KSIT BANGALORE

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE FILE

NAME OF THE STAFF	**:**	**Dr. DINESH KUMAR D S**
SUBJECT CODE/NAME	**:**	**18EC71-COMPUTER NETWORKS**
SEMESTER/YEAR	**:**	**VII/IV**
ACADEMIC YEAR	**:**	**2022 – 2023**
BRANCH	**:**	**ECE**

COURSE IN-CHARGE

HOD

K.S. INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

VISION:

"To achieve excellence in academics and research in Electronics & Communication Engineering to meet societal need".

MISSION:

- To impart quality technical education with the relevant technologies to produce industry ready engineers with ethical values.
- To enrich experiential learning through active involvement in professional clubs &societies.
- To promote industry-institute collaborations for research &development.

K. S. INSTITUTE OF TECHNOLOGY

VISION

" To impart quality technical education with ethical values, employable skills and research to achieve excellence".

MISSION

- To attract and retain highly qualified, experienced & committed faculty.
- To create relevant infrastructure.
- Network with industry & premier institutions to encourage emergence of new ideas by providing research & development facilities to strive for academic excellence.
- To inculcate the professional & ethical values among young students with employable skills & knowledge acquired to transform the society.

K S INSTITUTE OF TECHNOLOGY

PROGRAM OUTCOMES (PO'S)

Engineering Graduates will be able to:

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

K.S. INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

PROGRAM EDUCATIONAL OBJECTIVES (PEO'S)

PEO1: Excel in professional career by acquiring domain knowledge.

PEO2: Motivation to pursue higher Education & research by adopting technological innovations by continuous learning through professional bodies and clubs.

PEO3: To inculcate effective communication skills, team work, ethics and leadership qualities.

PROGRAM SPECIFIC OUTCOMES (PSO'S)

PSO1: Graduate should be able to understand the fundamentals in the field of Electronics & Communication and apply the same to various areas like Signal processing, embedded systems, Communication & Semiconductor technology.

PSO2: Graduate will demonstrate the ability to design, develop solutions for Problems in Electronics & Communication Engineering using hardware and software tools with social concerns.

K S INSTITUTE OF TECHNOLOGY

PROGRAM OUTCOMES (PO'S)

Engineering Graduates will be able to:

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

K.S.INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGG.
LIST OF STUDENTS STUDYING IN VII SEMESTER
FOR THE ACADEMIC YEAR - 2022 (ODD SEMESTER)

SECTION : A

SL.NO	USN	NAME OF THE STUDENT
1	1KS19EC001	ABHILASH A S
2	1KS19EC002	ABHISHEK CHANDRESH
3	1KS19EC003	AISHWARYA BASAVARAJ KEMBAVI
4	1KS19EC004	AISHWARYA M G
5	1KS19EC005	AKSHAY KUMAR D
6	1KS19EC006	AKSHITHA
7	1KS19EC007	AMRUTA
8	1KS19EC008	AMULYA R
9	1KS19EC009	ANITHA S
10	1KS19EC010	ANJALI Y J
11	1KS19EC011	ARCHANA YADAV M
12	1KS19EC012	ASHRITHA R
13	1KS19EC014	BHAVANA S
14	1KS19EC015	CHAITRA P
15	1KS19EC016	CHANDAN RAJ Y
16	1KS19EC017	CHANDANA.L
17	1KS19EC018	CHENNREDDY RAJASEKHAR
18	1KS19EC019	CHIRANTHANA YOGANANDA K
19	1KS19EC020	D NAYAN
20	1KS19EC021	DANESH RAJU V
21	1KS19EC022	DAVINO JOSEPH
22	1KS19EC023	DHANYA SUKANTH B K
23	1KS19EC024	DHEEMANTH K N
24	1KS19EC025	DISHA SHIVANI
25	1KS19EC027	GAYATHRI P K
26	1KS19EC028	GAYATHRI R WARRIER
27	1KS19EC029	GONUGUNTLA SAI SIDDARTHA
28	1KS19EC030	GOWRI S NADIGER
29	1KS19EC031	HARSHA R
30	1KS19EC032	HARSHITHA B Y
31	1KS19EC033	HEMANTH.R.PATIL
32	1KS19EC035	JAGRUTI PAI
33	1KS19EC036	JAYANTH M B
34	1KS19EC037	KAMMA MANUBOLU MANOGNA
35	1KS19EC038	KARTHIK K
36	1KS19EC039	KASHYAP.P
37	1KS19EC040	KRUPA.A
38	1KS19EC041	KRUTHIK S
39	1KS19EC042	LAKSHMAN KUMARA B
40	1KS19EC043	LIKITHA.H
41	1KS19EC044	M LOKESHWARI
42	1KS19EC045	MANU N KANDRA
43	1KS19EC046	MEGHANA H P
44	1KS19EC047	MOHAMMAD RAKHEEB M R
45	1KS19EC048	MOHITH KUMAR G
46	1KS19EC049	MONIKA V ARYA
47	1KS19EC050	MONISHA.B.K
48	1KS19EC051	N ANILA
49	1KS19EC052	NIDHI S
50	1KS19EC053	NISARGA K
51	1KS19EC054	NITHIN D
52	1KS19EC055	PAVAN KUMAR G R
53	1KS19EC056	POKURI MOUNIKA
54	1KS19EC057	POOJA S P
55	1KS19EC058	PRADEEP GADED
56	1KS19EC059	PRAKASH CHEGORE
57	1KS19EC061	PRASHANTH.S.K
58	1KS19EC062	PRAVEEN KUMAR N
59	1KS19EC063	PREETHAM G H
60	1KS19EC064	PRIYANKA K
61	1KS19EC065	RADHA KRISHNA L
62	1KS19EC066	RAJALAKSHMI S

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGG.

LIST OF STUDENTS STUDYING IN VII SEMESTER

FOR THE ACADEMIC YEAR - 2022 (ODD SEMESTER)

SECTION : B

SL.NO	USN	NAME OF THE STUDENT
1	1KS19EC067	RAMYASREE R
2	1KS19EC068	RANGASWAMY.U
3	1KS19EC069	ROHAN K R
4	1KS19EC070	S K BHARATESH
5	1KS19EC071	SABARISH I J
6	1KS19EC073	SAHANA S
7	1KS19EC074	SAI PRIYA T S
8	1KS19EC075	SAMIKSHA S
9	1KS19EC076	SANTOSH HEGDE
10	1KS19EC077	SATHVIK U M
11	1KS19EC078	SHAMITHA BIJOOR
12	1KS19EC079	SHASHANK KASHYAP.H.R
13	1KS19EC081	SHREYAMS D K
14	1KS19EC082	SHREYAS B ARADHYA
15	1KS19EC083	SHREYAS GOWDA
16	1KS19EC084	SHREYAS V BHARADWAJ
17	1KS19EC085	SHUBHAM KUMAR SINGH A
18	1KS19EC086	SINCHANA M N
19	1KS19EC087	SRINIVAS S
20	1KS19EC088	SRINIVASAN M
21	1KS19EC089	SRIRAM
22	1KS19EC090	SUHAS.M
23	1KS19EC092	SUMUKHA VASISHTA M R
24	1KS19EC093	SUSHMITHA S
25	1KS19EC094	SWAGATH AITHAL P G
26	1KS19EC095	SWATHI U
27	1KS19EC096	T N L RUTHVIK
28	1KS19EC097	TEJASHWINI P V
29	1KS19EC098	THEERTHANA S R
30	1KS19EC099	TUSHAR R VASISHTA
31	1KS19EC100	VAISHNAVI K
32	1KS19EC101	VANDANA G
33	1KS19EC102	VANDANA S
34	1KS19EC103	VIGNESH MUTHAIAH R
35	1KS19EC104	VIKAS S
36	1KS19EC105	VINUTH S REDDY
37	1KS19EC106	VISHAL SANJAY RAJU
38	1KS19EC107	VISHNU RAATA YADUNANDAN
39	1KS19EC108	YASHASWINI N
40	1KS18EC089	SNEHA N
41	1KS20EC400	MADALA VIVEK KUMAR
42	1KS20EC401	RANJANA P
43	1KS20EC402	SINDHU J

K.S INSTITUT E OF TECHNOLOGY, BENGALURU-560109

TENTATIVE CALENDAR OF EVENTS: VII ODD SEMESTER (2022-2023)

SESSION: SEP 2022 – DEC 2022

Week No.	Month	Day						Days	Activities
		Mon	Tue	Wed	Thu	Fri	Sat		
1	SEP	19*	20	21	22	23	24 DH	5	19*-Commencement of VII Semester
2	SEP/OCT	26	27	28	29	30	1	6	1 - Wednesday Time Table
3	OCT	3	4H	5H	6	7	8 DH	3	4-Ayudha Pooja 5- Vijaya Dasami
4	OCT	10	11	12	13	14	15 TA	6	15-Friday Time Table
5	OCT	17 T1	18 T1	19 T1	20	21	22 DH	5	
6	OCT	24 H	25	26 H	27 LT1	28LT1	29 LT1	4	24-Naraka Chaturdashi 26- Balipadyami Deepavalli
7	OCT/NOV	31	1H	2	3* FFB1	4 BV	5 DH	4	1- Kannada Rajyotsava 3* - First Faculty Feed Back
8	NOV	7 ASD	8	9	10	11H	12	5	11- Kanakadasa Jayanti 12- Tuesday Time Table
9	NOV	14	15	16	17	18 TA	19 DH	5	
10	NOV	21 T2	22 T2	23 T2	24	25	26	6	26 - Wednesday Time Table
11	NOV/DEC	28 * FFB2	29	30 BV	1	2 ASD	3 DH	5	28* -Second Faculty Feed Back
12	DEC	5	6	7	8	9	10	6	10- Tuesday Time Table
13	DEC	12	13	14	15	16	17 DH	5	
14	DEC	19	20	21 TA	22 T3	23 T3	24 T3	6	
15	DEC	26	27	28 LT2	29 LT2	30 LT2	31*	6	31-Monday Time Table 31 - Last Working day
Total No of Working Days : 77									

Total Number of working days (Excluding holidays and Tests)=62

H	Holiday
BV	Blue Book Verification
T1,T2,T3	Tests 1,2, 3
ASD	Attendance & Sessional Display
DH	Declared Holiday
LT	Lab Test
TA	Test attendance

Monday	13
Tuesday	13
Wednesday	12
Thursday	12
Friday	12
Total	**62**

22/09/22

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K. S INSTITUTE OF TECHNOLOGY, BENGALURU-560109

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

TENTATIVE CALENDAR OF EVENTS: VII ODD SEMESTER (2022-2023)

SESSION: SEP 2022 – DEC 2022

Week No.	Month	Day						Days	Activities	Department Activities Tentative Dates	Budget (RS.)
		Mon	Tue	Wed	Thu	Fri	Sat				
1	SEP	19*	20	21	22	23	24 DH	5	19*-Commencement of VII Semester		
2	SEP/ OCT	26	27	28	29	30	1	6	1 - Wednesday Time Table	Sep 26th to 30th - FDP Under IEEE, IEI, IETE & ISTE	27000
3	OCT	3	4H	5H	6	7	8 DH	3	4-Ayudha Pooja 5- Vijaya Dasami		
4	OCT	10	11	12	13	14	15 TA	6	15-Friday Time Table	Oct. 10th &11th Workshop Under Anthariksh Oct 15th - IEEE day	15000
5	OCT	17 T1	18 T1	19 T1	20	21	22 DH	5		Oct21st - Industrial Visit for 7th sem	500
6	OCT	24 H	25	26 H	27 LT1	28 LT1	29 LT1	4	24-Naraka Chaturdashi 26- Balipadyami Deepavalli		
7	OCT/ NOV	31	1 H	2	3* FFB1	4 BV	5 DH	4	1- Kannada Rajyotsava 3* - First Faculty Feed Back	Nov. 2nd - Industrial Visit for 5th sem	500
8	NOV	7 ASD	8	9	10	11H	12	5	11- Kanakadasa Jayanti 12- Tuesday Time Table	Nov. 8th Self Happines & Resilience Nov. 12th - FDP on "Patent Search and Analysis" for students & staff.	5000
9	NOV	14	15	16	17	18 TA	19 DH	5		Nov. 15 - IEEE Awareness for 1st year students Nov. 16th - Talk Under ASH/IEEE-WIE for 5th & 7th sem Nov.17th -Talk on Entrepreneurship development Skill Under ISTE	7000
10	NOV	21 T2	22 T2	23 T2	24	25	26	6	26 - Wednesday Time Table	Nov. 24,25&26th -3 days "Hands-on Workshop on Embedded system Design using Raspberry pico" for students	10000
11	NOV/ DEC	28 * FFB2	29	30 BV	1	2 ASD	3 DH	5	28* -Second Faculty Feed Back	Nov. 28th & 29th AICTE Activity	1000
12	DEC	5	6	7	8	9	10	6	10- Tuesday Time Table	Dec.8th & 9th - Workshop for 3rd & 5th sem students Under Garut AeroModeling Club Dec. 10th - Guest Lecture on "Addressing challenges in research publications" for students & Staff	8000
13	DEC	12	13	14	15	16	17 DH	5		Dec. 12th- Motivational Talk Under ISTE	3000
14	DEC	19	20	21 TA	22 T3	23 T3	24 T3	6		Dec. 24th- Indusrial Visit for 3rd sem	500
15	DEC	26	27	28 LT2	29 LT2	30 LT2	31*	6	31-Monday Time Table 31 - Last Working day	Dec. 30th- Carrier Guidance	3000
Total No of Working Days : 77											

Total Number of working days (Excluding holidays and Tests)=62

H	Holiday
BV	Blue Book Verification
T1,T2, T3	Tests 1,2, 3
ASD	Attendance & Sessional Display
DH	Declared Holiday
LT	Lab Test
TA	Test attendance

Monday	13
Tuesday	13
Wednesday	12
Thursday	12
Friday	12
Total	62

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

VII SEMESTER TIME TABLE FOR THE YEAR 2022 (ODD SEMESTER)

W.E.F. : 19/9/2022

SEC : 'B'

CLASS TEACHER : Mr. Aswini Kumar G

CLASS ROOM : OB LH 311

PERIOD	1	2	10.20 AM 10.35 AM	3	4	12.25 PM 1.15 PM	5	6	7
TIME DAY	8.30 AM 9.25 AM	9.25 AM 10.20 AM		10.35 AM 11.30 AM	11.30 AM 12.25 PM		1.15 PM 2.10 PM	2.10 PM 3.05 PM	3.05 PM 4.00 PM
MON	E&E (18ME751)	CRYPTO (18EC744)	TEA BREAK	VLSI (18EC72)	SC (18EC732)	LUNCH BREAK	← Project Work Phase - 1 (18ECP78) →		
TUE	E&E (18ME751)	CRYPTO (18EC744)		VLSI (18EC72)	CN (18EC71)		← CN LAB (18ECL76) -B2 / VLSI LAB (18ECL77) -B1 →		
WED	CN (18EC71)	CRYPTO (18EC744)		SC (18EC732)	VLSI (18EC72)		E&E (18ME751)	CRYPTO (18EC744)-(T)	
THU	CRYPTO (18EC744)	SC (18EC732)		E&E (18ME751)	CN (18EC71)		← CN LAB (18ECL76) -B3 / VLSI LAB (18ECL77) -B2 →		
FRI	← CN LAB (18ECL76) -B1 / VLSI LAB (18ECL77) -B3 →				VLSI (18EC72)		CN (18EC71)	SC (18EC732)	

Sub-Code	Subject Name	Faculty Name
18EC71	Computer Networks	Dr. Dinesh Kumar D S
18EC72	VLSI Design	Mr. Aswini Kumar G
18EC732	Satellite Communication Professional Elective - 2	Mrs. Pooja S
18EC744	Cryptography Professional Elective - 3	Dr. P.N Sudha
18ME751	Energy and Environment Open Elective -B	Dr. B Surekha
18ECL76	Computer Networks Lab	Mr. Saleem S Tevaramani, Mr. Praveen.A.
18ECL77	VLSI Laboratory	Mrs. Pooja .S , Mr. Aswini Kumar G
18ECP78	Project Work Phase - 1	Dr. B.Sudharshan, Dr. Rekha N
	Internship	Mr. Santhosh Kumar B R

Time Table Co-ordinator

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
INDIVIDUAL TIME TABLE FOR THE YEAR - 2022 (ODD SEMESTER)

W.E.F. : 19/9/2022

NAME OF THE FACULTY : Dr. DINESH KUMAR D S

DESIGNATION: ASSOCIATE PROFESSOR

PERIOD	1	2		3	4		5	6	7
TIME DAY	8.30 AM 9.25 AM	9.25 AM 10.20 AM	10.20 AM 10.35 AM	10.35 AM 11.30 AM	11.30 AM 12.25 PM	12.25 PM 1.15 PM	1.15 PM 2.10 PM	2.10 PM 3.05 PM	3.05 PM 4.00 PM
MON		CN (18EC71) -A	T E A B			L U N C H B R E A K	← CN LAB (18ECL76) -A2 →		
TUE		CN (18EC71) -A			CN (18EC71) -B		← WC LAB (18TEL76) →		
WED	CN (18EC71)/- B						← CN LAB (18ECL76) -A3 →		
THU	← CN LAB (18ECL76) -A1 →				CN (18EC71) - B			CN (18EC71) -A	
FRI			R E	CN (18EC71) -A			CN (18EC71) -B		

	Subject Code	Subject Name	Sem	Section	Work Load
Subject 1	18EC71	Computer Networks	VII	A&B	8
Lab -1	18ECL76	Computer NetworksLab	VII	3	9
Lab -2	18TEL76	Wireless Communication Laboratory	VII (TC)	1	3
Project	18ECP78	Project Work Phase - 1	VII		2

ADDITIONAL WORK: MENTORING AND OTHERS

TOTAL LOAD= 22 Hrs/Week

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

VII SEMESTER TIME TABLE FOR THE YEAR 2022 (ODD SEMESTER)

W.E.F. : 19/9/2022

SEC : 'A'

CLASS TEACHER : Mrs. Pooja S

CLASS ROOM : OB LH 310

PERIOD	1	2	10.20 AM 10.35 AM	3	4	12.25 PM 1.15 PM	5	6	7
TIME DAY	8.30 AM 9.25 AM	9.25 AM 10.20 AM		10.35 AM 11.30 AM	11.30 AM 12.25 PM		1.15 PM 2.10 PM	2.10 PM 3.05 PM	3.05 PM 4.00 PM
MON	CRYPTO (18EC744)	CN (18EC71)	TEA BREAK	E&E (18ME751)	VLSI (18EC72)	LUNCH BREAK	← CN LAB (18ECL76) -A2 / VLSI LAB (18ECL77) -A1 →		
TUE	CRYPTO (18EC744)	CN (18EC71)		SC (18EC732)	VLSI (18EC72)		← Project Work Phase - 1 (18ECP78) →		
WED	SC (18EC732)	VLSI (18EC72)		CRYPTO (18EC744)	E&E (18ME751)		← CN LAB (18ECL76) -A3 / VLSI LAB (18ECL77) -A2 →		
THU	← CN LAB (18ECL76) -A1 / VLSI LAB (18ECL77) -A3 →				SC (18EC732)		E&E (18ME751)	CN (18EC71)	
FRI	CRYPTO (18EC744)	E&E (18ME751)	AK	CN (18EC71)	SC (18EC732)		VLSI (18EC72)	CRYPTO (18EC744) (T)	

Sub-Code	Subject Name	Faculty Name
18EC71	Computer Networks	Dr. Dinesh Kumar D S
18EC72	VLSI Design	Mr. Praveen.A.
18EC732	Satellite Communication Professional Elective - 2	Mrs. Pooja S
18EC744	Cryptography Professional Elective - 3	Dr. P.N Sudha
18ME751	Energy and Environment Open Elective -B	Dr. B Surekha
18ECL76	Computer Networks Lab	Mr. Saleem S Tevaramani, Dr. Dinesh Kumar D S
18ECL77	VLSI Laboratory	Mr. Praveen.A, Mr. Aswini Kumar G
18ECP78	Project Work Phase - 1	Dr. B.Sudharshan, Dr. Rekha N
	Internship	Mr. Santhosh Kumar B R

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BENGALURU - 560 109.

B. E. 2018 Scheme Seventh Semester Syllabus (EC)

Choice Based Credit System (CBCS) and Outcome Based Education (OBE)

SEMESTER – VII
COMPUTER NETWORKS

Course Code	: 18EC71	CIE Marks	: 40
Lecture Hours/Week	: 3	SEE Marks	: 60
Total Number of Lecture Hours : 40 (08 Hrs/module)		Exam Hours	: 03
CREDITS – 03			

Course Learning Objectives: This course will enable students to:

- Understand the layering architecture of OSI reference model and TCP/IP protocol suite.
- Understand the protocols associated with each layer.
- Learn the different networking architectures and their representations.
- Learn the functions and services associated with each layer.

Module-1

Introduction: Data communication: Components, Data representation, Data flow, Networks: Network criteria, Physical Structures, Network types: LAN, WAN, Switching, The Internet.
(1.1,1.2, 1.3(1.3.1to 1.3.4 of Text)
Network Models: Protocol Layering: Scenarios, Principles, Logical Connections, TCP/IP Protocol Suite: Layered Architecture, Layers in TCP/IP suite, Description of layers, Encapsulation and Decapsulation, Addressing, Multiplexing and Demultiplexing, The OSI Model: OSI Versus TCP/IP.
(2.1, 2.2, 2.3 of Text) **L1, L2**

Module-2

Data-Link Layer: Introduction: Nodes and Links, Services, Two Categories' of link, Sublayers, Link Layer addressing: Types of addresses, ARP. Data Link Control (DLC) services: Framing, Flow and Error Control, Data Link Layer Protocols: Simple Protocol, Stop and Wait protocol, Piggybacking.
(9.1, 9.2(9.2.1, 9.2.2), 11.1, 11.2of Text)
Media Access Control: Random Access: ALOHA, CSMA, CSMA/CD, CSMA/CA.**(12.1 of Text)**
Wired and Wireless LANs: Ethernet Protocol, Standard Ethernet. Introduction to wireless LAN: Architectural Comparison, Characteristics, Access Control.
(13.1, 13.2(13.2.1 to 13.2.5), 15.1 of Text) **L1,L2, L3**

Module-3

Network Layer: Introduction, Network Layer services: Packetizing, Routing and Forwarding, Other services, Packet Switching: Datagram Approach, Virtual Circuit Approach, IPV4 Addresses: Address Space, Classful Addressing, Classless Addressing, DHCP, Network Address Resolution, Forwarding of IP Packets: Based on destination Address and Label.
(18.1, 18.2, 18.4, 18.5.1, 18.5.2 of Text)

Network Layer Protocols: Internet Protocol (IP): Datagram Format, Fragmentation, Options, Security of IPv4 Datagrams. **(19.1of Text).**

Unicast Routing: Introduction, Routing Algorithms: Distance Vector Routing, Link State Routing, Path vector routing.
(20.1, 20.2of Text) **L1,L2, L3**

Module-4

Transport Layer: Introduction: Transport Layer Services, Connectionless and Connection oriented Protocols, Transport Layer Protocols: Simple protocol, Stop and wait protocol, Go-Back-N Protocol, Selective repeat protocol. **(23.1, 23.2.1, 23.2.2, 23.2.3, 23.2.4 of Text)**

Transport-Layer Protocols in the Internet:
User Datagram Protocol: User Datagram, UDP Services, UDP Applications, Transmission Control Protocol: TCP Services, TCP Features, Segment, Connection, State Transition diagram, Windows in TCP, Flow control, Error control, TCP congestion control.
(24.2, 24.3.1, 24.3.2, 24.3.3, 24.3.4, 24.3.5, 24.3.6, 24.3.7, 24.3.8, 24.3.9 of Text) **L1,L2, L3**

Module-5

Application Layer: Introduction: providing services, Application- layer paradigms, Standard Client –Server Protocols: World wide web, Hyper Text Transfer Protocol, FTP: Two connections, Control Connection, Data Connection, Electronic Mail: Architecture, Wed Based Mail, Telnet: Local versus remote logging.Domain Name system: Name space, DNS in internet, Resolution, DNS Messages, Registrars, DDNS, security of DNS.
(25.1, 26.1, 26.2, 26.3, 26.4, 26.6 of Text) **L1, L2**

Course Outcomes: At the end of the course, the students will be able to:

1. Understand the concepts of networking.
2. Describe the various networking architectures.
3. Identify the protocols and services of different layers.
4. Distinguish the basic network configurations and standards associated with each network.
5. Analyze a simple network and measure its parameters.

