Bus, Mesh and Tree topologies	Numerical on number of connections in Mesh topology	Lecture through PPT		https://fcit.usf.edu/network/chap5/chap5.htm#LinearBusnetwork	CO1	PPT_4	https://www.cse.wustl.edu/~jain/cse567-08/ftp/topology/index.html#mesh_network_topology	Numerical Problem
L5	1	Ring, Star and Hybrid Topology	Compare the characteristics of Ring, Star and Hybrid topologies		Lecture through PPT	Role Play	https://fcit.usf.edu/network/chap5/chap5.htm#StarNetwork	CO1	PPT_5	https://www.cse.wustl.edu/~jain/cse567-08/ftp/topology/index.html#ring_network_topology	Role Play


 Director
 Tecnia Institute of Advanced Studies
 (Affiliated to GGSIP University Delhi)
 Madhuban Chowk, Rohini, Delhi-85

L6	1	Types of networks	Distinguish among LAN, MAN, PAN and WAN		Lecture through PPT	https://www.youtube.com/watch?v=4_zSiXb7tLQ	https://fcit.usf.edu/network/chap1/chap1.htm#LocalAreaNetwork	CO1	PPT_6	https://www.youtube.com/watch?v=0LFNN9DgUR8&list=PLM-jfaaaU5izLzA9oShVBFDgFifY_VLpI&index=21	Questions from Assignment
L7	1	OSI Reference Model	Understand the functionality of the layers of OSI model		Lecture through PPT		https://www.youtube.com/watch?v=8BK70UDgyrc&list=PLBhMhDVUMngf-peFloB7kyiA40EptH1up&index=5	CO2	PPT_7	https://www.youtube.com/watch?v=-6Uoku-M6oY&t=304s	
L8	1	TCP/IP Reference Model	Understand the functions of layers in TCP/IP Model		Lecture through PPT	Wireshark Demonstration	https://www.youtube.com/watch?v=_9QaylSruzo	CO2	PPT_8		
L9	1	OSI vs TCP/IP Model	Compare and contrast the features of OSI and TCP/IP reference models		Group Discussion		https://study-ccna.com/osi-tcp-ip-models/	CO2			Group Discussion 1
L10	1	Guided Transmission Media	Differentiate between various guided transmission media		Lecture through PPT	Guided Media Demonstration	https://www.youtube.com/watch?v=fSjU2oE_cmY	CO3	PPT_10		Questions from Assignment
L11	1	Unguided Transmission Media	Compare different types of unguided transmission media		Lecture through PPT		https://www.ijrti.org/papers/IJRTI1802004.pdf	CO3	PPT_11		
L12	1	Attenuation, distortion, noise, Signal to Noise Ratio (SNR)	Understand the different barriers to communication like Attenuation	Numerical on SNR calculation	Lecture through PPT			CO3	PPT_12		
L13	1	Throughput, propagation speed and time	Differentiate between throughput, propagation speed and time	Numerical on Propagation delay	Lecture through PPT		https://cse.iitkgp.ac.in/~agupta/networks/2-TransmissionBasics.pdf	CO3	PPT_13		Numerical Problem
L14	1	Wavelength and Shannon Capacity	Use Shannon's formula to find maximum capacity	Numerical on Shannon Capacity	Lecture through PPT			CO3	PPT_14		
L15	1	Revision	Recall the concepts studied in Unit 1		Discussion and Doubt Clearing Session						
L16	2	Frequency Division Multiplexing	Understand the working of Frequency Division Multiplexing		Lecture through PPT		https://www.youtube.com/watch?v=y2ZQkQZ7DWU	CO3, CO5	PPT_16	http://www.cs.emory.edu/~cheung/Courses/558/Syllabus/11-Fairness/Multiplexing.html	
L17	2	Wavelength Division Multiplexing	Differentiate the features of WDM and FDM		Lecture through PPT		https://www.youtube.com/watch?v=KdefsaYPCh4	CO3, CO5	PPT_17		