Question paper pattern:

- Examination will be conducted for 100 marks with question paper containing 10 full questions, each of 20 marks.
- Each full question can have a maximum of 4 sub questions.
- There will be 2 full questions from each module covering all the topics of the module.
- Students will have to answer 5 full questions, selecting one full question from each module.
- The total marks will be proportionally reduced to 60 marks as SEE marks is 60.

TEXT BOOK:

- Behrouz A Forouzan, "Data Communications and Networking", 5th Edition, McGraw Hill, 2013, ISBN: 1-25-906475-3.

REFERENCE BOOKS:

1. James J Kurose, Keith W Ross, "Computer Networks", Pearson Education.
2. Wayne Tomasi, "Introduction to Data Communication and Networking", Pearson Education.
3. Andrew S Tanenbaum, "Computer Networks", Prentice Hall.
4. William Stallings, "Data and Computer Communications", Prentice Hall.

K S INSTITUTE OF TECHNOLOGY BANGALORE-560109

DEPARTMENT OF ELECRONICS & COMMUNICATION ENGINEERING

NAME OF THE STAFF : Dr.Dinesh Kumar D S
SUBJECT CODE/NAME : 18EC71/COMPUTER NETWORKS
SEMESTER/YEAR/SEC : VII / A
ACADEMIC YEAR : 2022-2023

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	Module 1					
1	Introduction: Data Communications: Components, Representations,	L+D	BB+PPT	1	1	19/09/22
2	Data Flow, Networks Physical Structures,	L+D	BB+PPT	1	2	20/09/22
3	Network Types: LAN, WAN,	L+ D	BB+PPT	1	3	22/09/22
4	Switching, Internet		BB+PPT		4	23/09/22
5	Protocol Layering: Scenarios, Principles, Logical Connections	L+ D	BB+PPT	1	5	26/09/22
6	TCP/IP Protocol Suite: Layered Architecture, Layers in TCP/IP suite.	L+D	BB+PPT	1	6	27/09/22
7	Description of layers	L+ D	BB+PPT	1	7	29/09/21
8	Encapsulation and Decapsulation, Addressing, Multiplexing and Demultiplexing,	L+AV	BB+PPT	1	8	30/09/22
9	The OSI Model: OSI Versus TCP/IP	L+D	BB+PPT	1	9	03/10/22
	Module2					
10	**Data-Link Layer:** Introduction: Nodes and Links, Services, Categories of link	L+D	BB+PPT	1	10	06/10/22
11	Sublayers, Link Layer addressing: Types of addresses	L+ D	BB+PPT	1	11	07/10/22
12	ARP	L+D	BB+PPT	1	12	10/10/22
13	**Data Link Control (DLC) services:** Framing, Flow and Error Control	L+D	BB+PPT	1	13	11/10/22
14	Data Link Layer Protocols: Simple Protocol	L+D	BB+PPT	1	14	13/10/22
15	Stop and Wait protocol, Piggybacking	L+D	BB+PPT	1	15	14/10/22
16	Media Access Control: Random Access: Pure ALOHA ,slotted ALOHA	L+ D	BB+PPT	1	16	15/10/22
17	CSMA, CSMA/CD, CSMA/CA	L+ D	BB+PPT	1	17	20/10/22
18	**Wired and Wireless LANs:** Ethernet Protocol,	L+D	BB+PPT	1	18	21/10/22

19	Standard Ethernet	L+D	BB+PPT	1	19	25/10/22
20	Introduction to wireless LAN: Architectural Comparison, Characteristics, Access Control	L+D	BB+PPT	1	20	27/10/22
	Module 3					
21	**Network Layer:** Introduction, Network Layer services: Packetizing.	L+D	BB+PPT	1	21	28/10/22
22	Routing and Forwarding, Other services	L+D	BB+PPT	1	22	31/10/22
23	Packet Switching: Datagram Approach, Virtual Circuit Approach	L+D	BB+PPT	1	23	3/11/22
24	IPV4 Addresses: Address Space, Classful Addressing	L+D	BB+PPT	1	24	4/11/22
25	Classless Addressing	L+D	BB+PPT	1	25	7/11/22
26	DHCP, Network Address Resolution		BB+PPT		26	8/11/22
27	Forwarding of IP Packets: Based on destination Address, Based and Label	L+D	BB+PPT	1	27	10/11/22
28	Network Layer Protocols: Internet Protocol (IP): Datagram Format	L+D	BB+PPT	1	28	12/11/22
29	Options, Security of IPv4 Datagrams	L+D	BB+PPT	1	29	14/11/22
30	Unicast Routing: Introduction Routing Algorithms: Distance Vector Routing	L+D	BB+PPT	1	30	15/11/22
31	Link State Routing, Path vector routing	L+D	BB+PPT	1	31	17/11/22
	Module 4					
32	**Transport Layer:** Introduction: Transport Layer Services,Connectionless and Connection oriented Protocols	L+D	BB+PPT	1	32	18/11/22
33	Transport Layer Protocols: Simple protocol	L+D	BB+PPT	1	33	24/11/22
34	Stop and wait protocol,Go-Back-N Protocol	L+D	BB+PPT	1	34	25/11/22
35	,Selective repeat protocol	L+D	BB+PPT	1	35	28/11/22
36	User Datagram Protocol: User DatagramUDP Services	L+D	BB+PPT	1	36	29/11/22
37	Transmission Control Protocol: TCP Services, Features	L+D	BB+PPT	1	37	1/12/22
38	Segments, TCP connection	L+D	BB+PPT	1	38	2/12/22
39	State Transition diagram, Windows in TCP	L+D	BB+PPT	1	39	5/12/22
40	Flow control, Error control, TCP congestion control	L+D	BB+PPT	1	40	6/12/22
	Module 5					
41	Application Layer: Introduction: providing services	L+D	BB+PPT	1	41	8/12/22
42	Application- layer paradigms,	L+D	BB+PPT	1	42	9/12/22
43	Standard Client -Server Protocols: WWW, Hyper Text Transfer Protocol,	L+D	BB+PPT	1	43	10/12/22
44	FTP: Two connections, Control Connection, Data Connection	L+D	BB+PPT	1	44	12/12/22
45	Electronic Mail: Architecture	L+D	BB+PPT	1	45	13/12/22
46	Wed Based Mail	L+D	BB+PPT	1	46	15/12/22

47	Telnet: Local versus remote logging.	L+D	BB+PPT	1	47	16/12/22
48	Domain Name system: Name space,DNS in internet,	L+D	BB+PPT	1	48	19/12/22
49	Resolution, DNS Messages	L+D	BB+PPT	1	49	20/12/22
50	Registrars, DDNS, Security of DNS	L+D	BB+PPT	1	50	26/12/22
51	Revision	L+D	BB+PPT	1	51	27/12/22
52	Revision	L+D	BB+PPT	1	52	31/12/22

TEXTBOOK:

T1: Data Communications and Networking, Forouzan, 5th Edition, McGraw Hill, 2016 ISBN: 1-25-906475-3.

REFERENCES:

R1: Computer Networks, James J Kurose, Keith W Ross, Pearson Education, 2013, ISBN: 0-273-76896.

R2: Introduction to Data Communication and Networking, WayarlesTomasi, Pearson Education, 2007, ISBN: 0130138282.

WEB MATERIALS:

W1: https://nptel.ac.in/courses/106/105/106105183/

W2: https://nptel.ac.in/courses/106/105/106105081/

W3: https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-829-computer-networks-fall-2002/lecture-notes/

Course Incharge **Module Coordinator** **HOD ECE** **Principal**

K. S. INSTITUTE OF TECHNOLOGY

#14, Raghuvanahalli, Kanakapura Main Road, Bengaluru-560109

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Course: Computer Networks	**Course Code:18EC71**	**Type: Core**
Course In Charge: Dr.Dinesh Kumar D S	**Academic year:2022-23**	

No of Hours per week

Theory (Lecture Class)	Practical/Field Work/Allied Activities	Total/Week	Total teaching hours
4	0	4	50

Marks

Internal Assessment	Examination	Total	Credits
40	60	100	3

Aim/Objective of the Course:

This Course will enable students to:

- Understand the layering architecture of OSI reference model and TCP/IP Protocol suite.
- Understand the protocols associated with each layer.
- Learn the different networking architectures and their representations.
- Learn the functions and services associated with each layer.

Course Learning Outcomes:

After completing the course, the students will be able to,

CO1	**Examine** the layering architecture of computer networks and distinguish between the OSI reference model and TCP/IP protocol suite	Analyzing (K4)
CO2	**Evaluate** different DLL protocols and **distinguish** wired and wireless LAN architecture	Analyzing (K4)
CO3	**Distinguish** classful and classless IP addresses and **analyze** different network layer routing protocols	Analyzing (K4)
CO4	**Analyze** services of TCP and UDP and **evaluate** the performance of transport layer protocols.	Analyzing (K4)
CO5	**Analyze** services of application layer and **examine** variousprotocols such as FTP,WWW,TELNET and DNS	Analyzing (K4)

Syllabus Content:

Module 1 Introduction: Data Communications: Components, Representations, Data Flow, Networks: Physical Structures, Network Types: LAN, WAN, Switching, Internet. Network Models: Protocol Layering: Scenarios, Principles, Logical Connections, TCP/IP Protocol Suite: Layered Architecture, Layers in TCP/IP suite, Description of layers, Encapsulation and Decapsulation, Addressing, Multiplexing and Demultiplexing, The OSI Model: OSI Versus TCP/IP. . LO: At the end of this session the student will be able to, 1. Define the components of data communication system and its representation types. 2. Differentiate different network topologies. 3. Explain the concept of protocol layering, TCP/IP protocol suite and switching.	**CO1** **10 hrs** PO1-3 PO2-2 PO3-2 PO10 -2 PO12-2 PSO1-2 PSO2-2

4. Differentiate links and nodes	
Module 2: Data-Link Layer: Introduction: Nodes and Links, Services, Two Categories' of link, Sublayers, Link Layer addressing: Types of addresses, ARP. Data Link Control (DLC) services: Framing, Flow and Error Control, Data Link Layer Protocols: Simple Protocol, Stop and Wait protocol, Piggybacking. Media Access Control: Random Access: ALOHA, CSMA, CSMA/CD, CSMA/CA Wired and Wireless LANs: Ethernet Protocol, Standard Ethernet. Introduction to wireless LAN: Architectural Comparison, Characteristics, Access Control LO: At the end of this session the student will be able to, 1.Explain link layer addressing and protocols 2. Describe different random access and controlled access protocols of LAN and WAN. 3. Explain LLC and MAC layers of LAN and Ethernet standards and protocols 4. Explain MAC sublayers of wireless LAN.	**CO2** **10 hrs** PO1-3 PO2-3 PO3-3 PO4-2 PO9 -3 PO10 -2 PO11-2 PO12-2 PSO1-3 PSO2-2
Module 3: Network Layer: Introduction, Network Layer services: Packetizing, Routing and Forwarding, Other services, Packet Switching: Datagram Approach, Virtual Circuit Approach, IPV4 Addresses: Address Space, Classful Addressing, Classless Addressing, DHCP, Network Address Resolution, Forwarding of IP Packets: Based on destination Address and Label. Network Layer Protocols: Internet Protocol (IP): Datagram Format, Fragmentation, Options, Security of IPv4 Datagrams. Unicast Routing: Introduction, Routing Algorithms: Distance Vector Routing, Link State Routing, Path vector routing. LO: At the end of this session the student will be able to, 1. Describe Packetizing, Routing and Forwarding and other network layer services. 2. Describe IPv4 protocol and datagrams 3. Explain the importance of Unicast routing.	**CO3** **10 hrs** PO1-3 PO2-3 PO3-3 PO4-3 PO9 -3 PO10 -2 PO11-2 PO12-2 PSO1-3 PSO2-2
Module 4: Transport Layer: Introduction: Transport Layer Services, Connectionless and Connection oriented Protocols, Transport Layer Protocols: Simple protocol, Stop and wait protocol, Go-Back-N Protocol, Selective repeat protocol. (23.1, 23.2.1, 23.2.2, 23.2.3, 23.2.4 of Text) Transport-Layer Protocols in the Internet: User Datagram Protocol: User Datagram, UDP Services, UDP Applications, Transmission Control Protocol: TCP Services, TCP Features, Segment, Connection, State Transition diagram, Windows in TCP, Flow control, Error control, TCP congestion control. LO: At the end of this session the student will be able to, 1. Explain Connectionless and Connection oriented Protocols. 2. Explain UDP and TCP 3. Differentiate flow and congestion control.	**CO4** **10 hrs** PO1-3 PO2-3 PO3-3 PO4-2 PO9 -3 PO10 -2 PO11-2 PO12-2 PSO1-3 PSO2-2

Module 5: Application Layer: Introduction: providing services, Application- layer paradigms, Standard Client -Server Protocols: World wide web, Hyper Text Transfer Protocol, FTP: Two connections, Control Connection, Data Connection, Electronic Mail: Architecture, Wed Based Mail, Telnet: Local versus remote logging. Domain Name system: Name space, DNS in internet, Resolution, DNS Messages, Registrars, DDNS, security of DNS LO: At the end of this session the student will be able to, 1. Explain standard application layer Protocols like HTTP, FTP, DNS 2. Explain Email architecture 3. Explain the role of DNS in Internet.	**CO5** **10 hrs** PO1-3 PO2-2 PO3-2 PO10 -2 PO11-2 PO12-2 PSO1-3 PSO2-2

Textbooks: -

1. Behrouz A Forouzan, Data Communications and Networking, 5th Edition, McGraw Hill, 2013, ISBN: 1-25906475-3.

Reference Books:

1. Computer Networks, James J Kurose, Keith W Ross, Pearson Education, 2013, ISBN: 0-273-76896.
2. Introduction to Data Communication and Networking, Wayne Tomasi, Pearson Education, 2007, ISBN: 0130138282.
3. Andrew S Tanenbaum, "Computer Networks", Prentice Hall.
4. William Stallings, "Data and Computer Communications", Prentice Hall

Useful Websites

1. https://www.ciena.com/insights/acronym-guide/
2. https://www.techopedia.com/

Useful Journals

1. Computer Networks, The International Journal of Computer and Telecommunications Networking, Elsevier
2. Journal of Network and Systems Management, Springer
3. Computer networks and communications, IEEE

Teaching and Learning Methods:

1. Lecture class: 40 hrs.
2. Self-study: 5hrs.
3. Field visits/Group Discussions/Seminars: 5hrs.
4. Practical classes: 0hrs.

Type of test/examination: Written examination:
Continuous Internal Evaluation(CIE) : 20 marks (Average of best two of total three tests will be considered)
Semester End Exam(SEE) : 80 marks (students have to answer all main questions)
Test duration: 1 :30 hr
Examination duration: 3 hrs
Semester End Exam(SEE) : 60 marks (students have to answer all main questions)
Test duration: 1 :30 hr
Examination duration: 3 hrs

CO - PO MAPPING

PO1: Science and engineering Knowledge **PO2:** Problem Analysis **PO3:** Design & Development **PO4:**Investigations of Complex Problems **PO5:** Modern Tool Usage **PO6:** Engineer & Society	**PO7:**Environment and Sustainability **PO8:**Ethics **PO9:**Individual & Team Work **PO10:** Communication **PO11:**Project Management & Finance **PO12:**Life long Learning

PSO1: Ability to understand basic concepts, analyze subsystems/modules and apply them in various fields like signal processing, networking and communication.

PSO2: Should be able to associate the learning, understand the published literature and project work effectively.

CO PO Mapping details for Computer Networks

CO 18EC71	Bloom's Level	PO1	PO2	PO3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12	PSO1	PSO2
18EC71.1	K3	3	2	2	-	-	-	-	-	-	2	-	2	2	2
18EC71.2	K4	3	3	3	2	-	-	-	-	3	2	2	2	3	2
18EC71.3	K4	3	3	3	3	-	-	-	-	3	2	2	2	3	2
18EC71.4	K4	3	3	3	3	-	-	-	-	3	2	2	2	3	2
18EC71.5	K4	3	2	2	-	-	-	-	-	-	2	2	2	3	2
18EC71		3	2.6	2.6	2.7	-	-	-	-	-	-	-	-	2.8	2
Content Beyond Syllabus(CBS)		-	-	-	-	-	-	-	-	3	2	2	2	-	-
18EC71		3	2.8	2.8	3	-	-	-	-	3	2	2	2	2.8	2

CO PO mapping for the events conducted after gap identification

Sl. No.	Gap Identification	Activity Planned to fill the gap	CO	Relevant PO Mapping
1	PO4- PO12	Literature Survey	CO1, CO2, CO3, CO4, CO5	PO4,PO9, PO10,PO11, PO12

CO-POMAPPINGJustificationTable				
Sl No.	CO	PO	Number Of Key Elements of PO Mapped To CO	Justification
CO1: Examine the layering architecture of computer networks and distinguish between the OSI reference model and TCP/IP protocol suite.				
1.	**CO1**	1	**The students will be able to gain** • KnowledgeOfMathematics • KnowledgeIn Specific Engg. Problem & To Find Solution	3 Keywords Are Mapped Hence Strength Is **3**
2.		2	**The students will be able to** • Identify • Formulate • AnalyseComplexEngineeringProblems	2
3.		3	**The students will be able to** • DesignSolutions for data communication • DesignSolutions for Cultural & Societal Issues. • DesignSolutions for Environmental Considerations	2
4.		9	**The students will be able to work effectively in multidisciplinary as** • Individual • In a Team	3
5.		10	**The students will able to Communicate effectively by** • **Write Effective Reports** **Effective Presentations**	2
6.		11	**The students will be able to gain the knowledge and understand** • Engineering principles • Management of projects in a team	2
7		12	**The students will be able to engage in knowledge upgradation through** • Independent learning • Lifelong learning	2
8		PSO1	**The students will be able to understand the fundamentals of ECE in** • Communication • Networking	2
9		PSO2	**The students will be able to gain the knowledge to** • Design a tool for societal concern • Develop solutions for hardware/software tools	2
CO2: Evaluate different DLL protocols and **distinguish** wired and wireless LAN architecture				
10	**CO2**	1	**The students will be able to gain the** • KnowledgeOfMathematics • KnowledgeOfScience, • KnowledgeIn Specific Engg. Problem & To Find Solution	3
11		2	**The students will be able to** • Identify • Formulate • AnalyseComplexEngineeringProblems	3
12		3	**The students will be able to** • **Design**solutions for public health & safety • **Design**solutions for environmental considerations	3

13		4	**The students will be able to** • Design of solution for complex problems • Analysis of problems • Synthesis of solution for complex problems	3
14		9	**The students will be able to work effectively in multidisciplinary as** • Individual • In a Team	3
15		10	**The students will able to Communicate effectively by** • **Write Effective Reports** **Effective Presentations**	2
16		11	**The students will be able to gain the knowledge and understand** • Engineering principles Management of projects in a team	2
17		12	**The students will be able to engage in knowledge upgradation through** • Independent learning Lifelong learning	2
18		PSO1	**The students will be able to gain the knowledge in the fundamentals of ECE in** • Communication • Networking	3
19		PSO2	**The students will have the ability to** • Design a tool for societal concern • Develop solutions for hardware/software tools	2
CO3:**Distinguish** classful and classless IP addresses and **analyze** different network layer routing protocols				
19	**CO3**	1	The students will be able to gain the • KnowledgeOfMathematics • KnowledgeOfScience, • KnowledgeIn Specific Engg. Problem & To Find Solution	3
20		2	The students will be able to • Identify • Formulate • AnalyseComplexEngineeringProblems	3
21		3	The students will be able to gain • **Design**solutions for public health & safety • **Design**solutions for environmental considerations	3
22		4	The students will be able to • Design of solution for complex problems • Analysis of problems • Synthesis of solution for complex problems	3
23		9	**The students will be able to work effectively in multidisciplinary as** • Individual In a Team	3
24		10	**The students will able to Communicate effectively by** • **Write Effective Reports** **Effective Presentations**	2
25		11	**The students will be able to gain the knowledge and understand** • Engineering principles	2

			Management of projects in a team	
26		12	**The students will be able to engage in knowledge upgradation through** • Independent learning Lifelong learning	2
27		PSO1	The students will be able to gain the fundamentals of ECE in • Communication • Networking	3
28		PSO2	The students will be able to gain the ability to • Design a tool for societal concern	2
CO4: Analyze services of TCP and UDP and **evaluate** the performance of transport layer protocols.				
29	**CO4**	1	The students will be able to gain the • KnowledgeOfMathematics • KnowledgeOfScience, • KnowledgeIn Specific Engg. Problem & To Find Solution	3
30		2	The students will be able to • Identify • Formulate • AnalyseComplexEngineeringProblems	3
31		3	The students will be able to • **Design**solutions for public health & safety • **Design**solutions for environmental considerations	3
32		4	The students will be able to gain • Design of solution for complex problems • Analysis of problems • Synthesis of solution for complex problems	3
33		9	The students will be able to work effectively in multidisciplinary as • Individual • In a Team	3
34		10	**The students will able to Communicate effectively by** • **Write Effective Reports** **Effective Presentations**	2
35		11	The students will be able to gain knowledge and understanding • Engineering principles • Management of projects in a team	2
36		12	The students will gain the ability to engage in knowledge upgradation through • Independent learning • Lifelong learning	2
37		PSO1	The students will be able to gain the knowledge in the fundamentals of ECE in • Communication • Networking	3
38		PSO2	The students will be able to gain the ability to • Design a tool for societal concern • Develop solutions for hardware/software tools	2

CO5: **Analyze** services of application layer and **examine** variousprotocols such as FTP,WWW,TELNET and DNS				
33.	**CO5**	1	The students will be able to gain • KnowledgeOfMathematics • KnowledgeIn Specific Engg. Problem & To Find Solution	2 Keywords Are Mapped Hence Strength Is 3
34.		2	The students will be able to • Identify • Formulate • AnalyseComplexEngineeringProblems	2
35		3	The students will be able to • DesignSolutions for Public Health & Safety • DesignSolutions for Cultural & Societal Issues. • DesignSolutions for Environmental Considerations	2
37		9	The students will be able to work effectively in multidisciplinary as • Individual • In a Team	3
38		10	**The students will able to Communicate effectively by** • **Write Effective Reports** **Effective Presentations**	2
39		11	The students will be able to gain the knowledge and understanding in • Engineering principles • Management of projects in a team	2
40		12	The students will have the ability to engage in knowledge upgradation through • Independent learning • Lifelong learning	2
41		PSO1	The students will be able to gain the knowledge in the fundamentals of ECE in • Communication • Networking	3
42		PSO2	The students will be able to gain the ability to • Design a tool for societal concern • Develop solutions for hardware/software tools	2

Signature of Course In charge **Signature of Module Coordinator** **Signature of HOD ECE**

K S INSTITUTE OF TECHNOLOGY BANGALORE-560109

DEPARTMENT OF ELECRONICS & COMMUNICATION ENGINEERING

NAME OF THE STAFF : Dr.Dinesh Kumar D S
SUBJECT CODE/NAME : 18EC71/COMPUTER NETWORKS
SEMESTER/YEAR/SEC : VII / B
ACADEMIC YEAR : 2022-2023

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	Module 1					
1	Introduction: Data Communications: Components, Representations,	L+D	BB+PPT	1	1	20/09/22
2	Data Flow, Networks Physical Structures,	L+D	BB+PPT	1	2	21/09/22
3	Network Types: LAN, WAN,	L+ D	BB+PPT	1	3	22/09/22
4	Switching, Internet		BB+PPT		4	23/09/22
5	Protocol Layering: Scenarios, Principles, Logical Connections	L+ D	BB+PPT	1	5	27/09/22
6	TCP/IP Protocol Suite: Layered Architecture, Layers in TCP/IP suite.	L+D	BB+PPT	1	6	28/09/22
7	Description of layers	L+ D	BB+PPT	1	7	29/09/21
8	Encapsulation and Decapsulation, Addressing, Multiplexing and Demultiplexing,	L+AV	BB+PPT	1	8	30/09/22
9	The OSI Model: OSI Versus TCP/IP	L+D	BB+PPT	1	9	1/10/22
	Module2					
10	**Data-Link Layer:** Introduction: Nodes and Links, Services, Categories of link	L+D	BB+PPT	1	10	6/10/22
11	Sublayers, Link Layer addressing: Types of addresses	L+ D	BB+PPT	1	11	7/10/22
12	ARP	L+D	BB+PPT	1	12	11/10/22
13	**Data Link Control (DLC) services:** Framing, Flow and Error Control	L+D	BB+PPT	1	13	12/10/22
14	Data Link Layer Protocols: Simple Protocol	L+D	BB+PPT	1	14	13/10/22
15	Stop and Wait protocol, Piggybacking	L+D	BB+PPT	1	15	14/10/22
16	Media Access Control: Random Access: Pure ALOHA ,slotted ALOHA	L+ D	BB+PPT	1	16	15/10/22
17	CSMA, CSMA/CD, CSMA/CA	L+ D	BB+PPT	1	17	20/10/22
18	**Wired and Wireless LANs:** Ethernet Protocol,	L+D	BB+PPT	1	18	21/10/22

19	Standard Ethernet	L+D	BB+PPT	1	19	25/10/22
20	Introduction to wireless LAN: Architectural Comparison, Characteristics, Access Control	L+D	BB+PPT	1	20	27/10/22
	Module 3					
21	**Network Layer:** Introduction, Network Layer services: Packetizing.	L+D	BB+PPT	1	21	28/10/22
22	Routing and Forwarding, Other services	L+D	BB+PPT	1	22	31/10/22
23	Packet Switching: Datagram Approach, Virtual Circuit Approach	L+D	BB+PPT	1	23	3/11/22
24	IPV4 Addresses: Address Space, Classful Addressing	L+D	BB+PPT	1	24	4/11/22
25	Classless Addressing	L+D	BB+PPT	1	25	7/11/22
26	DHCP, Network Address Resolution		BB+PPT		26	8/11/22
27	Forwarding of IP Packets: Based on destination Address, Based and Label	L+D	BB+PPT	1	27	10/11/22
28	Network Layer Protocols: Internet Protocol (IP): Datagram Format	L+D	BB+PPT	1	28	12/11/22
29	Options, Security of IPv4 Datagrams	L+D	BB+PPT	1	29	14/11/22
30	Unicast Routing: Introduction Routing Algorithms: Distance Vector Routing	L+D	BB+PPT	1	30	15/11/22
31	Link State Routing, Path vector routing	L+D	BB+PPT	1	31	17/11/22
	Module 4					
32	**Transport Layer:** Introduction: Transport Layer Services,Connectionless and Connection oriented Protocols	L+D	BB+PPT	1	32	18/11/22
33	Transport Layer Protocols: Simple protocol	L+D	BB+PPT	1	33	24/11/22
34	Stop and wait protocol,Go-Back-N Protocol	L+D	BB+PPT	1	34	25/11/22
35	,Selective repeat protocol	L+D	BB+PPT	1	35	28/11/22
36	User Datagram Protocol: User DatagramUDP Services	L+D	BB+PPT	1	36	29/11/22
37	Transmission Control Protocol: TCP Services, Features	L+D	BB+PPT	1	37	1/12/22
38	Segments, TCP connection	L+D	BB+PPT	1	38	2/12/22
39	State Transition diagram, Windows in TCP	L+D	BB+PPT	1	39	5/12/22
40	Flow control, Error control, TCP congestion control	L+D	BB+PPT	1	40	6/12/22
	Module 5					
41	Application Layer: Introduction: providing services	L+D	BB+PPT	1	41	8/12/22
42	Application- layer paradigms,	L+D	BB+PPT	1	42	9/12/22
43	Standard Client -Server Protocols: WWW, Hyper Text Transfer Protocol,	L+D	BB+PPT	1	43	10/12/22
44	FTP: Two connections, Control Connection, Data Connection	L+D	BB+PPT	1	44	12/12/22
45	Electronic Mail: Architecture	L+D	BB+PPT	1	45	13/12/22
46	Wed Based Mail	L+D	BB+PPT	1	46	15/12/22

47	Telnet: Local versus remote logging.	L+D	BB+PPT	1	47	14/12/22
48	Domain Name system: Name space,DNS in internet,	L+D	BB+PPT	1	48	15/12/22
49	Resolution, DNS Messages	L+D	BB+PPT	1	49	16/12/22
50	Registrars, DDNS, Security of DNS	L+D	BB+PPT	1	50	20/12/22
51	Revision	L+D	BB+PPT	1	51	21/12/22
52	Revision	L+D	BB+PPT	1	52	27/12/22

TEXTBOOK:

T1: Data Communications and Networking, Forouzan, 5th Edition, McGraw Hill, 2016 ISBN: 1-25-906475-3.

REFERENCES:

R1: Computer Networks, James J Kurose, Keith W Ross, Pearson Education, 2013, ISBN: 0-273-76896.

R2: Introduction to Data Communication and Networking, WayarlesTomasi, Pearson Education, 2007, ISBN: 0130138282.

WEB MATERIALS:

W1: https://nptel.ac.in/courses/106/105/106105183/

W2: https://nptel.ac.in/courses/106/105/106105081/

W3: https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-829-computer-networks-fall-2002/lecture-notes/

Course Incharge **Module Coordinator** **HOD ECE** **Principal**

K S Institute of Technology, Bangalore-560109

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

ASSIGNMENT QUESTIONS

Academic Year	**2021-22 (ODD)**		
Batch	**2019-2023**		
Year/Semester/section	**IV/VII/A & B**		
Course Code-Title	**18EC71-Computer Networks**		
Name of the Instructor	**Dr.Dinesh Kumar D S**	**Dept**	**ECE**

K-Levels: K1-Remebering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

Assignment No: 1 **Total marks:10**
Date of Issue:12-10-2022 **Date of Submission: 19/10/2022**

Sl. No.	Assignment Questions	K Level	CO	Marks
1.	a. **Analyze** different network topologies with advantages and disadvantages. b. Explain various scenarios used in protocol layering.	K4	CO1	1
2.	a. **Make use of** a neat diagram and explain different layers of TCP/IP protocol suite b. **Differentiate** OSI and TCP/IP models.	K3	CO1	1
3.	a.Explain the concept of Encapsulation & Decapsulation and Mutliplexing & Demultiplexing used in internet. b.**Discuss** different adressing used in data communication	K2	CO1	1
4.	**a.Illustrate** the architecture of internet with suitable diagram b.**Illustrate** the following swictching systems with relevant digrams i.circuit switching ii.packet switching	K2	CO1	1
5.	**Build** the following wirh networks relevant diagrams i.LAN ii. WAN	K3	CO1	1
6.	a.**Explain** different forms of data representation with examples b.**Explain** the components of data communication with neat diagram	K2	CO1	1

COMPUTER NETWORKS

18EC71 – Assignment-1

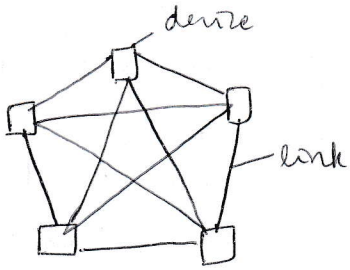
① @ Analyse different network topologies with advantages & disadvantages.

→ * Mesh topology.

- Every device has a dedicated point to point link to every other device
- The link carries traffic only between the two devices it connects.
- For n nodes, we need (n-1) physical links & $n\left(\frac{n-1}{2}\right)$ duplex links.

Advantages: • Use of dedicated links guaranteed that each connection can carry its own data.

- It dominates traffic problems between links.
- Privacy and security.
- Easy fault identification & fault isolation.
- It is robust.

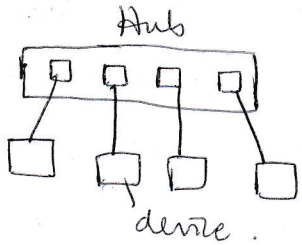


Disadvantages: • Amount of cabling and the number of I/O port required is more.

- Installation and reconnection are difficult
- Sheer bulk of the wiring is more.

* Star topology

- Each device has a dedicated point to point link only to a central controller, usually called a hub.
- They do not allow direct traffic between devices
- The controller acts as an exchange.



Advantages: • less expensive.

- Each device is connected only to one link and one I/O port
- Easy reinstall & reconfigure.
- It is robust.

Disadvantage: • dependency of the whole topology on one hub. If the hub goes down, the whole system is dead.

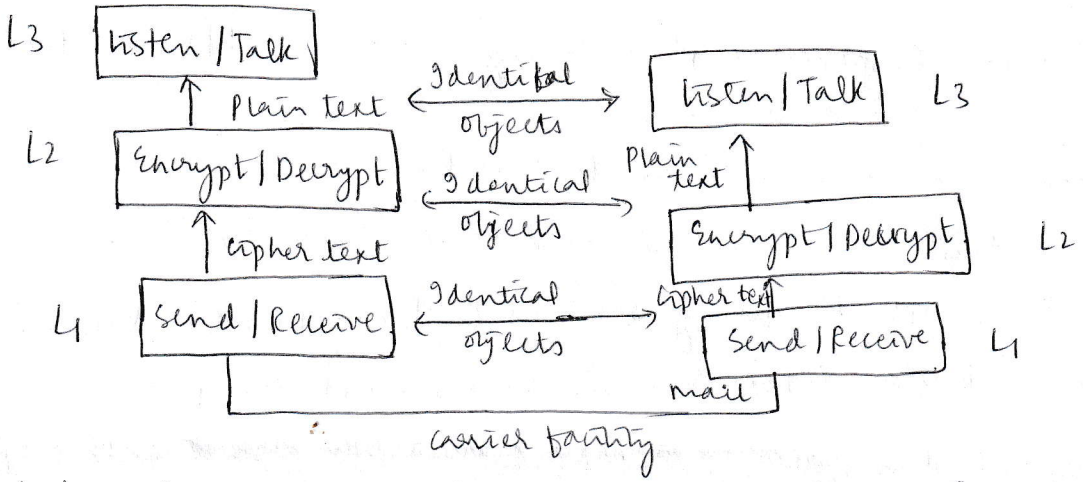
* Bus topology

- It is a multipoint connection.
- One long cable acts as a backbone to a link all device.
- Nodes are connected to the bus cable by droplines & taps.

- First, they should greet each other
- Second, confine their vocabulary to the level of their friendship
- Third, should refrain from speaking when the other party is speaking.
- Fourth, both should have the opportunity to talk about the issue.
- Fifth, should exchange some nice words when they leave.

Second Scenario

- We Assume that Ann is offered a higher-level position in her company, but needs to move to another branch in another city far from Maria.
- They decide to continue conversation using regular mail through posters.



- Protocol layering enables us to divide a complex task into several smaller and simpler tasks
- Modularity in this case means independent layers
- One advantage is allows us to separate the services from the implementation
- Communication does not always use only 2 end systems, there are intermediate systems.

(2) (a) Make use of a neat diagram and explain different layer of TCP/IP protocol suite.

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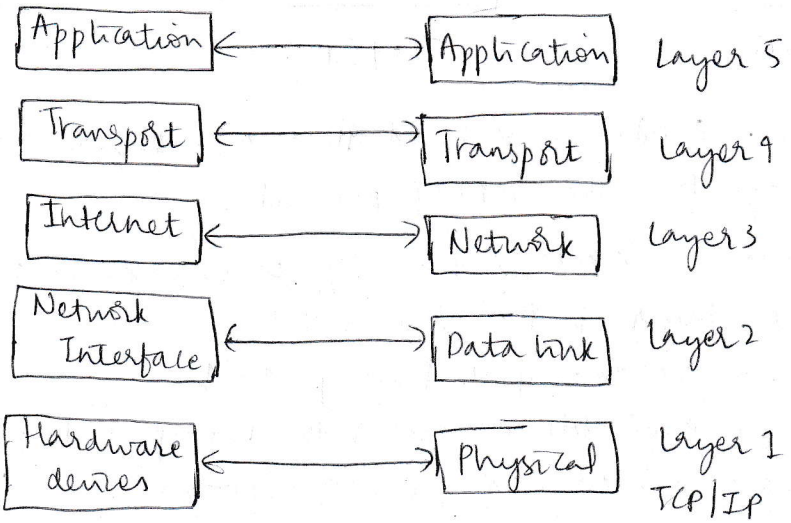


- TCP/IP - Transmission control protocol / Internet Protocol, is a protocol suite used in the internet today.
- It is a hierarchial protocol made up of interactive modules each of which provides a specific functionality.
- Today TCP/IP is thought of as a five layer model.

Physical Layer:- They are responsible for carrying individual bits in a frame.

Datalink layer: It is responsible for choosing the datagram and moving it across the link

It takes a datagram and encapsulates it in a packet called a frame.

Network layer: Responsible for creating connection bktween the source computer and destination.

The communication is between host to host.

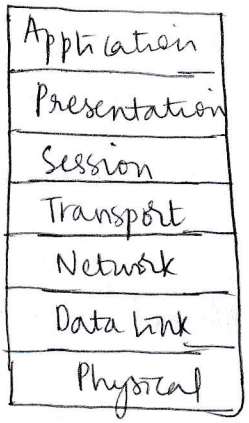
Transport layer: It is called end to end connection.

It is responsible for giving services to the application layer.

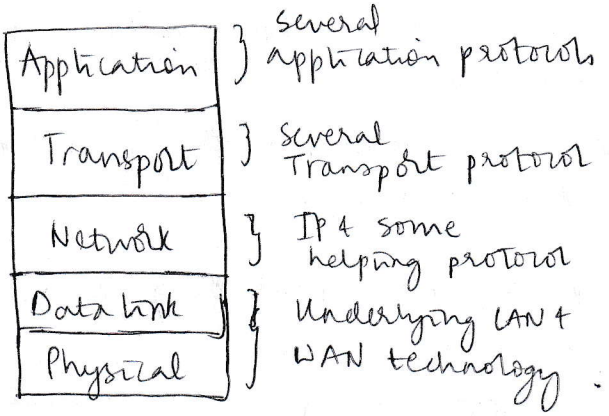
Application layer: Communication happens between two process. It includes predefined protocols, but a user can also create a pair of processes to be run at the 2 hosts.

② ⑥ Differentiate OSI and TCP/IP Models.

→



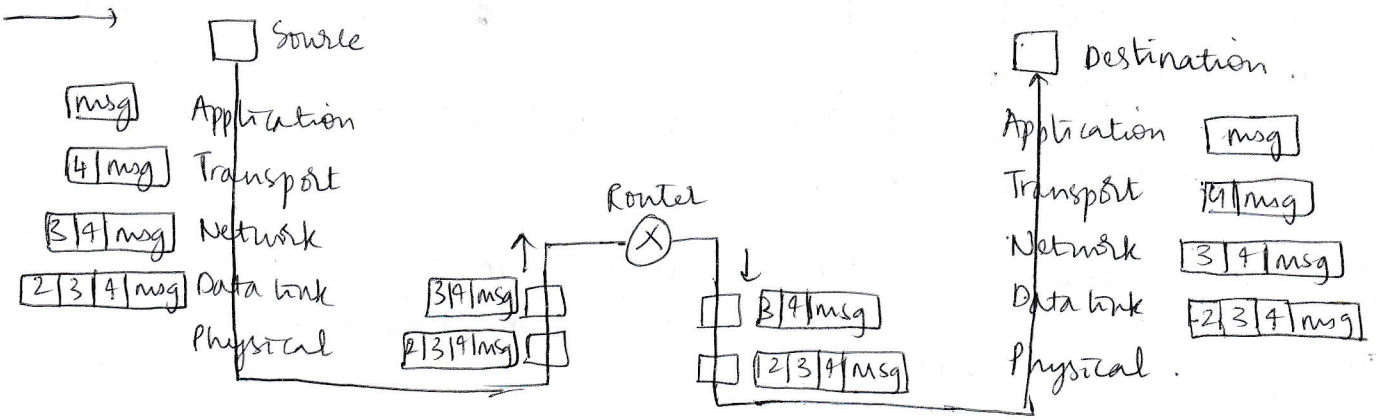
OSI Model.



TCP/IP.

- When we compare the 2 models, we find that two layers session and presentation are missing from the TCP/IP protocol.
- The application layer in the suite is usually considered to be the combination of three layers in the OSI model.
- TCP/IP has more than one transport layer protocol
- Some session layers are available in some of the transport layer protocols
- The application layers is not only one piece of software.

(5) (a) Explain the concept of encapsulation & Decapsulation and multiplexing & demultiplexing used in Internet.



Encapsulation at source:

- At the encapsulation: application layer, the data to be exchanged is referred to as a message
- The transport layer takes the message as a payload, the load that the transport layer should take care of.
- The result packet is segment in (TCP) and user datagram (UPP)
- Network layer takes the transport-layer packet as data & adds own header to payload.
- The result is the network layer packet called a datagram.
- The data link layer takes the info from network layer, adds own header. The result is called frame.

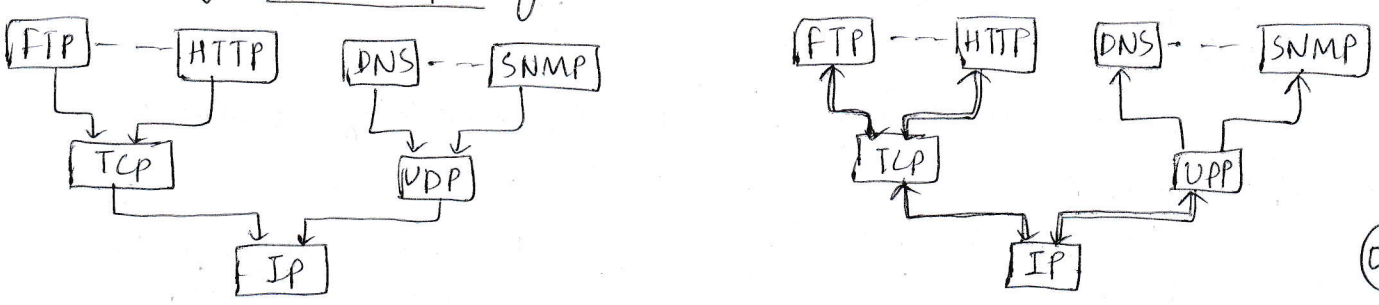
Decapsulation and Encapsulation at Router.

- After set of bits are delivered to data link, this layer decapsulates the datagram from frame & passes network layer.
- The datagram is then passed to the datalink layer of next link.
- The data link layer of the next link encapsulates the datagram in the frame & passes to physical layer.

Decapsulation at Destination Host

- Each layer decapsulates the received packets, removes payload & delivers to next higher layer until message reaches application checking.

Multiplexing & Demultiplexing:

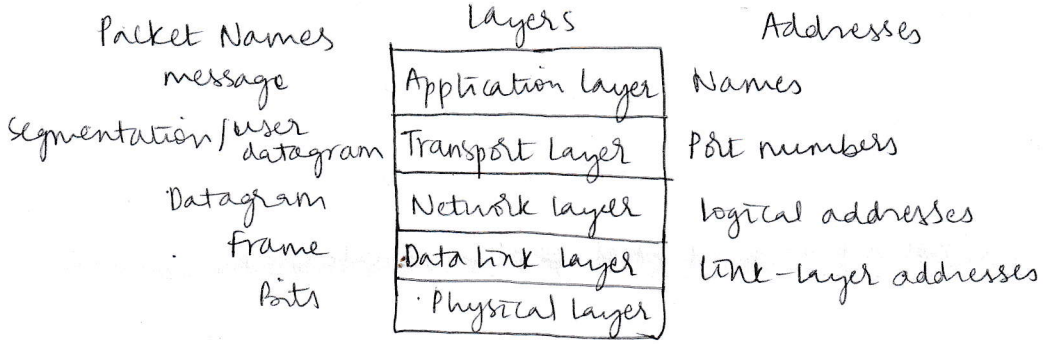


- Multiplexing means that a protocol at a layer can encapsulate a packet from several next higher layer protocols (one at a time)
- Demultiplexing means that a protocol (one at a time) deliver a packet to several next higher protocols (one at a time)
- A protocol needs to have a field in its header to identify to which protocol the encapsulated packets belong.

③ (b) Discuss different addressing used in data communication:

⟶ Any communication that involves 2 parties needs 2 address. source address and destination address.

- We normally have only four because the physical layer does not need addresses.
- The unit of data exchange at the physical layer is a bit, which definitely cannot have address.