L18	2	Time Division Multiplexing	Distinguish among TDM, FDM and WDM		Lecture through PPT		https://www.youtube.com/watch?v=uU5ykeHg3c	CO3, CO5	PPT_18	http://www.cs.emory.edu/~cheung/Courses/558/Syllabus/11-Fairness/Multiplexing.html	Group Discussion 2
L19	2	Circuit switching	Understand circuit switching and analyze its advantages and disadvantages		Lecture through PPT	Role Play		CO3, CO5	PPT_19		
L20	2	Packet switching	Compare packet switching with circuit switching		Lecture through PPT		https://www.youtube.com/watch?v=A8ePVMijOCI	CO3, CO5	PPT_20		
L21	2	Message switching	Compare message switching, packet switching and circuit switching		Lecture through PPT		https://www.youtube.com/watch?v=2eFeXAHGjDI	CO3, CO5	PPT_21		
L22	2	Data Link Layer	Understand the functions of data link layer		Lecture through PPT		https://www.youtube.com/watch?v=jMvA9mSlwtK	CO2	PPT_22		Viva Voce
L23	2	Framing techniques: Character Count and Bit Stuffing	Implement character count and bit stuffing framing techniques	Question on bit stuffing framing technique	Lecture through PPT		https://www.youtube.com/watch?v=xh1LWyZf9uo&list=PLM-jfaaaU5izLzA9oShVBFdGFfY_VLpI&index=16	CO5	PPT_23	https://www.youtube.com/watch?v=JHGkHR_YSKc	
L24	2	Framing techniques: Byte Stuffing and Coding Violations	Implement Byte stuffing and Coding Violations framing technique	Question on byte stuffing method	Lecture through PPT		https://www.youtube.com/watch?v=JHGkHR_YSKc	CO5	PPT_24		
L25	2	Error detection methods: One bit and two bit parity check	Perform error detection through one bit parity check and two-bit parity check methods	Numerical on Parity bit calculation	Lecture through PPT		https://www.youtube.com/watch?v=5pNjKpYeMFQ&list=PLM-jfaaaU5izLzA9oShVBFdGFfY_VLpI&index=4	CO5	PPT_25	Numerical Problem	
L26	2	Error detection methods: Cyclic Redundancy Check and Checksum	Perform error detection using CRC and Checksum techniques	Numerical on CRC calculation	Lecture through PPT		https://www.cse.iitb.ac.in/~sri/cs348/cs348-lec8-ErrorDetection-2012.pdf	CO5	PPT_26		
L27	2	Error correction methods: Hamming Code	Implement error correction using Hamming Code technique	Numerical on Hamming Code	Lecture through PPT		https://www.youtube.com/watch?v=7-ai7ELuj3I&list=PLM-jfaaaU5izLzA9oShVBFdGFfY_VLpI&index=9	CO5	PPT_27		https://cse.iitkgp.ac.in/~ksrao/pdf/iti-18/slide-3.pdf