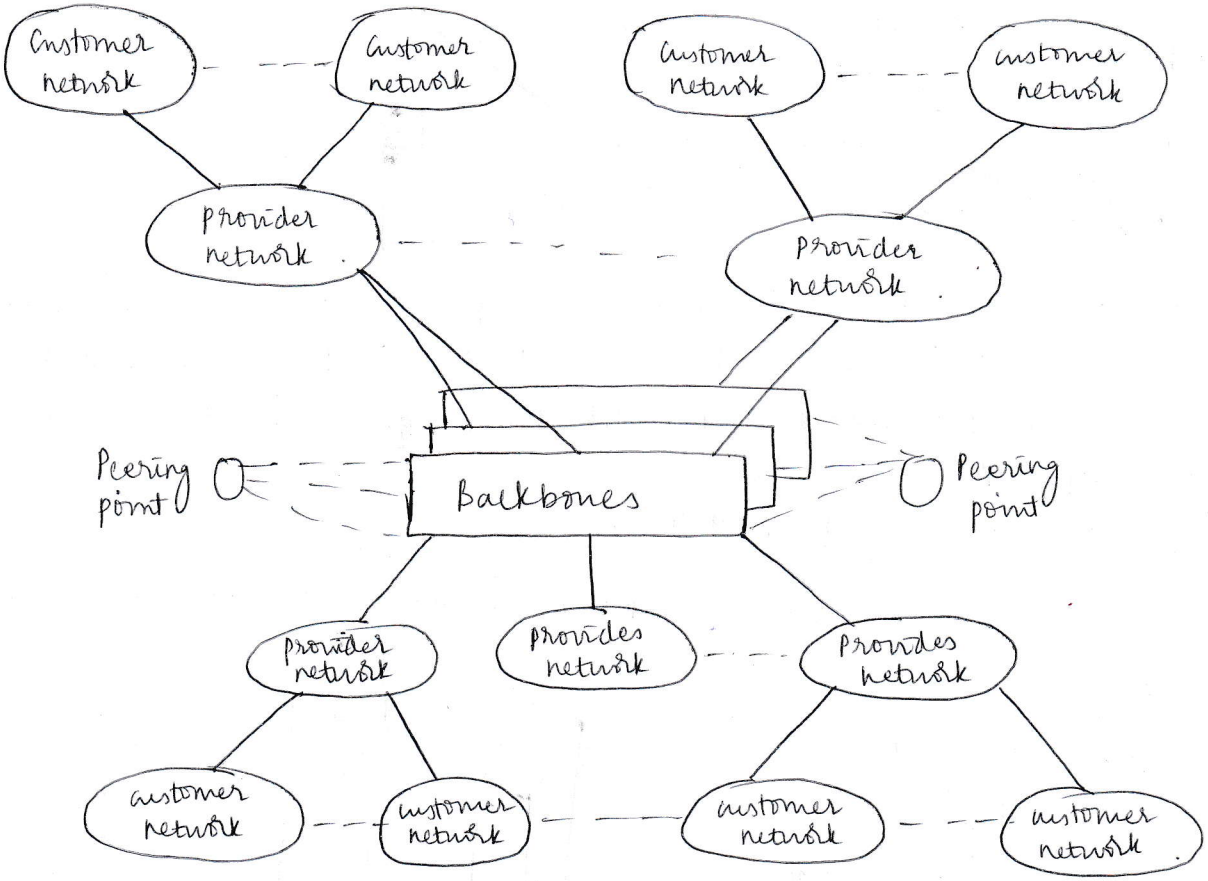


- At application layer, we normally use names to define the site that provides services
- At transport layer, addresses are called port numbers and these define the application-layer programs at the source and destination.
- At network layers, addresses are global
- The link layer addresses, sometimes called MAC addresses are locally defined addresses.

④ (a) Illustrate the architecture of Internet with suitable diagram.

⟶ • An internet is 2 or more networks that can communicate with each other

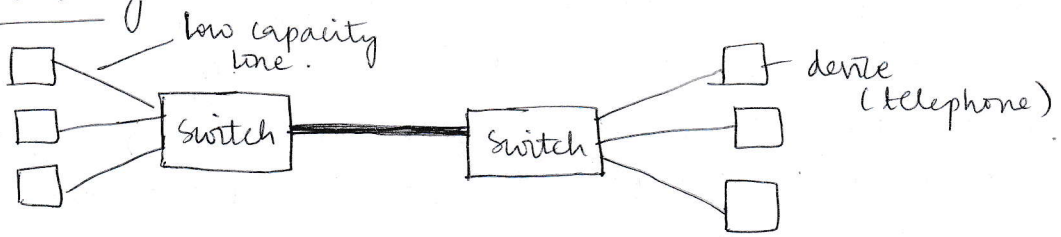
- Internet has several backbones, provides networks, customer network. At the top level, backbones are large networks owned by some communication companies.
- They are connected through some complex switching systems called peering points.
- At level 2, provides networks, that use the services of the backbones for a fee.



- Customer networks at the edge of the internet that actually use the services provided by the Internet
- Backbones by providers networks are also called Internet service protocol.

④ (b) Explain

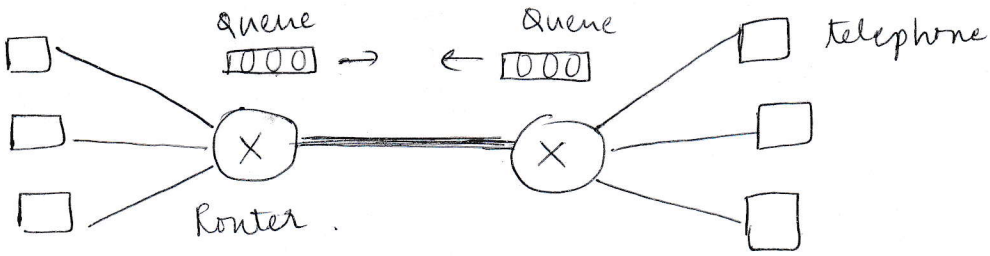
(i) Circuit Switching.



- A dedicated connection called a circuit is always available between 2 end systems.
- switch can only make it active or inactive.
- The devices are connected to a switch
- The high capacity communication line can handle all devices at the same time, the capacity can be shared between all pairs of devices.
- There is not storing capability
- Circuit switched network is efficient only when it is working at its full capacity.

(ii) Packet Switched Network

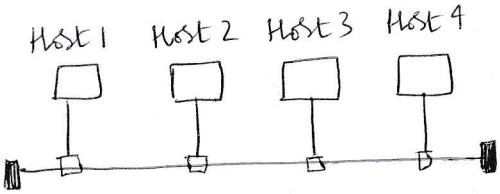
- Communication between the 2 ends is done in blocks of data called packets.

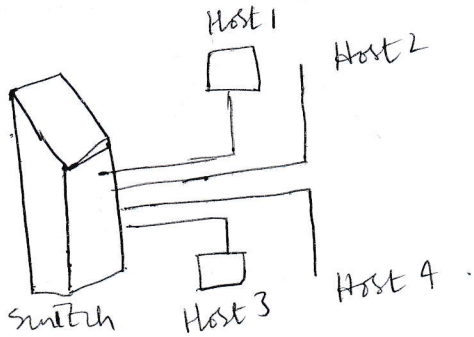


- It allows us to make the switches function for both storing & forwarding because a packet is independent entity that can be stored & sent later.
- A router in a packet switched network has a queue that can store and forward the packet.
- This eliminates waiting for packets.

(5) (a) Build the following with networks relevant diagrams.

(i) LAN.





- Local Area Network (LAN) is usually privately owned and connects some hosts in a single office building.
- Each host in a LAN has an identifier an address, that uniquely defines the host in LAN.
- In past all host in a network were connected through a common cable, which meant that a packet sent was received by all hosts.
- Today, they use switch which is able to recognize the destination address of the packet and guide the packet to its destination.
- It allows more than one pair to communicate.

(ii) WAN

- Wide Area Network (WAN) is also an interconnection of the devices capable of communication.
- WAN has a wider geographical span.
- WAN is normally created and run by companies and leased by an organisation that uses it

point to point WAN

Connects 2 communicating devices through a transmission media.

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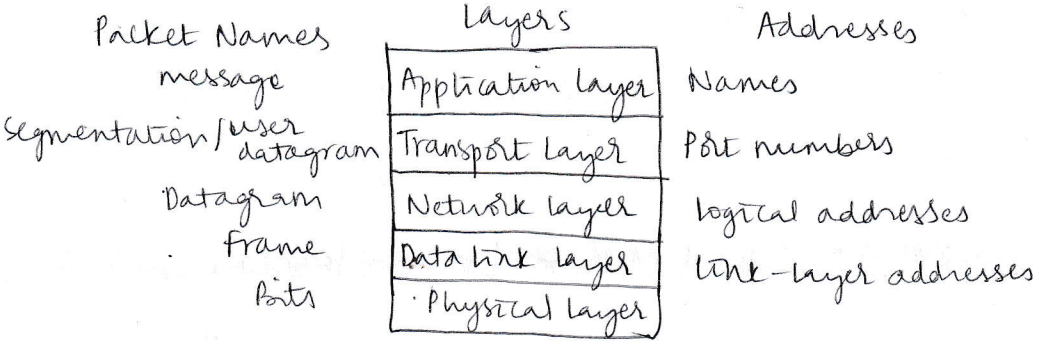

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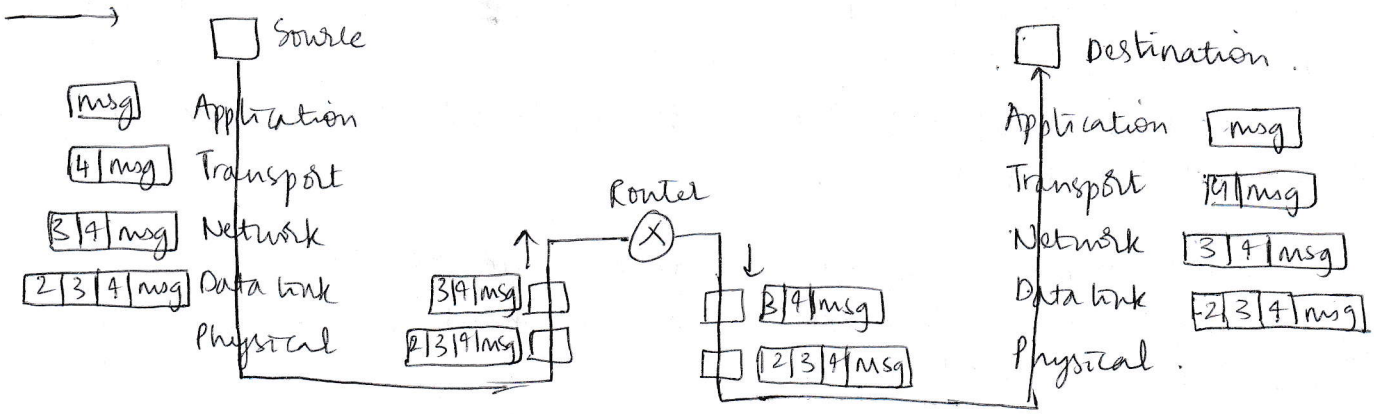

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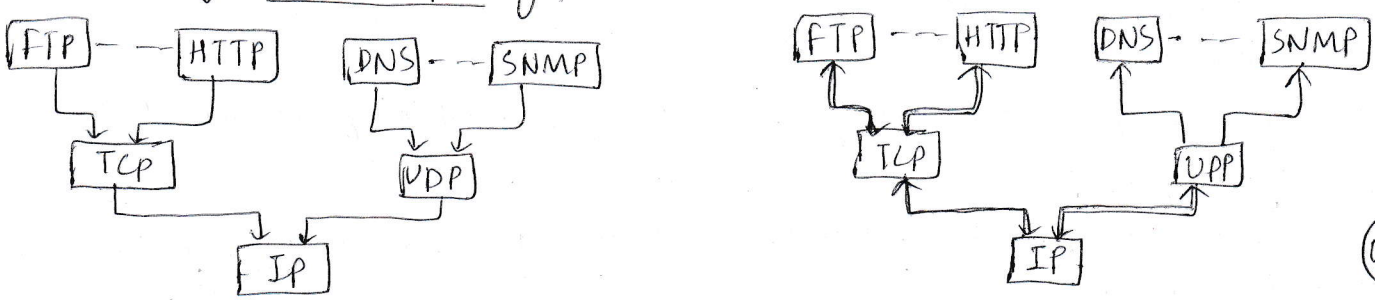

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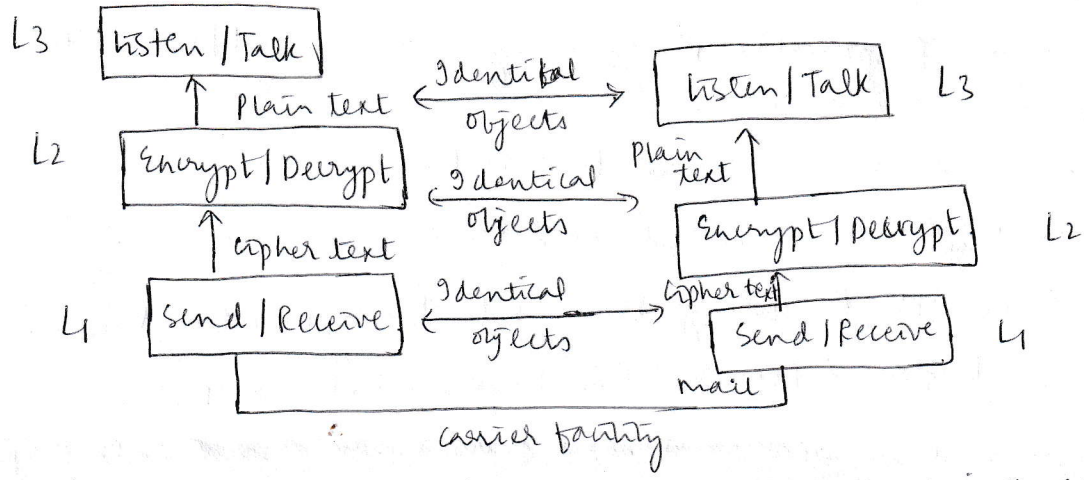

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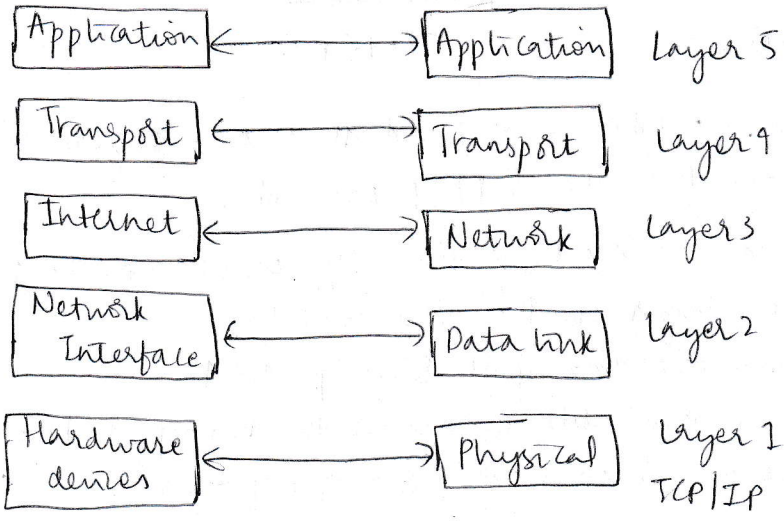

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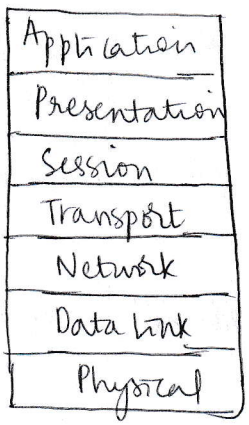
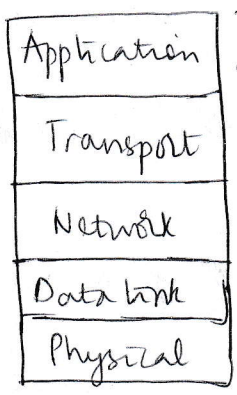


OSI Model.



} several application protocols.
} several Transport protocol
} IP & some helping protocol
} Underlying LAN & WAN technology.

TCP/IP.

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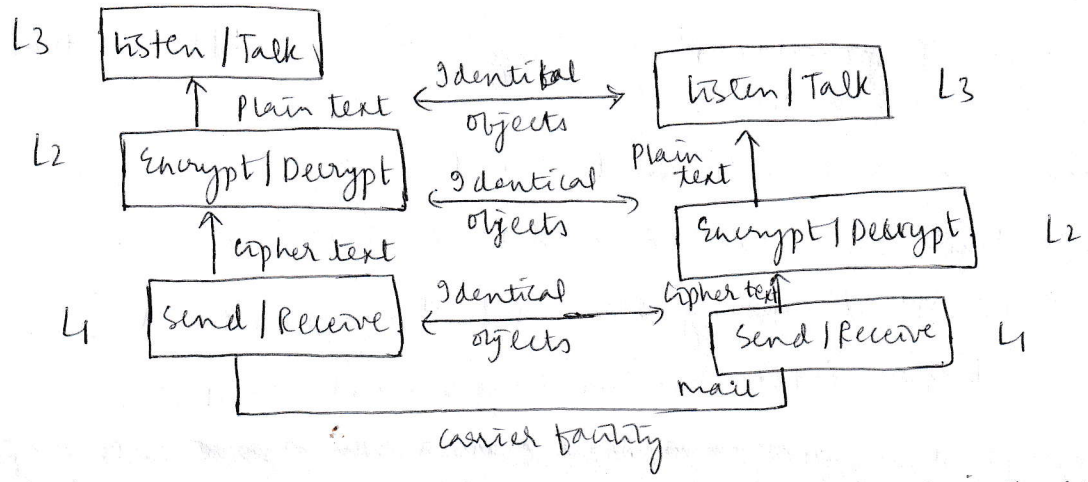

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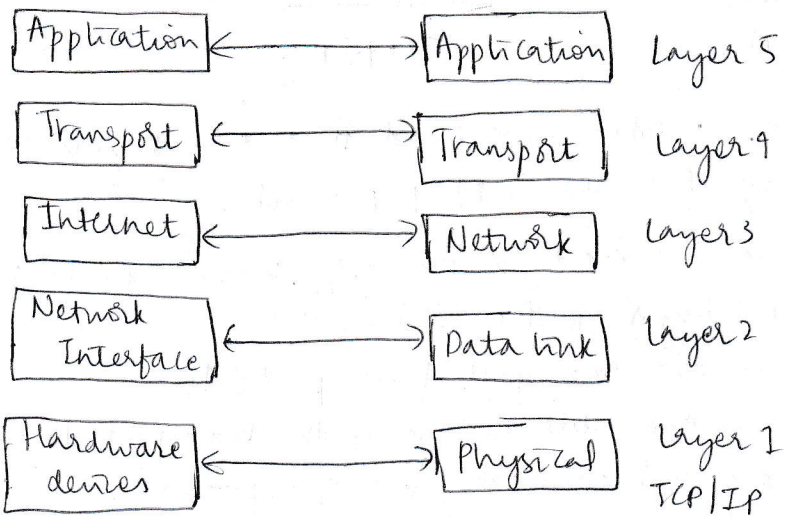


COMPUTER NETWORKS

18EC71 – Assignment-1

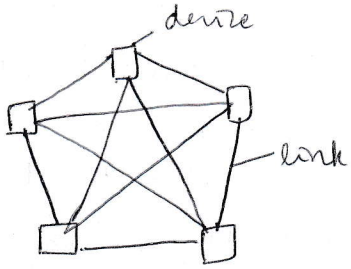
① @ Analyse different network topologies with advantages & disadvantages.

→ * Mesh topology.

- Every device has a dedicated point to point link to every other device
- The link carries traffic only between the two devices it connects.
- For n nodes, we need (n-1) physical links & $n\frac{(n-1)}{2}$ duplex links.

Advantages: • Use of dedicated links guaranteed that each connection can carry its own data.

- It dominates traffic problems between links.
- Privacy and security.
- Easy fault identification & fault isolation.
- It is robust.

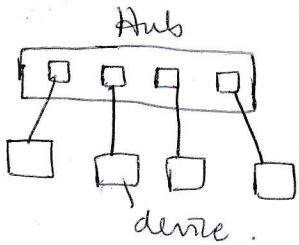


Disadvantages: • Amount of cabling and the number of I/O port required is more.

- Installation and reconnection are difficult
- Sheer bulk of the wiring is more.

* Star topology

- Each device has a dedicated point to point link only to a central controller, usually called a hub.
- They do not allow direct traffic between devices
- The controller acts as an exchange.



Advantages: • less expensive.

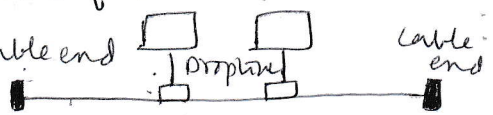
- Each device is connected only to one link and one I/O port
- Easy reinstall & reconfigure.
- It is robust.

Disadvantage: • dependency of the whole topology on one hub. If the hub goes down, the whole system is dead.

* Bus topology

- It is a multipoint connection.
- One long cable acts as a backbone to a link all device.
- Nodes are connected to the bus cable by droplines & taps.

· The signal becomes weaker & weaker as it travels further.

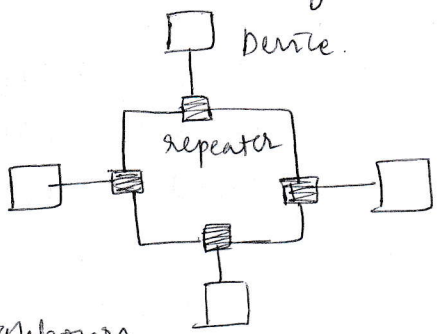


Advantage: · Easy installation
· Backbone cable can be laid along the most efficient path.
· Redundancy is eliminated.

Disadvantage: · Difficult reconnection and fault isolation
· Difficult to add new devices
· Fault or break in the bus cable stops all transmission

* Ring Topology:

· Each device has a dedicated point to point connection with only the 2 devices on either side of it
· Each device incorporates a repeater!
· When a signal is received, the repeater regenerates the bits and passes them along.



Advantages: · Easy to install and reconfigure.
· Each device is linked to only its immediate neighbours.
· Fault isolation is simplified.

Disadvantage: · Unidirectional traffic.
· A break in the ring can disable the entire network.

① (b) Explain various scenarios used in protocol layering.

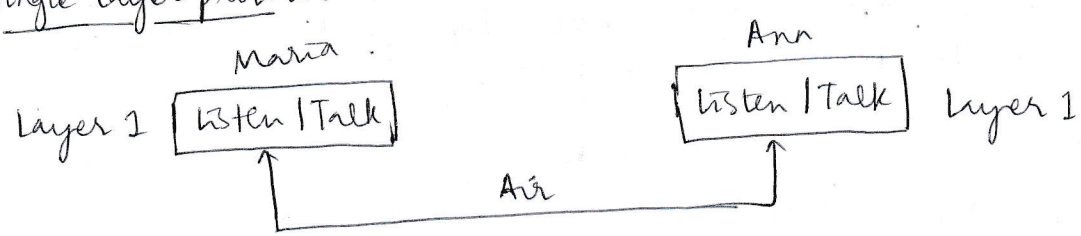
→ A protocol defines the rules that both the sender & receiver and all intermediate devices that need to follow.

When communication is complex, we may need protocol at each layering

First scenario:

Communication is so simple that it can occur in only one layer.
Assume maria and Ann are neighbours with a lot of common ideas.
Common ideas. Communication takes place in one layer.

Single layer protocol



K S Institute of Technology, Bangalore-560109

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

ASSIGNMENT QUESTIONS

Academic Year	2022-23 (ODD)		
Batch	2019-2023		
Year/Semester/section	IV/VII/A & B		
Course Code-Title	18EC71-Computer Networks		
Name of the Instructor	Dr.Dinesh Kumar D S	Dept	ECE

K-Levels: K1-Remebering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

Assignment No: 2 **Total marks:10**
Date of Issue: 15/11/2022 **Date of Submission: 25/11/2022**

Sl. No.	Assignment Questions	K Level	CO	Marks
1.	Analyze different adressing mechanisms used in wireless LAN	K4	CO2	1
2.	Analyze IEEE 802.11 MAC layer format with all the fields	K4	CO2	1
3.	Discuss differenet services provided by network layer	K2	CO3	1
4.	A block of adress is granted to a small organization.one of the adress is 210.16.37.39/27. Evaluate the first adress,last adress and number of adresses.	K4	CO3	1
5.	an organization is granted a block of adress with beginning adress 20.24.74.0/24. design a sub blocks with i.10 ii.60 & iii.120 adresses	K4	CO3	1
6.	Analyze IPV4 datagram format with all the necessary fields	K4	CO3	1
7.	Make use of different classful IPV4 adressing with example	K3	CO3	1
8.	Analyze link state routing with its link state data base	K4	CO3	1
9.	Analyze Go –Back-N protocol with FSM	K3	CO4	1
10.	Analyze selective repeat protocol with FSM	K4	CO4	1

Course Incharge

HOD ECE

Computer Network

Assignment - 2

1. Analyse different addressing mechanism used in wireless LAN.

The IEEE. 802-11 specifies 4 cases, difined by value of 2 flags in flag control field.

To DS	From DS	Address 1	Address 2	Address 3	Address 4
0	0	Destination	Source	BSS. ID	N/A
0	1	Destination	Sending AP	Source	N/A
1	0	Receiving AP	Source	Destination	N/A
1	1	Receiving AP	sending AP	Destination	Source

Address 1 - is always address of next device next frame will visit.

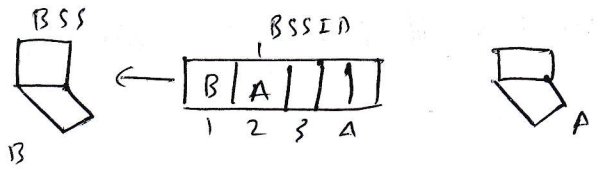
Address 2 - is address of previous device that frame has left.

Address 3 - is address of final destination if it is not difined by address 1 on the original source station if it's not difined by address 2.

Case 1 - 00, To DS = 0, From DS = 0

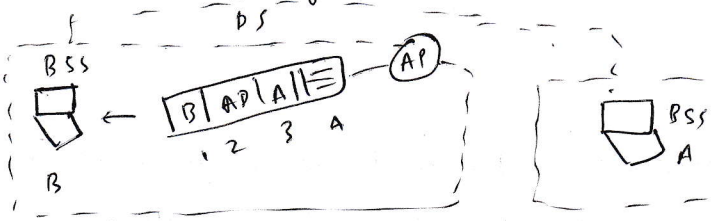
which means the frame is not going to distribution system nor coming back.

Going from one system to another without coming back.



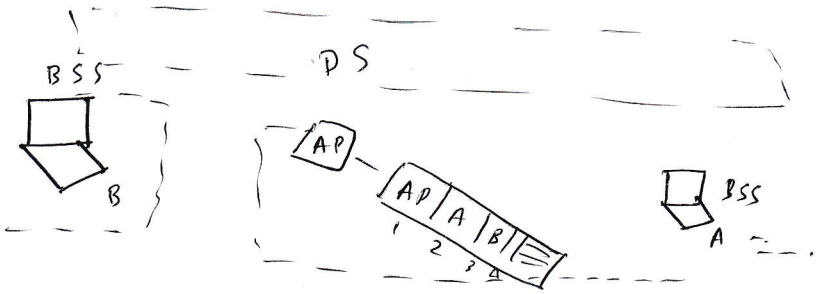
Case 2: 01 To DS = 0 | From DS = 1

Frame is coming from DS (AP) & going to a station.



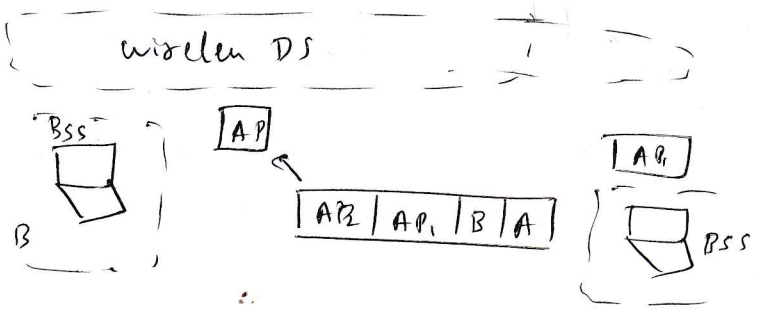
Case 3 : 10 To DS = 1 | From DS = 0

Frame is going from a station to an AP. Ack is sent to original station.

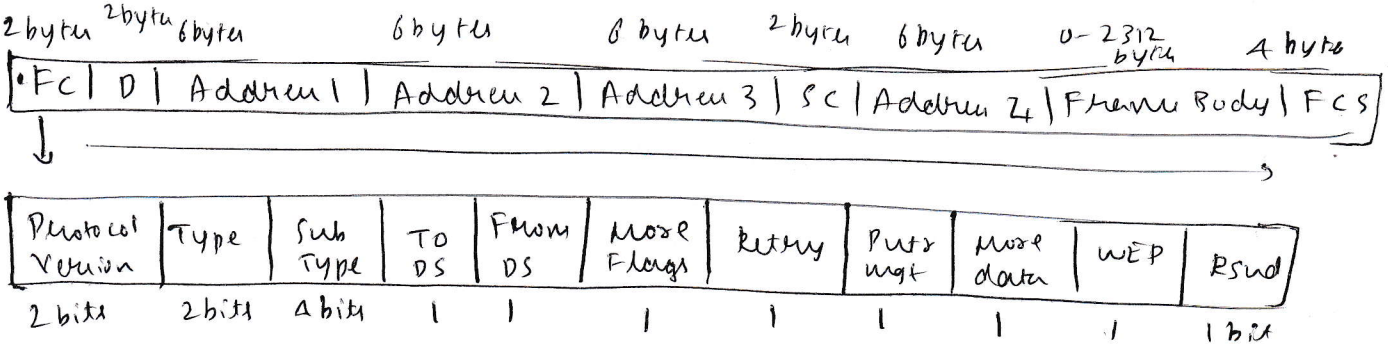


Case 4 : 11 To DS = 1 | From DS = 1

More frame is going from AP to another in wireless DS



2) Analyse IEEE 802.11 MAC layer format with all fields.



→ Frame control (FC)

It is 2 byte long & difine the type of frame & some control information.

Version	Current version is 0
Type	Mgt (00), Ctrl (01), data (10)
Subtype	1101 (Ack), 1100 CCES), 1011 (RTS)
To DS	
From DS	
Power Mgnt	
Retry	when set 1 - Retransmitted frame when set 1 - more fragments

More data -	when set 1 - Station has more data to send.
WEP	wired Equipment privacy
Rsvd	Reserved.

→ D - define the duration of Txn. One control frame it defines ID of frame.

→ Address - There are 4 fields which depends on value of DS & from DS.

→ SC - Sequence control (16 bit)

first 4 bits define the fragment number, last 12 bits define sequence number

→ Frame Body - Contains information based on type & subtype defined in FC field.

→ FCS - Frame Control Status

Contains a CRC-32 error detection sequence.

3. Different services provided in network layer.

→ Packetizing - Packet switching

There are 2 main approaches.

- Datagram (connectionless) - Use only destination address & independent of paths.
- Virtual circuit (connection oriented)

Relationship exists b/w all packets belonging to message.

→ Error control

Packet in network layer may be fragmented at each router, which makes error checking at this layer inefficient.

→ Flow control

It regulates amount of data a source can send without overwhelming at receiver.

→ Congestion Control

It is a situation in which too many datagrams are present in an area of Internet.

→ Quality of Service

Internet has thrived by providing better quality of service to support these applications.

4) A block of address is granted to a small organization one of address is 210.16.37.39/27. Evaluate first, last & number of address.

→ 11010010. 00010000. 00100101. 00100111

n = 27

32 - 27 = 5

→ First address

11010010. 00010000. 00100101. 00100000

210. 16. 37. 32

→ Last Address

11010010. 00010000. 00100101. 00111111

210. 16. 37. 63

Total number of Addresses

$2^5 = 32$ address

5) An organisation is granted a block of address with beginning address 20.2A.74.0/24.

Design subblock with 10, 60, 120 address.

→ $2^{32-24} = 256$

20.24.74.0/24 → 14.24.74.255/24.

If no of address is largest subblock which is 120 is not power of 20

$128 = 2^7$ | n1=7 | n1 = 32-7 = 25

→ 20. 24.74.0/25 - 14.24.74.127/25

→ $60 = 2^6$: n2 = 6 n2 = 32-6 = 26

20.24.74.128/26 - 20.24.74.191/26

→ $10 = 2^4$: n3 = 32-4 = 28

20.27.74.192/28 - 20.24.74.207/28

→ No of address = 128 + 64 + 16 = 208

N = 256

20.24.74.0/24 | n=24 | 20.24.74.255/24

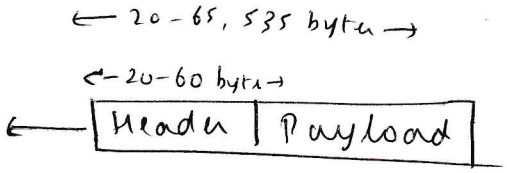
20.24.74.0/25 | n1=25 | 20.24.74.127/25

20.24.74.128/26 | n2=26 | 20.24.74.191/26

20.24.74.192/28 | n3=28 | 20.24.74.207/28

Unused = 256 - 208 = 48

6) Analyse IPV4 datagram formed with all necessary fields.



Flags | | D | M |

→ Packets used by IP are called datagram.

→ A datagram is a variable length packet consisting of 2 parts header & payload (data).

→ The header is 20 to 60 bytes in length & contains information essential for routing & delivery.

→ VER - Version Number

→ Header lg - Define total lg of datagram header in 4 byte.

→ Service type - define how datagram should be handled.

→ Protocol - packet is called a payload

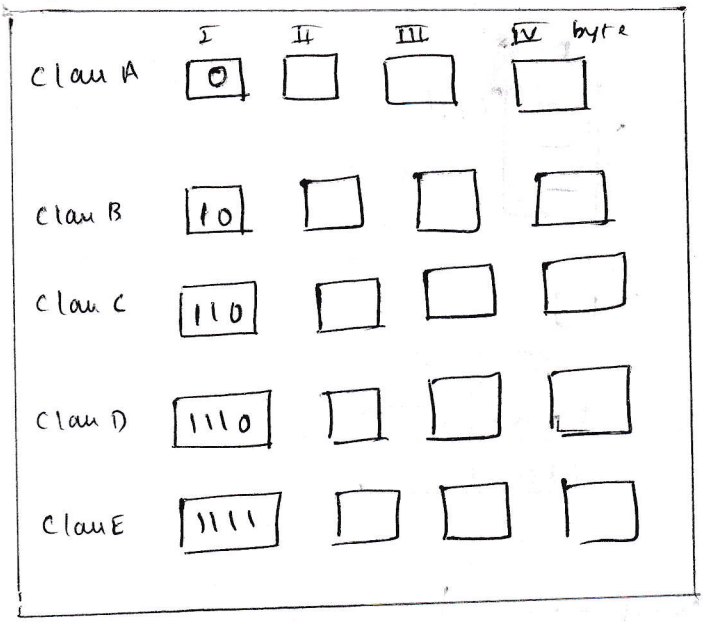
→ Options - options can be used for network testing & debugging.

→ Time to live - used to control the max no of hops taken by data.

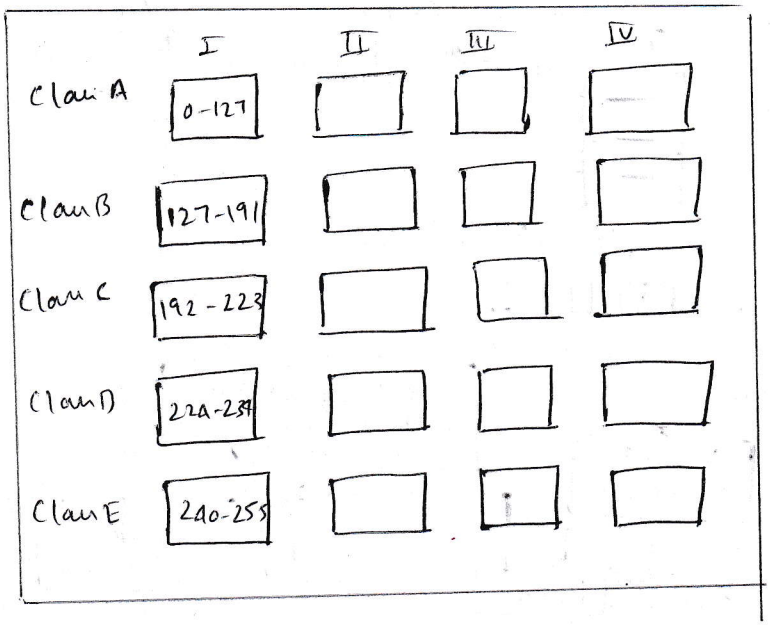
7. Make use of different classful IPV4 address with eg.

- Normally class A address were designed for large organisation with large number of attached hosts or routers.
- Class B address were designed for midsize organization with tens of thousands of attached hosts or routers.
- Class C address were designed for small organisations with a small number of attached hosts or routers
- Class D address were designed for multicasting
- Class E address were reserved for future use.

Primary Notation



Dotted Decimal Notation

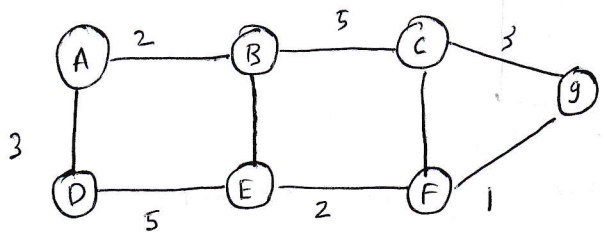


8. Analyse link state with its link state database

A routing algorithm for creating cost tree & forwarding table is link state (LS) routing

Link State database (LSDB)

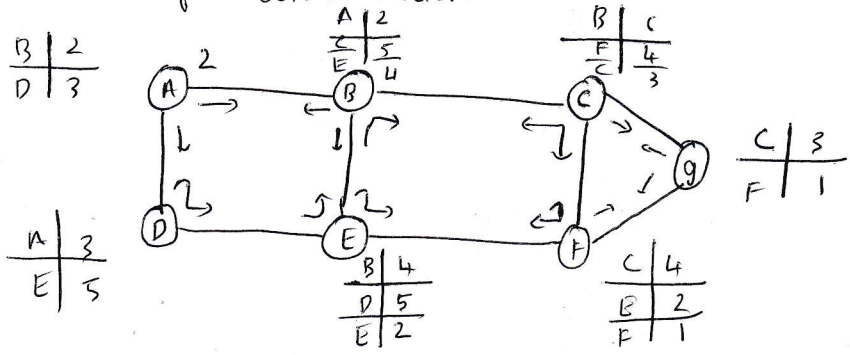
LSDB is a two dimensional array in which the value of each cell defines the cost of corresponding link.



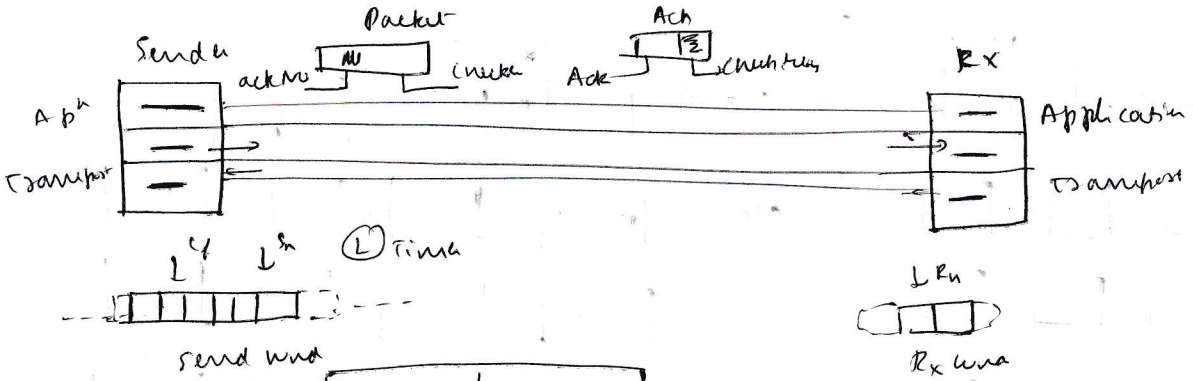
weighted graph

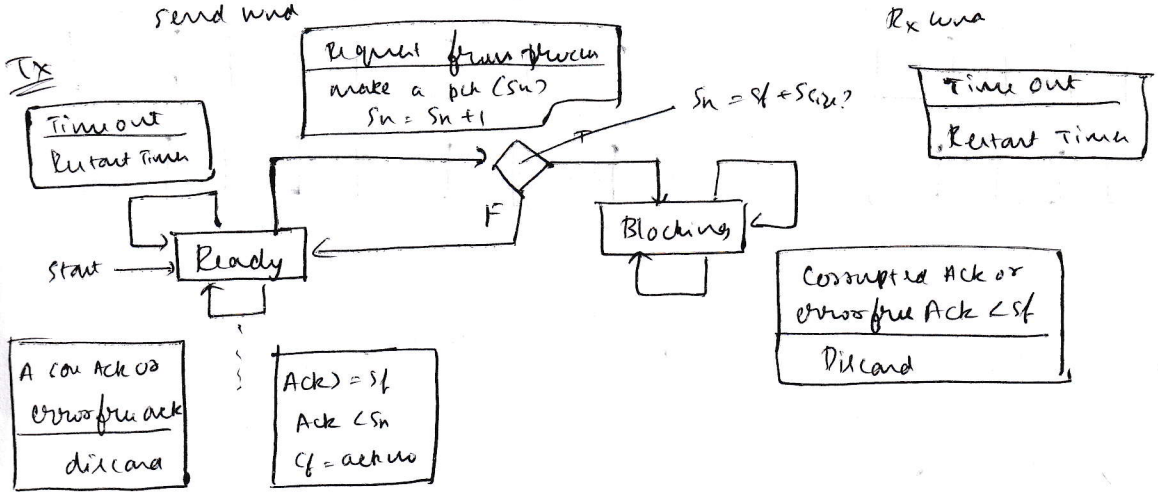
	A	B	C	D	E	F	G
A	0	2	∞	3	∞	∞	∞
B	2	0	5	∞	4	∞	∞
C	∞	5	0	∞	∞	4	3
D	3	∞	∞	0	5	∞	∞
E	∞	4	∞	5	0	2	∞
F	∞	∞	4	∞	2	0	1
G	∞	∞	3	∞	∞	1	0

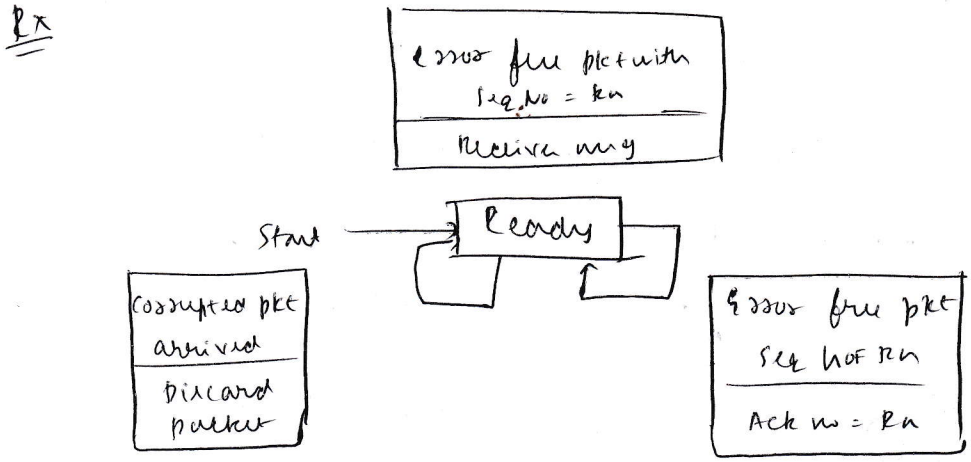
In LSR, flooding is used to create LSDB for each node that contains info about which interface each node can send & receive node



9. Analyse Go-Back protocol with FSM.





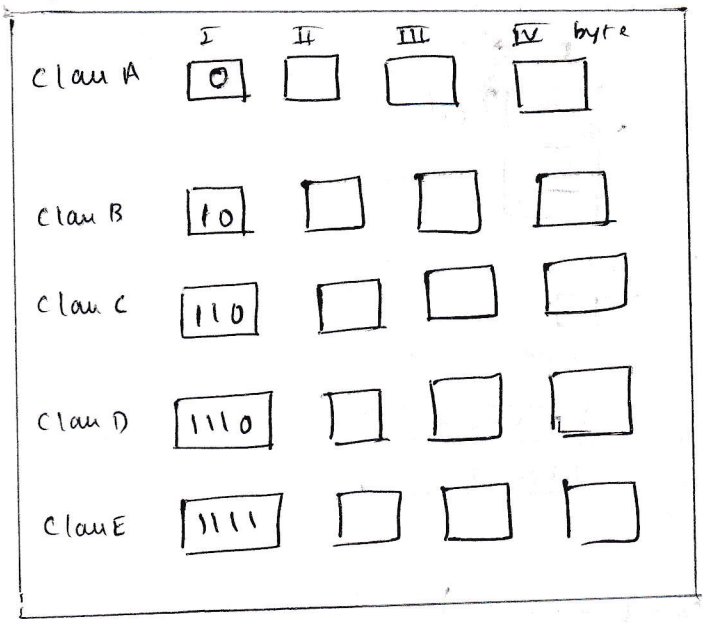


The ack no is commutative & defines the sequence number of next packet expected to arrive

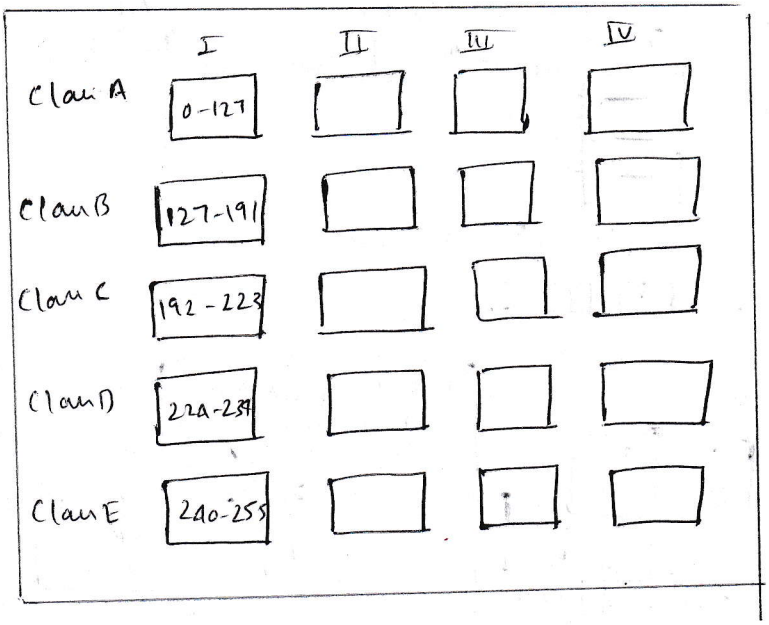
The maximum size of window is $2^m - 1$

The seq. no are mod 2^m, m = size of seq no.