L28	2	Flow control	Understand the basics of flow control and differentiate between its two types		Lecture through PPT		https://www.youtube.com/watch?v=TrgZ7_L525w	CO3	PPT_28		Viva Voce
L29	2	Stop & wait ARQ protocol	Understand the stop & wait ARQ protocol		Lecture through PPT	Role Play	https://www.youtube.com/watch?v=jQakTxK9oE4&list=PLM-jfaaaU5izLzA9oShVBFDgFifY_VLpl&index=5	CO5	PPT_29	https://www.youtube.com/watch?v=v5zT-tp9P_I&list=PLM-jfaaaU5izLzA9oShVBFDgFifY_VLpl&index=6	Role Play
L30	2	Selective repeat ARQ protocol	Understand selective repeat ARQ protocol		Lecture through PPT		https://www.cse.iitb.ac.in/~sri/cs348/cs348-lec7-SlidingWindow-2012.pdf	CO5	PPT_30	https://www.youtube.com/watch?v=9zAl8Z-aREk&list=PLM-jfaaaU5izLzA9oShVBFDgFifY_VLpl&index=8	
L31	2	Go-Back- NARQ protocol	Understand Go-Back- NARQ protocol		Lecture through PPT		https://www.youtube.com/watch?v=bi_GVYM2EYQ&list=PLM-jfaaaU5izLzA9oShVBFDgFifY_VLpl&index=30	CO5	PPT_31		
L32	2	Revision	Recall the concepts studied in Unit 2		Discussion and Doubt Clearing Session						
L33	3	Network Layer	Understand the functionality of Network layer in the reference model		Lecture through PPT		https://www.youtube.com/watch?v=0BZ3AWZqfPM&list=PLM-jfaaaU5izLzA9oShVBFDgFifY_VLpl&index=30	CO2	PPT_33	https://www.youtube.com/watch?v=vjGOvMDbyjQ&list=PLM-jfaaaU5izLzA9oShVBFDgFifY_VLpl&index=31	Viva Voce
L34	3	Repeaters and Hubs	Compare the function of repeaters and hub		Lecture through PPT			CO1	PPT_34		
L35	3	Bridges and Switches	Compare the function of bridges and switches		Lecture through PPT		https://www.youtube.com/watch?v=teWamogDiuk	CO1	PPT_35		
L36	3	Router and Gateway	Understand the functions of router and gateways		Lecture through PPT	Demonstration		CO1	PPT_36		
L37	3	Modems	Understand the working of a MODEM		Lecture through PPT			CO1	PPT_37		
L38	3	Addressing: IPv4 and IPv6 addressing	Understand Classful addressing	Numerical on Classful addressing	Lecture through PPT	Wireshark Demonstration	https://www.youtube.com/watch?v=hJpD8JYe2dM&list=PLM-jfaaaU5iwyJ2YHYQtsj4Q2Ijtwlx-&index=6	CO4	PPT_38	https://www.youtube.com/watch?v=WarLURKAUKs&list=PLQgOKy0AIWh889ExOLIVoQDw57tgGEY2x&index=2&t=160s	Question from Mini Project
L39	3	IPv4 subnetting	Implement subnetting for Class A, Class B and Class C	Numerical on calculation of subnet mask	Lecture through PPT			CO4	PPT_39		Numerical Problem

L40	3	IPv4 subnetting			Lecture through PPT			CO4	PPT_40		
L41	3	Routing and its types	Understand the basics of routing		Lecture through PPT		https://www.youtube.com/watch?v=B_gWddn12GI&list=PLM-jfaoaU5izLzA9oShVBFDgFifY_VLpI&index=32	CO4	PPT_41		
L42	3	Routing Information Protocol	Understand the working of Routing Information Protocol		Lecture through PPT			CO4	PPT_42		
L43	3	Open Shortest Path First	Explain Open Shortest Path First (OSPF)	Questions on OSPF protocol	Lecture through PPT		https://www.youtube.com/watch?v=gkkbJrF7IMg&list=PLM-jfaoaU5izLzA9oShVBFDgFifY_VLpI&index=33	CO4	PPT_43		
L44	3	Border Gateway Protocol	Describe Border Gateway Protocol (BGP)		Lecture through PPT			CO4	PPT_44		
L45	3	Static and Dynamic Routing	Compare Static and Dynamic Routing		Lecture through PPT			CO4	PPT_45		
L46	3	Distance vector routing protocol	Understand the features of Distance vector routing protocol		Lecture through PPT		https://www.youtube.com/watch?v=dmS1t2twFrI	CO4	PPT_46	https://www.youtube.com/watch?v=c_06mcZ56js&list=PLM-	
L47	3	Link state routing protocol	Understand the working of Link State Routing protocol		Lecture through PPT		https://www.youtube.com/watch?v=CPyatRMMaMA&list=PLM-jfaoaU5izLzA9oShVBFDgFifY_VLpI&index=25	CO4	PPT_47	https://www.youtube.com/watch?v=dINbkkxHY4U	
L48	3	Revision	Recall the concepts studied in Unit 3								
L49	4	Transport layer	Understand the use of transport layer in the reference model		Lecture through PPT		https://www.youtube.com/watch?v=gYP4RWRBv_4&list=PLQgOKy0AIWh889Ex0LIVoQDw57tgGEY2x&index=50	CO2	PPT_49		
L50	4	Transport layer functions	Describe various functions of transport layer		Lecture through PPT		https://www.youtube.com/watch?v=UpEs1P5uelQ&list=PLM-jfaoaU5iwyJ2YHYQtySJ4Q2ljtwlx-&index=11	CO2	PPT_50	https://www.youtube.com/watch?v=wQ4_N73du00	