Primary Notation



Dotted Decimal Notation

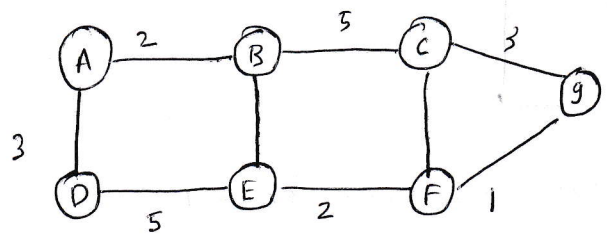


8. Analyze link state with its link state database

A routing algorithm for creating cost trees & forwarding tables is link state (LS) routing

Link State database (LSDB)

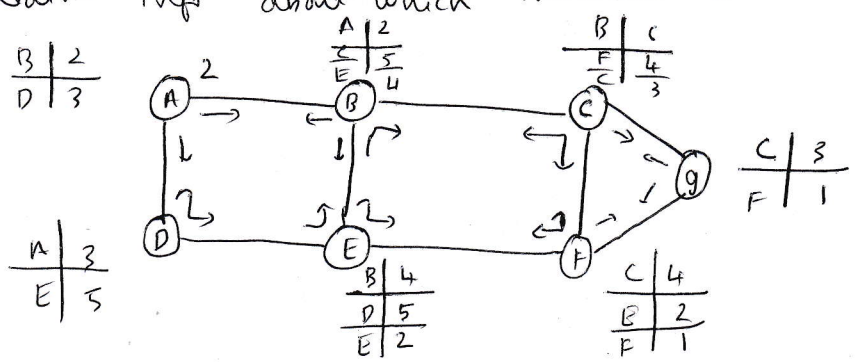
LSDB is a two dimensional array in which the value of each cell defines the cost of corresponding link.



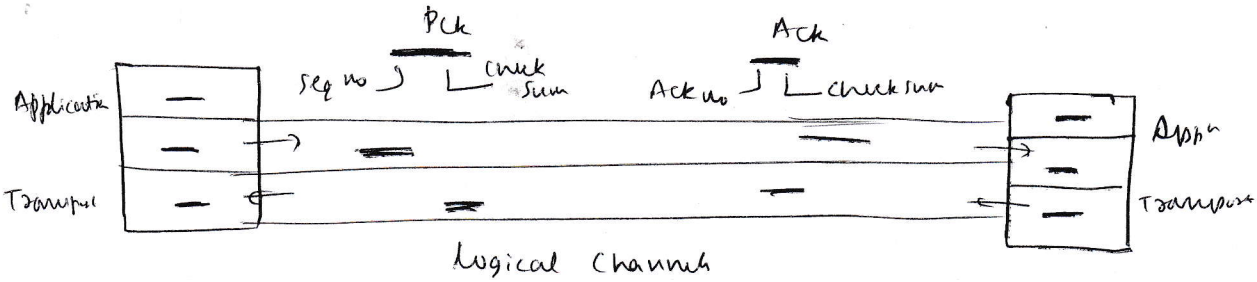
weighted graph

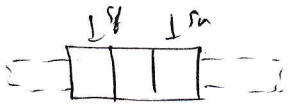
	A	B	C	D	E	F	G
A	0	2	∞	3	∞	∞	∞
B	2	0	5	∞	4	∞	∞
C	∞	5	0	∞	∞	4	3
D	3	∞	∞	0	5	∞	∞
E	∞	4	∞	5	0	2	∞
F	∞	∞	4	∞	2	0	1
G	∞	∞	3	∞	∞	1	0

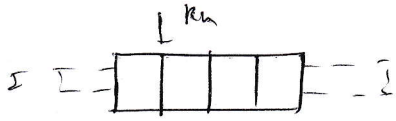
In LSR, flooding is used to create LSDB for each node that contains info about which interface each node can send & receive node



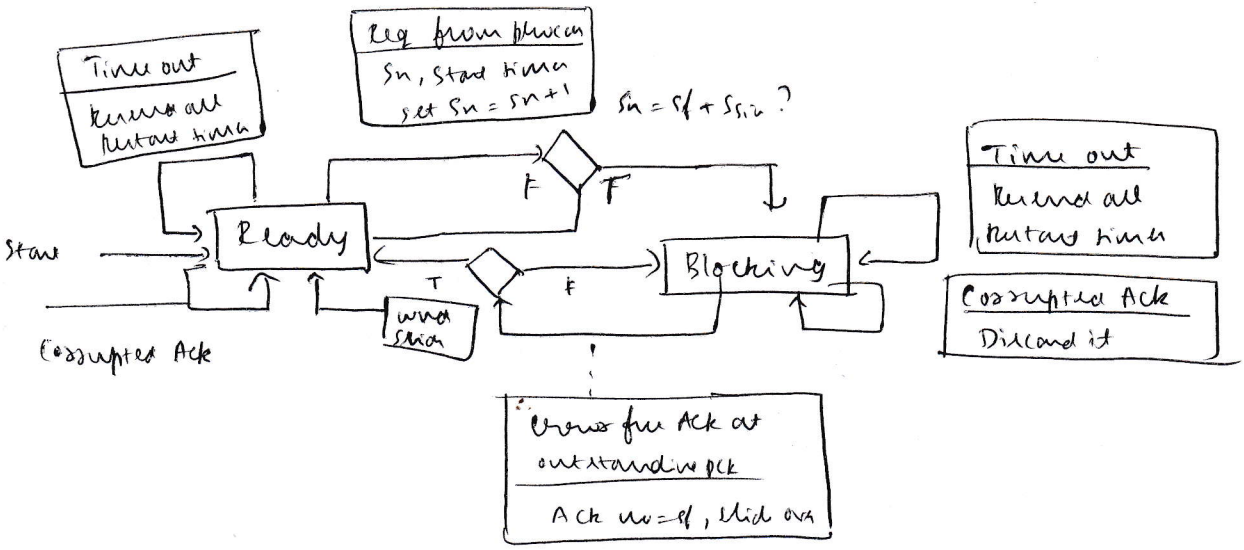
10) Analyse selective repeat protocol with FSM.



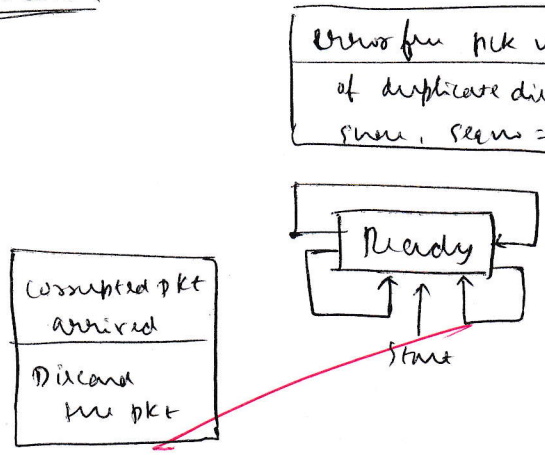




FSM



Receiver



K S Institute of Technology, Bangalore-560109

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

ASSIGNMENT QUESTIONS

Academic Year	2022-23 (ODD)		
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Year/Semester/section	IV/VII/A		
Course Code-Title	17EC81-Computer Networks		
Name of the Instructor	Dr.Dinesh Kumar D S	Dept	ECE

K-Levels: K1-Remebering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

Assignment No: 3 **Total marks:10**
Date of Issue: 12/12/2022 **Date of Submission: 19/12/2022**

Sl. No.	Assignment Questions	K Level	CO	Marks
1.	Distinguish sending and receiving buffers in TCP	K4	CO4	1
2.	Analyze the working of selective repeat protocol and discover why the size of the send and receive window inselective repeat can be at most one half of 2^m.	K4	CO4	1
3.	List the general services provided by UDP withformats	K2	CO4	1
4.	Explain TCP segment format with a neat diagram	K4	CO4	1
5.	Analyze Persistent and non-persistentconnections in HTTP.	K4	CO5	1
6.	Analyze the concept of Web based Email with respectto general Email	K4	CO5	1
7.	Analyze the architecture and format of Electronic Mail	K4	CO5	1
8.	Analyze the concept of FTP in detail.	K4	CO5	1
9.	Contrast Local and Remote Logging in TELNET	K3	CO5	1
10.	List the features of DNS Recursive and IterativeResolutions	K2	CO5	1

Course Incharge

HOD ECE

K.S. INSTITUTE OF TECHNOLOGY, BANGALORE - 560109

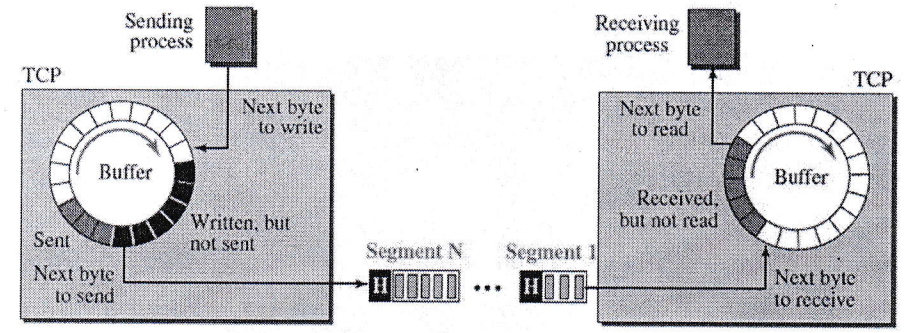
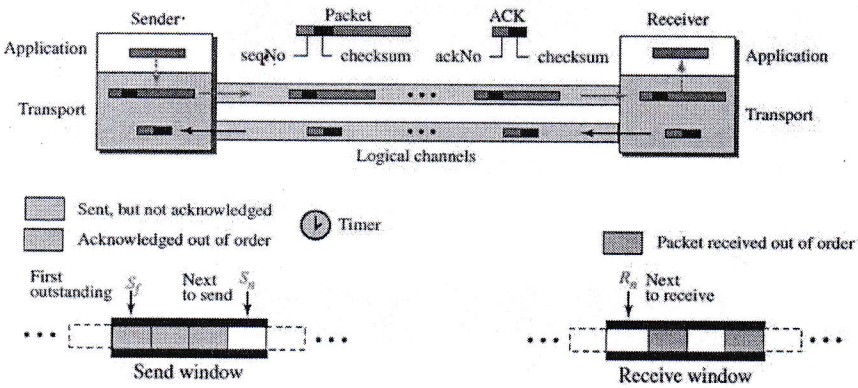
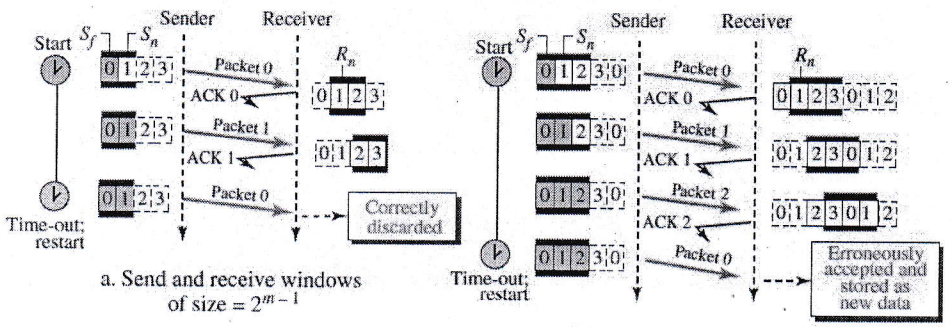
ASSIGNMENT 3 SCHEME

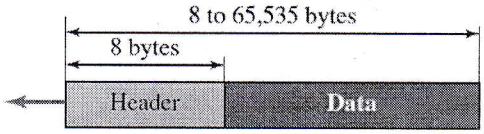
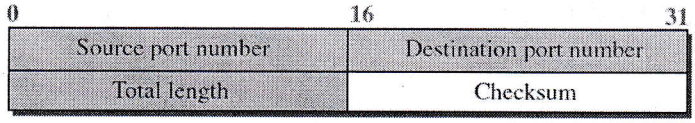
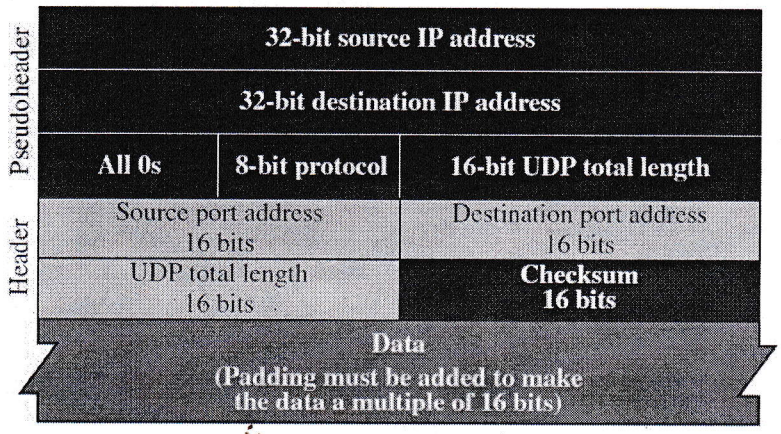
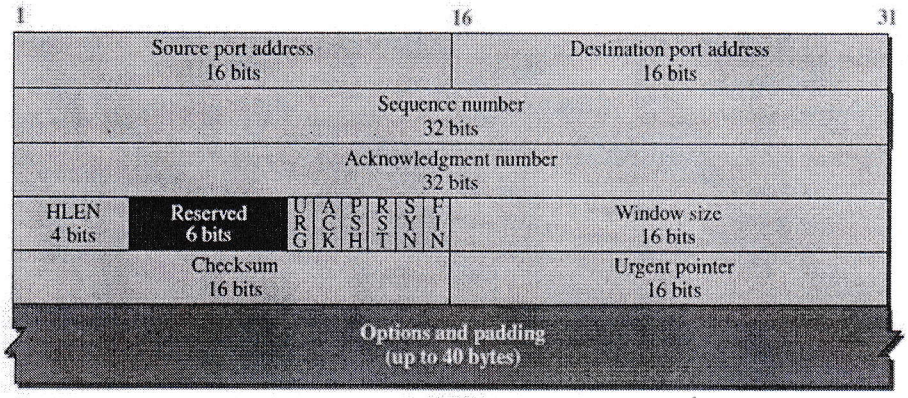
2022 – 23 ODD SEMESTER

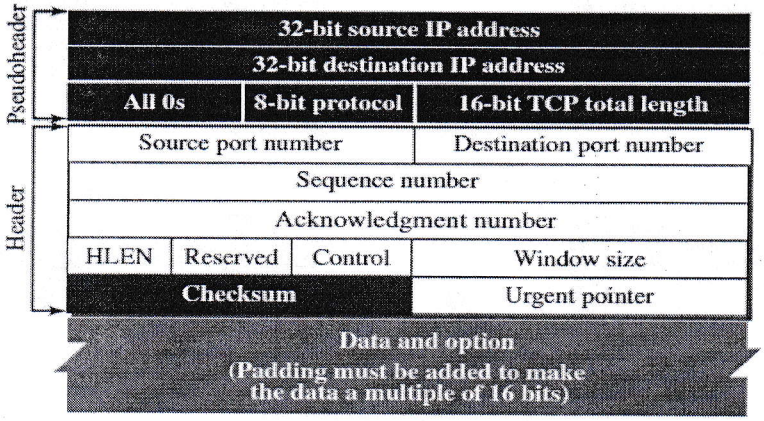
Degree : B.E **Semester : VII**

Branch : ECE **Course Code : 18EC71**

Course Title : COMPUTER NETWORKS **Max Marks : 10**

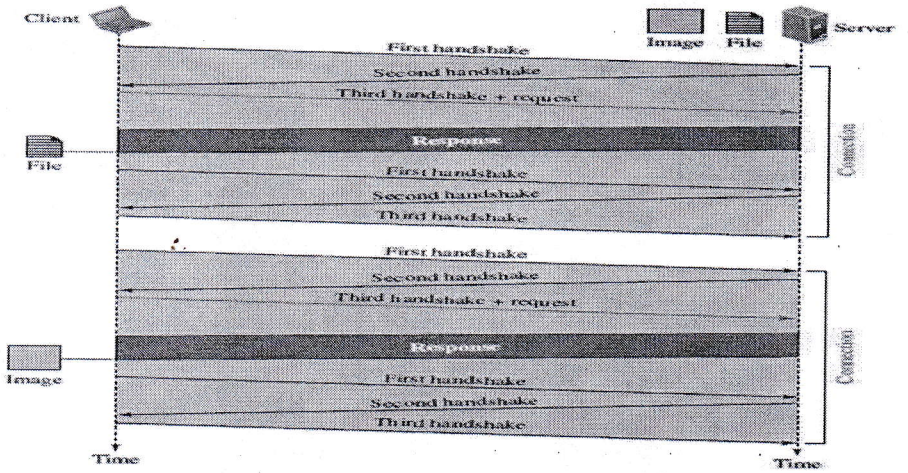
Q.NO.	POINTS	MARKS
1	 **Explanation**	6
2	 **FSM at Sender and Receiver**  a. Send and receive windows of size = 2^{m-1} b. Send and receive windows of size > 2^{m-1} **Explanation**	6

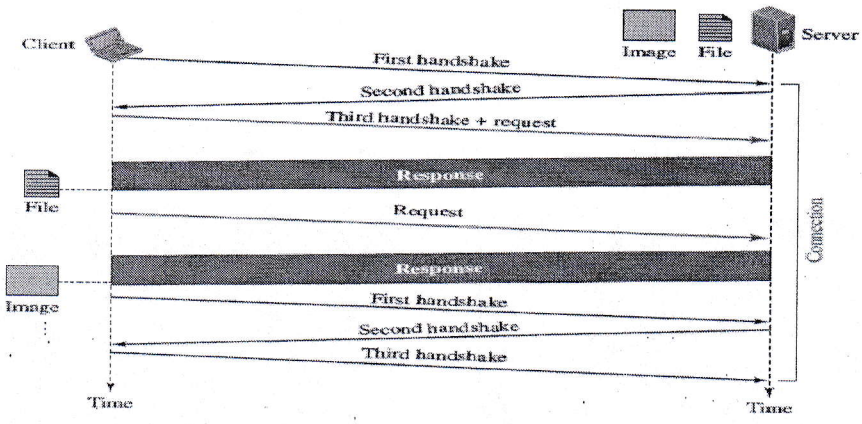
3	 a. UDP user datagram  b. Header format  **Connectionless, Unreliable: No flow control, process-to-process communication , No Error control except for optional checksum, No congestion control, Encapsulation and Decapsulation, Multiplexing and Demultiplexing, Queuing : Explanation**	6
4	 a. Segment  b. Header	6

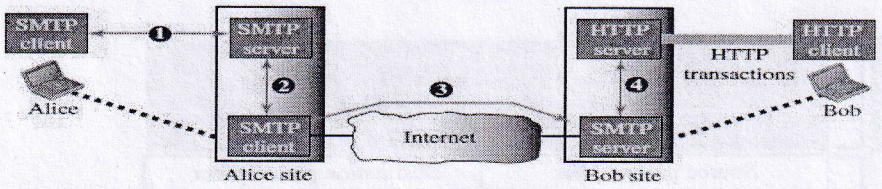


Explanation

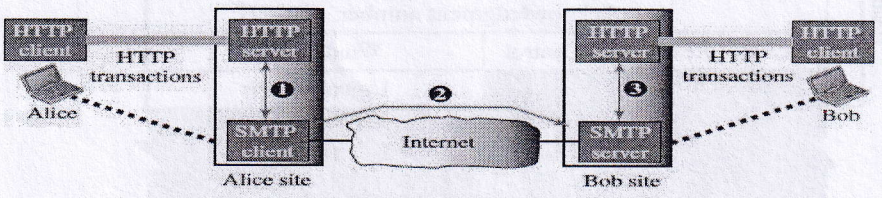
5







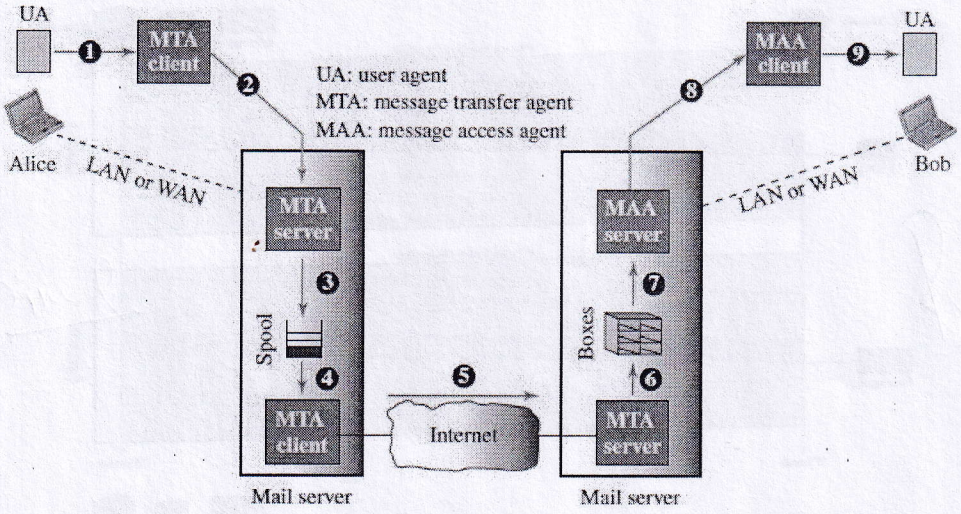
Case 1: Only receiver uses HTTP

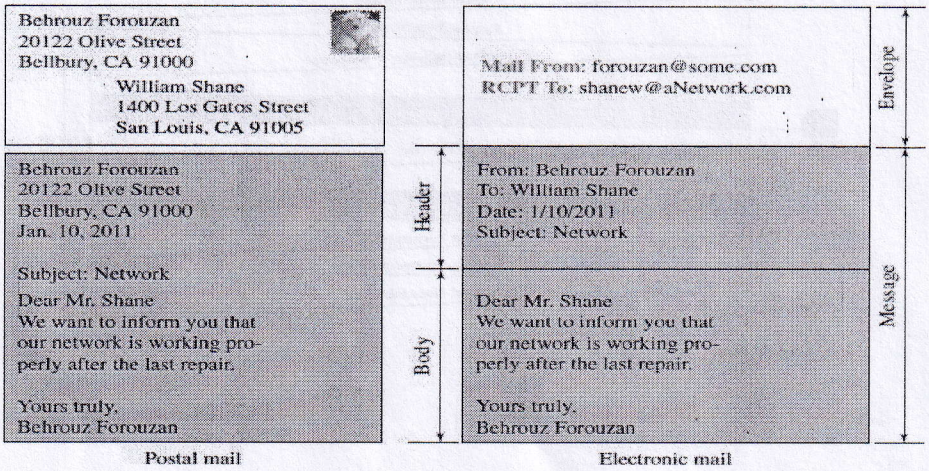


Case 2: Both sender and receiver use HTTP

Explanation

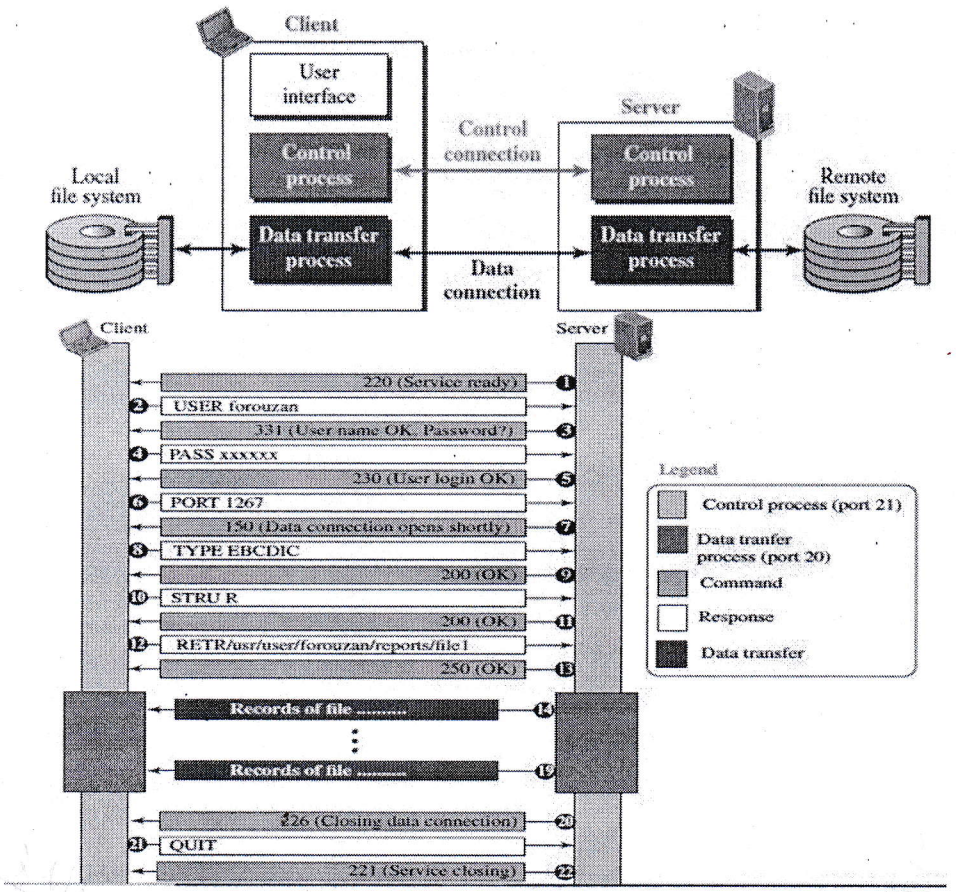
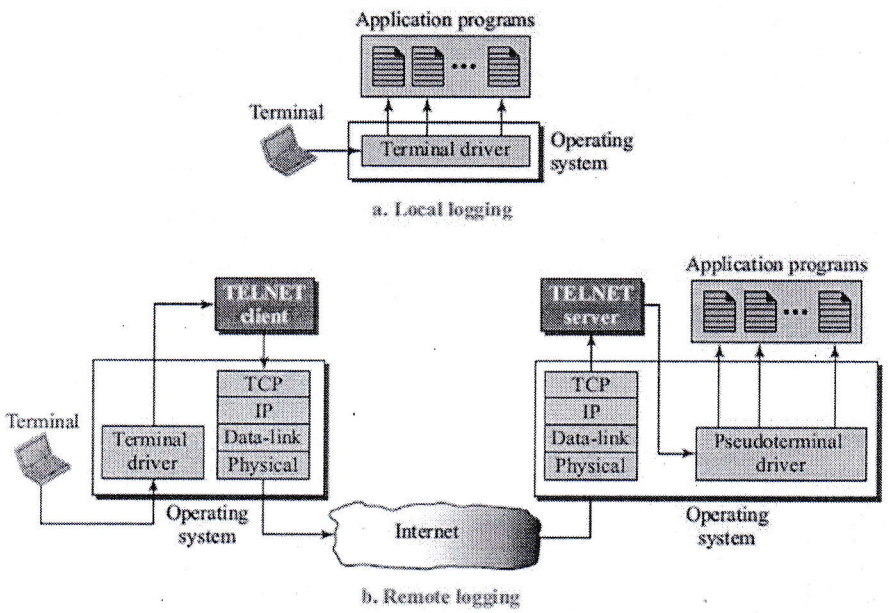
7

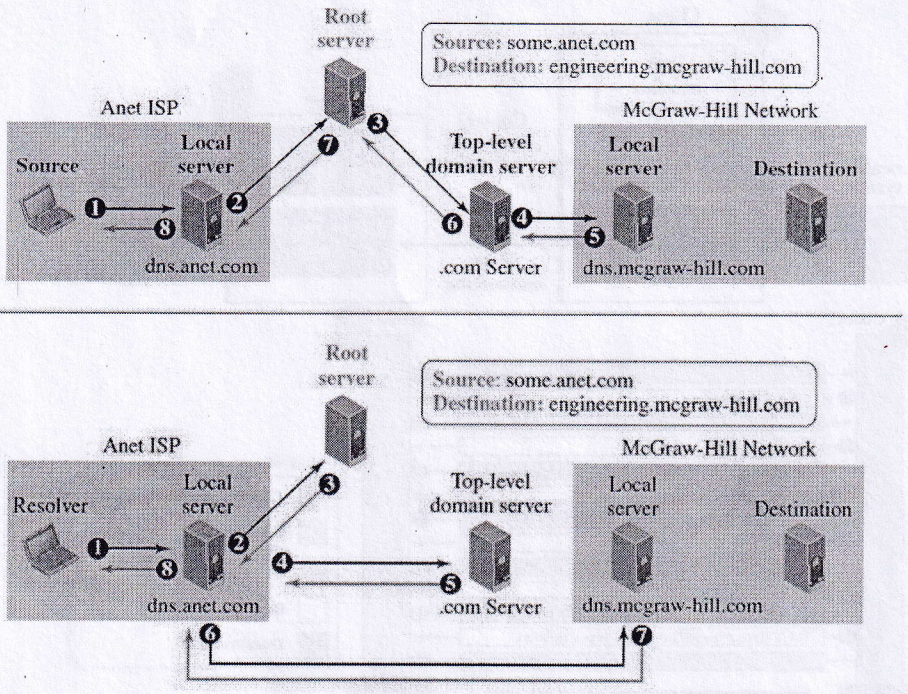




Explanation

6

8	 Explanation	
9	 Explanation	6

10	 Explanation	6

Course In charge

HOD ECE

K.S. INSTITUTE OF TECHNOLOGY, BANGALORE - 560109
FIRST INTERNAL TEST QUESTION PAPER 2022-23 ODD SEMESTER

SET: B

USN										

Degree : B.E
Branch : ECE
Course Title : Computer Networks
Duration : 90 Minutes

Semester : 7th
Course Code : 18EC71
Date : 27-10-2022
Max Marks : 30

Note: Answer ONE full question from each part.

K-Levels: K1-Remebering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

Q No.	Question	Marks	CO mapping	K-Level
	PART-A			
1(a)	**Make use of** the concept of Encapsulation & Decapsulation and Multiplexing & Demultiplexing used in internet	6	CO1	K2
(b)	**Analyze** different network topologies with advantages and disadvantages.	6	CO1	K4
(c)	**Differentiate** OSI and TCP/IP models.	6	CO1	K2
	OR			
2(a)	**Analyze** TCP/IP protocol suite with functions of each layers.	6	CO1	K4
(b)	**Explain** different forms of data representation with examples	6	CO1	K2
(c)	**Illustrate** the architecture of internet with suitable diagram	6	CO1	K2
	PART -B			
3(a)	**Evaluate** the throughout if the system produces i. 250 frames per second.ii.500 frames per second.iii.1000 frames per second. If A slotted ALOHA network transmits 100bit frames using a shared channel with a 200kbps bandwidth.	6	CO2	K4
(c)	**Make use of** FSM and Flow diagram, **Analyze** CSMA/CD random access method	6	CO2	K4
	OR			
4(a)	**Make use of** FSM and Flow diagram, **Analyze** Stop and Wait Protocol	6	CO2	K4
(b)	**Analyze** the throughput of pure ALOHA and slotted ALOHA with relevant diagrams	6	CO2	K4

Name & Signature of Course In charge | Name & Signature of Module Coordinator | HOD ECE | Principal

K.S. INSTITUTE OF TECHNOLOGY, BENGALURU-560109

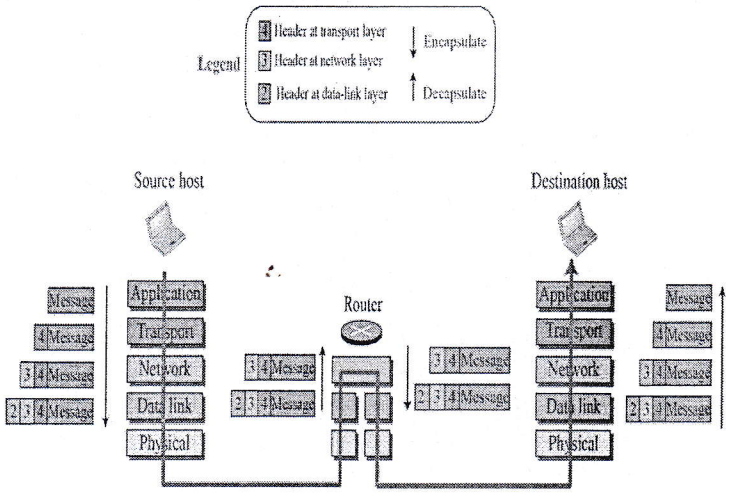
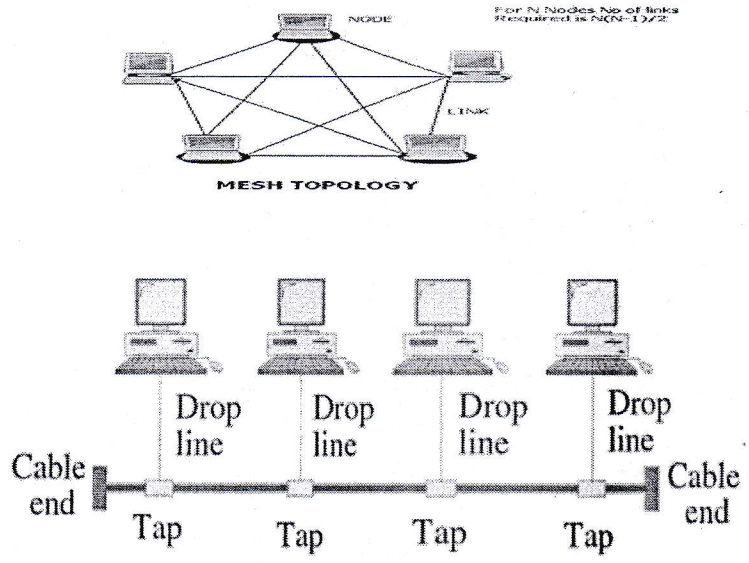
Department of Electronics & Communication Engineering

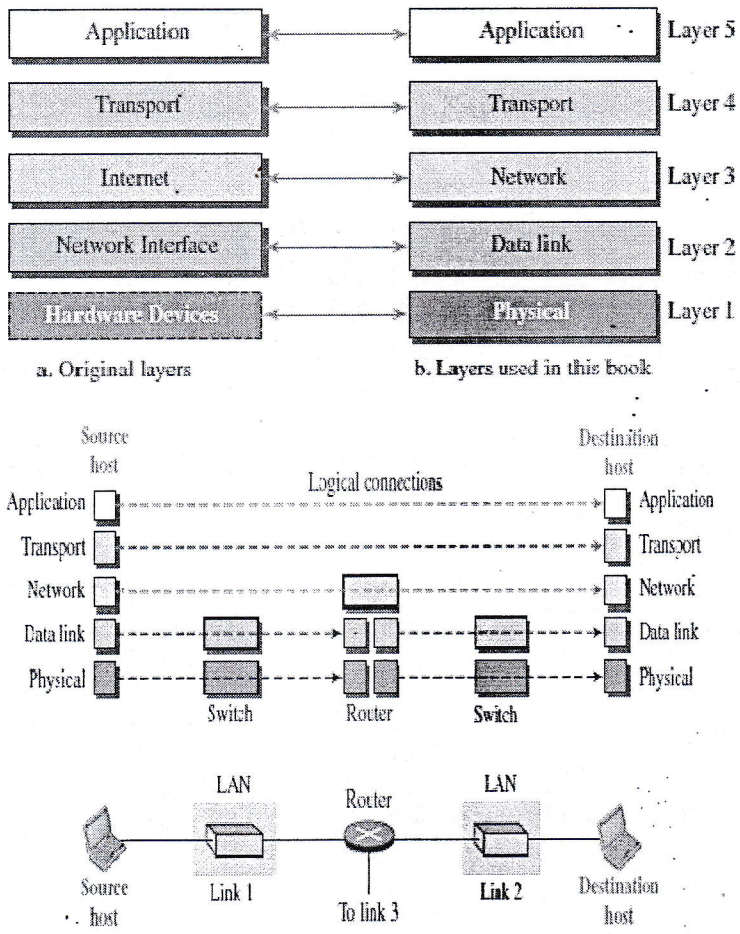
SESSION: 2022-2023 (ODDSEMESTER)

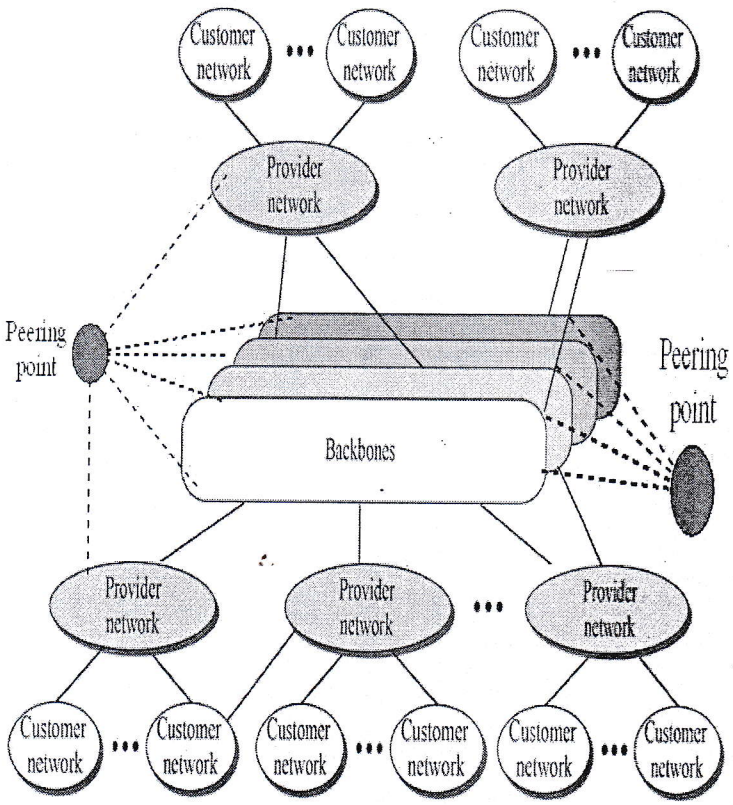
FIRST SESSIONAL TEST SCHEME & SOLUTION-SET-B

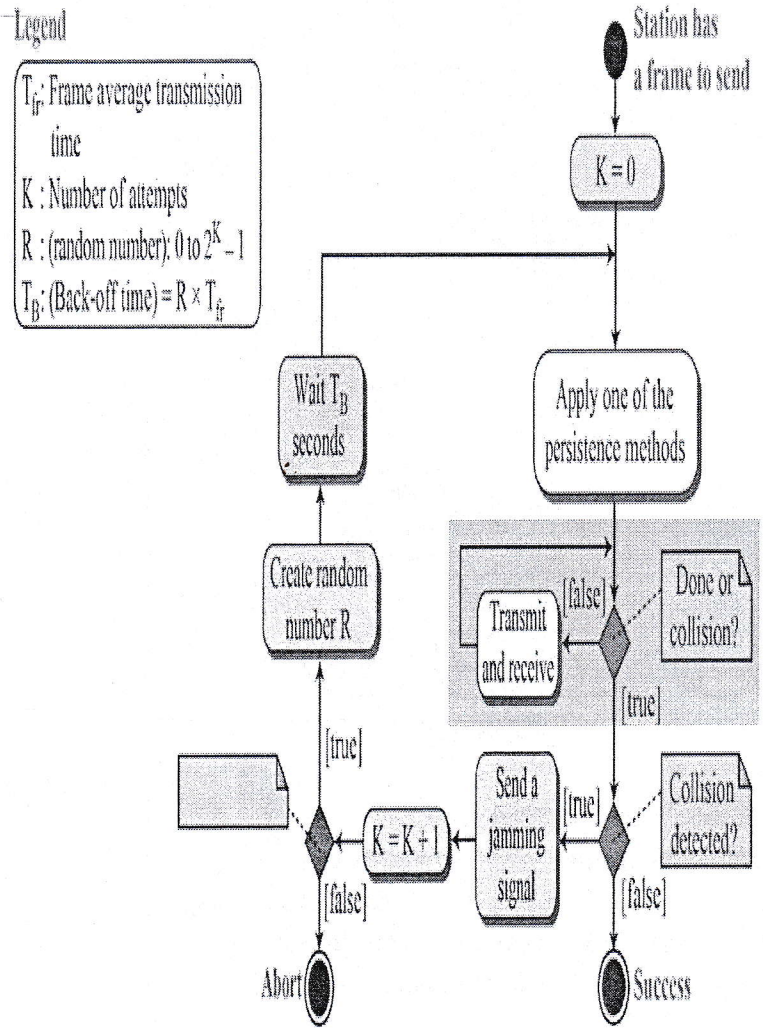
Degree	:	B.E	Semester	:	VII A & B
Branch	:	ECE	Date	:	27-10-2022
Course Title	:	Computer Networks	Course Code	:	18EC71
Duration	:	90 Minutes	Max Marks	:	30

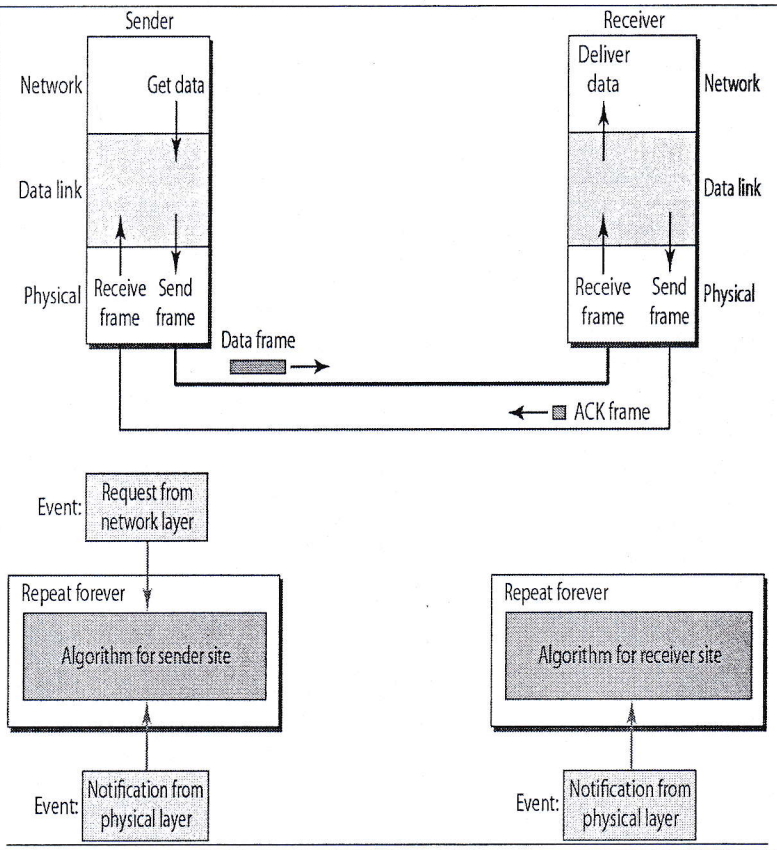
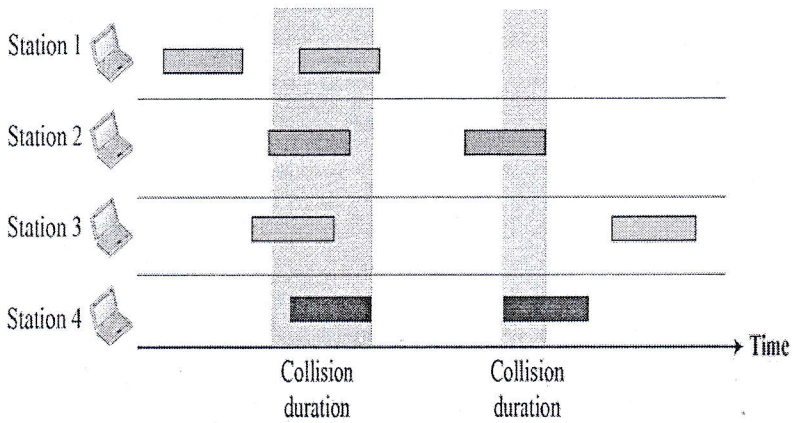
Note: Answer ONE full question from each part

Q. No.	Scheme and Solution	Marks	K-Level	CO
	PART-A			
1(a)	Encapsulation and Decapsulation 	6M Dia 3M Exp 3M	K2 Understanding	CO1
1(b)		6M Dia 3M Exp 3M	Analyzing (K4)	CO1