Viva Voce

Viva Voce

L51	4	Transmission Control Protocol	Understand the features and format of TCP		Lecture through PPT	Wireshark Demonstration		CO3	PPT_51		Question from Mini Project
L52	4	User Datagram Protocol	Compare and contrast the features of UDP with TCP		Lecture through PPT	Wireshark Demonstration	https://www.youtube.com/watch?v=MTLNqCWtGf0&list=PLM-jfaaaU5iwyJ2YHYQtySJ4Q2Ijtwlx-&index=10	CO3	PPT_52		
L53	4	Connection management	Understand the concept of TCP handshake in connection management		Lecture through PPT		https://www.youtube.com/watch?v=7-NhvKMrrgc&list=PLM-jfaaaU5iwyJ2YHYQtySJ4Q2Ijtwlx-&index=12	CO3	PPT_53	https://www.youtube.com/watch?v=y8WQ7zo3KhE&list=PLM-jfaaaU5iwyJ2YHYQtySJ4Q2Ijtwlx-&index=51	
L54	4	Session layer	Understand the functions of session layer		Lecture through PPT			CO2			Viva Voce
L55	4	Presentation layer	Describe functions and responsibilities of presentation layer		Lecture through PPT	Wireshark Demonstration		CO2			
L56	4	Application layer	Understand the functions and responsibilities of application layer		Lecture through PPT		https://www.youtube.com/watch?v=axK1d0bzbyl&list=PLQgOKy0AIWh889Ex0LIVoQDw57tgGEY2x&index=11	CO2			
L57	4	Domain Name Server	Understand the working of Domain Name Server		Lecture through PPT	https://www.youtube.com/watch?v=kPLxqSpWU50&list=PLQgOKy0AIWh889Ex0LIVoQDw57tgGEY2x&index=11	https://www.youtube.com/watch?v=ntasG1TWCAE&list=PLM-jfaaaU5iwyJ2YHYQtySJ4Q2Ijtwlx-&index=3	CO3		https://www.youtube.com/watch?v=sISdGU-isdC&list=PLM-jfaaaU5iwyJ2YHYQtySJ4Q2Ijtwlx-&index=4	Question from Mini Project
L58	4	Email, HTTP and HTTPS	Understand the basics of email and the difference between HTTP and HTTPS		Lecture through PPT	https://www.youtube.com/watch?v=whnPcd-h82A&list=PLQgOKy0AIWh889Ex0LIVoQDw57tgGEY2x&index=16	https://www.youtube.com/watch?v=chzCgHdR6G4&list=PLM-jfaaaU5iwyJ2YHYQtySJ4Q2Ijtwlx-&index=41	CO3		https://www.youtube.com/watch?v=DiOrcmsEO6w&list=PLQgOKy0AIWh889Ex0LIVoQDw57tgGEY2x&index=13	
L59	4	Revision	Recall the concepts studied in Unit 3		Discussion and Doubt Clearing Session						
L60	1,2,3,4	Revision	Revision of complete course	Solving questions from previous year papers	Discussion on questions from previous year papers						