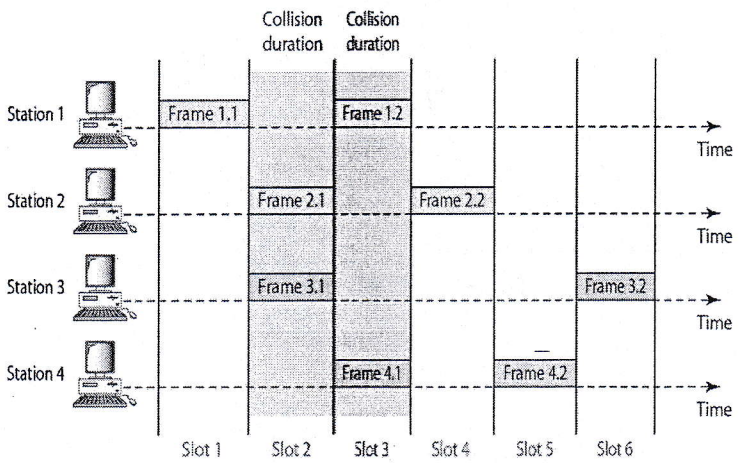
1(c)	TCPreferstoTransmissionControlProtocol.	OSIreferstoOpenSystemsInterconnection.	6 M	K2 Understanding	CO1
	TCP/IPhas5layers.	OSIhas7layers.	6M		
	TCP/IPismorereliable	OSIislessreliable			
	TCP/IPdoesnothaveverystrictboundaries.	OSIhasstrictboundaries			
	TCP/IPusesbothsessionandpresentationlayerintheapplicationlayeritself.	OSIusesdifferentsessionandpresentationlayers.			
	TCP/IPdevelopedprotocolsthenmodel.	OSIdevelopedmodelthen protocol.			
		OR			
2(a)	TCP/IP protocol suite 	6M Dia 2M Exp 4M	Analyzing (K4)	CO1
2(b)	• **Text :** sequence of 0's and 1's		6M	K2	CO1

	• **Number:** binary form • **Images:** matrix of pixels(chess board) color image represented: RGB, YCM • **Audio:** recording / broadcasting sound/**music** (continuous) • **Video :** recording / broadcasting picture/**movie**	**Exp 6M**	**Understanding**	
2(c)		**6M** **Dia 3M** **Exp 3M**	**K2 Understanding**	**CO1**
	PART-B			
3(a)	The frame transmission time is 200/200 kbps or **1** ms. a. If the system creates 1000 frames per second, this is 1 frame per millisecond. The load is 1. In this case $S = G \times e^{-G}$ or S = 0.368 (36.8 percent). This means that the throughput is 1000 × 0.368 = 368 frames. b. If the system creates 500 frames per second, this is (1/2) frame per millisecond. The load is (1/2). In this case $S = G \times e^{-G}$ or S = 0.303. This means that the throughput is 500 × 0.303 = 152 c. If the system creates 250 frames per second, this is (1/4)	**6M** **Sol-6M**	**Analyzing (K4)**	**CO2**

	frame per millisecond. The load is (1/4). In this case $S = G \times e^{-G}$ or S = 0.194 (19.4 percent). This means that the throughput is 250 × 0.194 = 49. Only 38 frames out of 250 will probably survive			
3(b)	CSMA/CD  Stop and wait protocol	6M Dia 3M Exp 3M	Analyzing (K4)	CO2

4a		Dia 3M Exp 3M	Analyzing (K4)	CO2
	OR			
4(b)	Pure ALOHA protocol ➢ Each station sends frames whenever they have Only one channel available so collisions occur Collision destroys frames & they r retransmitted Relies on ACK n then retransmits frame  Slotted ALOHA protocol	6M Dia 3M Exp 3M	Analyzing (K4)	CO2

- Divide time slots **of** Tfr seconds
- Stations can send **only** at beginning



Course In-charge

HOD ECE

K.S. INSTITUTE OF TECHNOLOGY, BANGALORE - 560109

FIRST INTERNAL TEST QUESTION PAPER 2022-23 ODD SEMESTER

SET: A

USN | | | | | | | | | | |

Degree : B.E
Branch : ECE
Course Title : Computer Networks
Duration : 90 Minutes

Semester : 7th
Course Code : 18EC71
Date : 27-10-2022
Max Marks : 30

Note: Answer ONE full question from each part.

K-Levels: K1-Remebering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

Q No.	Question	Marks	CO mapping	K-Level
	PART-A			
1(a)	**Analyze** TCP/IP protocol suite with functions of each layers.	6	CO1	K4
(b)	**Illustrate** the architecture of internet with suitable diagram	6	CO1	K2
(c)	**Explain** the components of data communication with neat diagram	6	CO1	K2
	OR			
2(a)	**Illustrate** i) Circuit switching ii) Packet Switching with relevant diagrams	6	CO1	K2
(b)	**Analyze** different network topologies with advantages and disadvantages.	6	CO1	K4
(c)	**Build** the following with networks relevant diagrams i. LAN ii. WAN	6	CO1	K3
	PART -B			
3(a)	**Evaluate** the throughout if the system produces i. 1000 frames per second.ii.500 frames per second.iii.250 frames per second. If A pure ALOHA network transmits 200 bit frames using a shared channel with a 200kbps bandwidth.	6	CO2	K4
(c)	**Illustrate** Bit stuffing and byte stuffing with example.	6	CO2	K2
	OR			
4(a)	**Illustrate** the following controlled access protocols with relevant diagrams i) Token passing ii) Reservation	6	CO2	K2
(b)	**Interpret** three persistence methods of CSMA with flow diagrams	6	CO2	K2

Dinesh
Name & Signature of Course In charge

Name & Signature of Module Coordinator

HOD ECE

Principal

Selected

K.S. INSTITUTE OF TECHNOLOGY, BENGALURU-560109

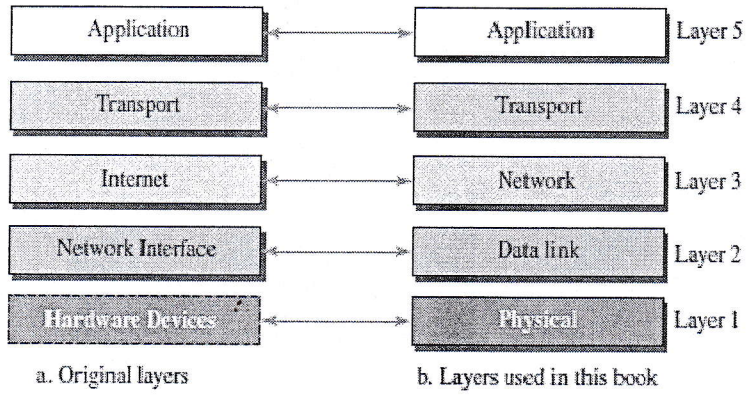
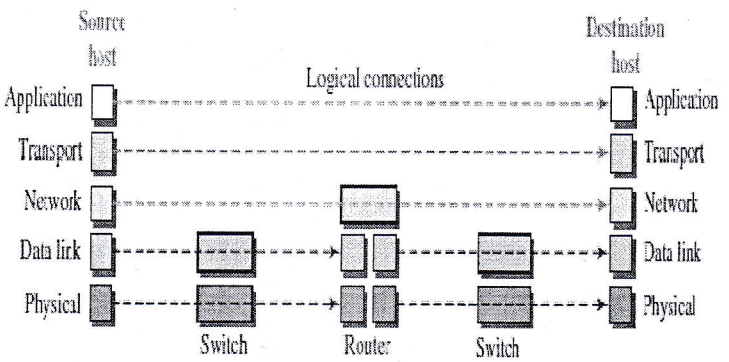
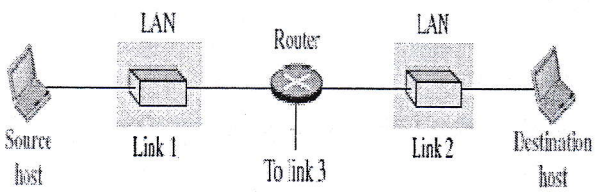
Department of Electronics & Communication Engineering

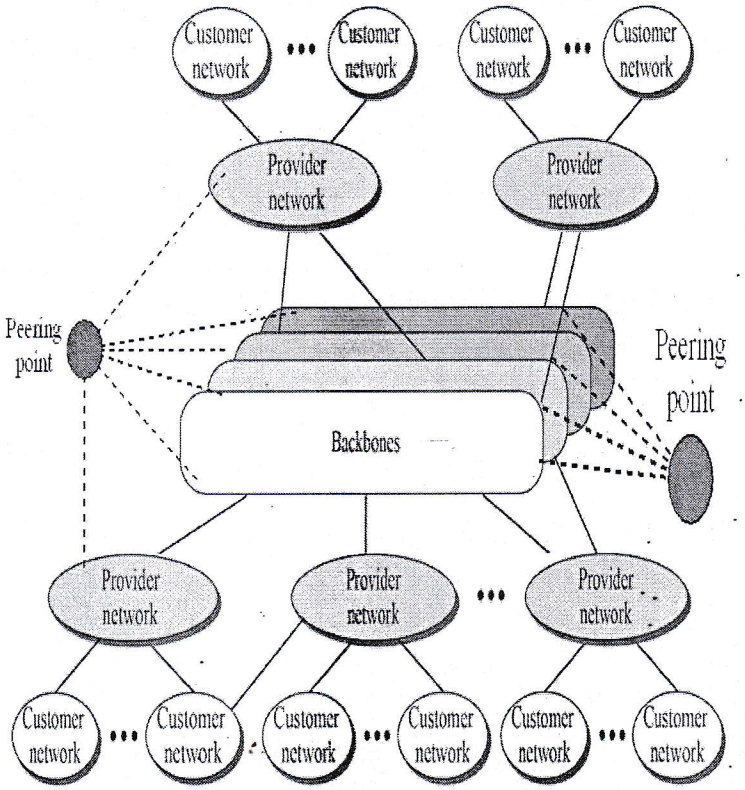
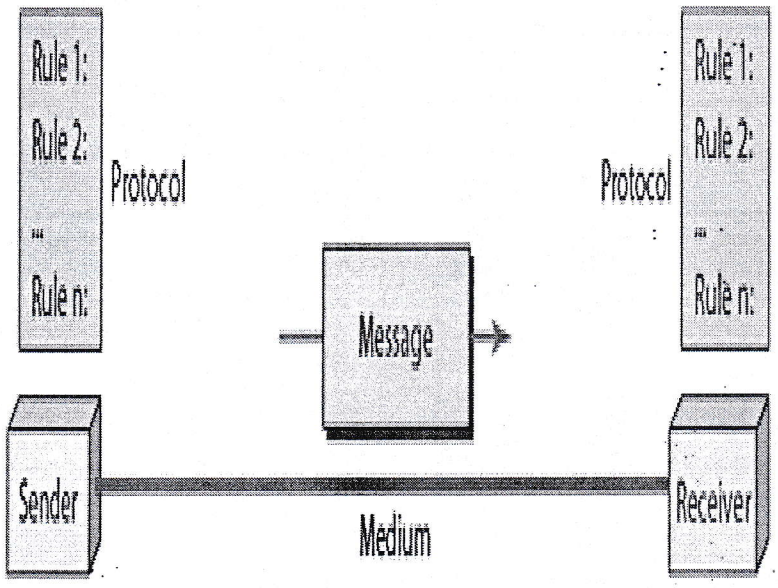
SESSION: 2021-2022 (EVEN SEMESTER)

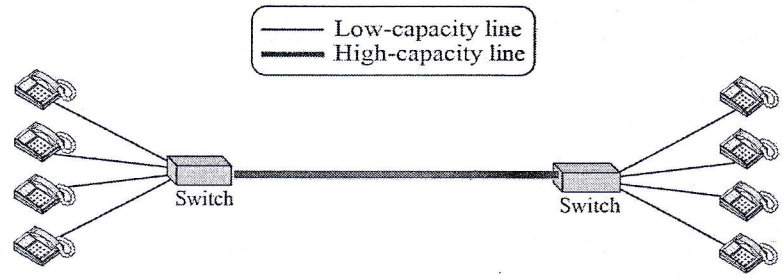
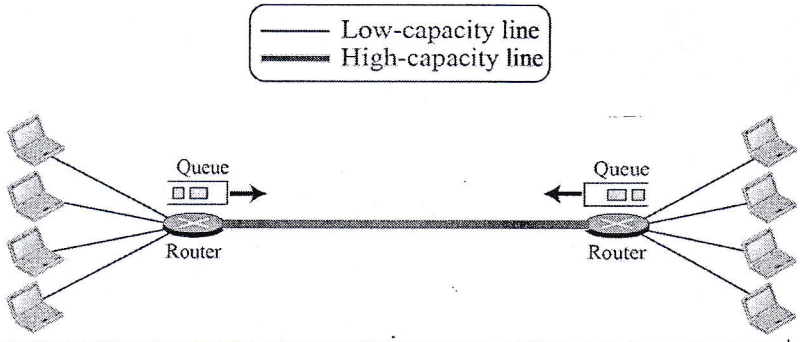
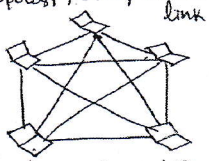
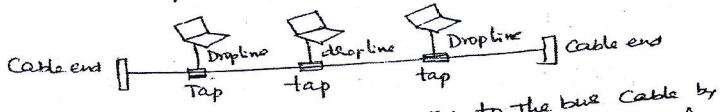
FIRST SESSIONAL TEST SCHEME & SOLUTION-SET-A

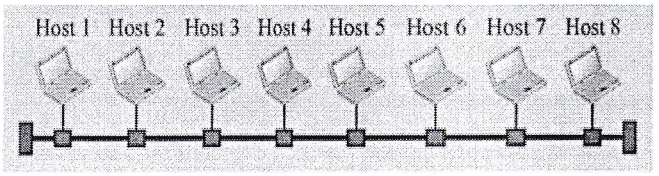
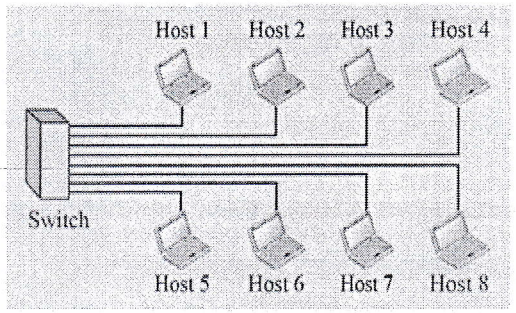
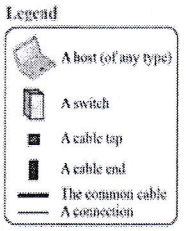
Degree	:	B.E	Semester	:	VII A & B
Branch	:	ECE	Date	:	27-10-2022
Course Title	:	Computer Networks	Course Code	:	18EC71
Duration	:	90 Minutes	Max Marks	:	30

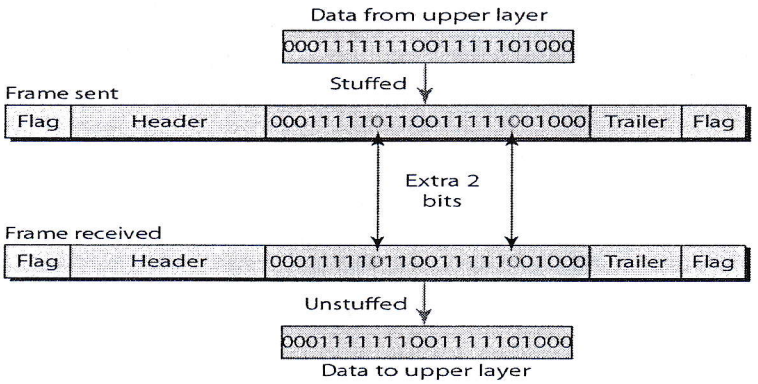
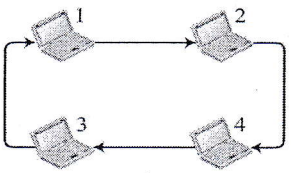
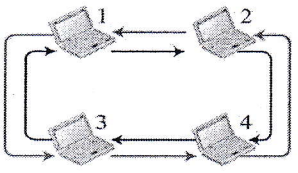
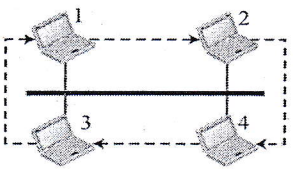
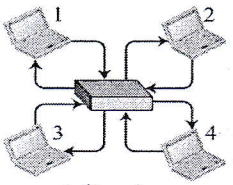
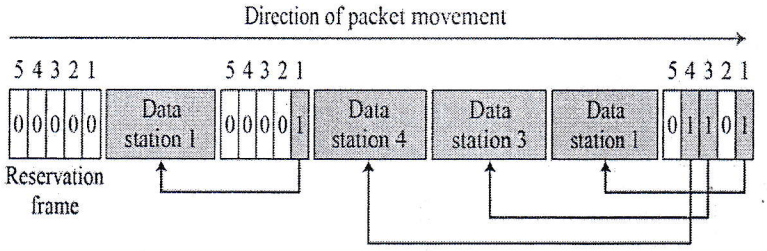
Note: Answer ONE full question from each part

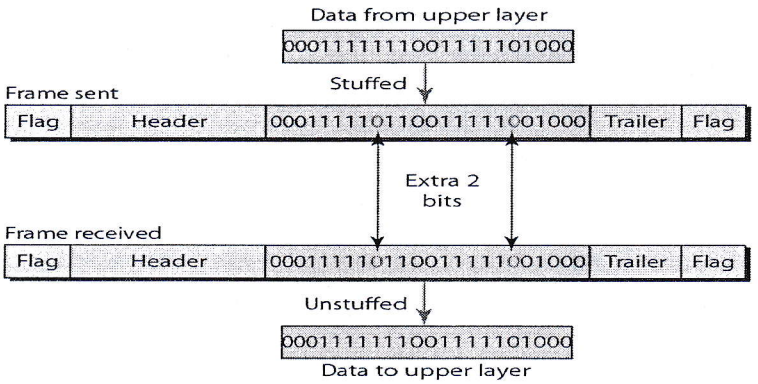
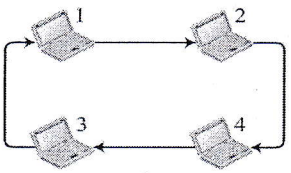
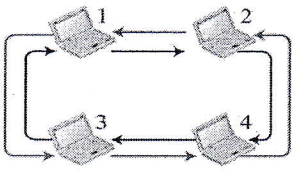
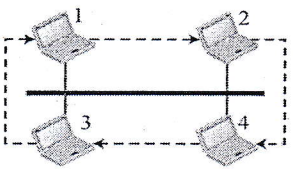
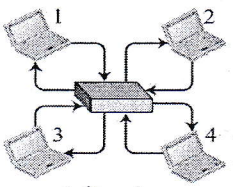
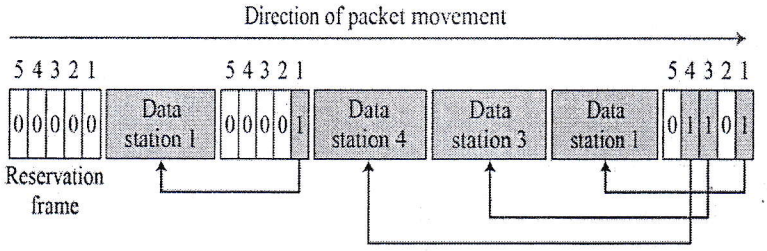
Q. No.	Scheme and Solution	Marks	K Level	CO
	PART-A			
1(a)	   Any One diagram can be drawn and detailed explanation related to the diagram is equally must.	6M Dia-3M Exp-3M	Analyzing (K4)	CO1

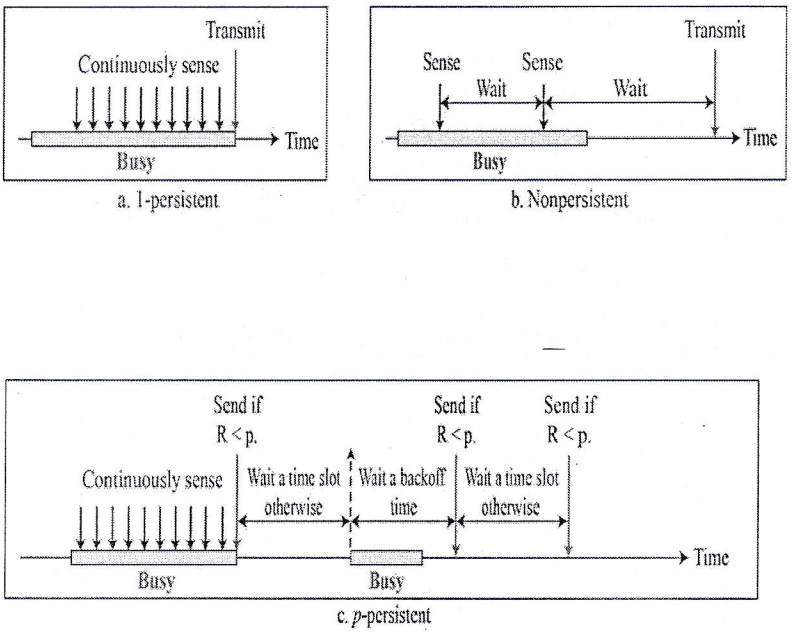
1(b)		6M Dia 3M Exp 3M	K2 Understanding	CC
1(c)		6 M Dia-2M Exp-4M	K2 Understanding	CC
	OR			

2(a)	Circuit switching  Packet switching  	6M Dia-2M Exp-4M	K2 Understanding	CO1
2(b)	1) Mesh topology: Consider a fully connected mesh topology (5 devices) In mesh topology, every device has a dedicated point-to-point link to every other device.  No of links is given by here n=5 $N = \frac{n(n-1)}{2}$ $N = \frac{5(5-1)}{2} = 10$ Advantages:- ① Traffic is reduced because of dedicated path between devices ② if any one link is unusable, it does not affect the system performance capacity. ③ provides privacy or security because of dedicated path Bus topology:- It is multipoint where all devices share common path or link.  Here Nodes are connected to the bus cable by drop lines & taps. This topology is suitable for data communication. Advantage:- ① ease of installation disadvantages ① reconnection & fault isolation is difficult	6M Dia-3M Exp-3M	Analyzing (K4)	CO1

2(c)	 a. LAN with a common cable (past)  b. LAN with a switch (today) 	6M Dia-3M Exp-3M	K2 Understanding	CO1
	PART-B			
3(a)	The frame transmission time is 200/200 kbps or 1 ms. a. If the system creates 1000 frames per second, this is 1 frame per millisecond. The load is 1. In this case $S = G \times e^{-2G}$ or $S = 0.135$ (13.5 percent). This means that the throughput is $1000 \times 0.135 = 135$ frames. Only 135 frames out of 1000 will probably survive. b. If the system creates 500 frames per second, this is (1/2) frame per millisecond. The load is (1/2). In this case $S = G \times e^{-2G}$ or $S = 0.184$ (18.4 percent). This means that the throughput is $500 \times 0.184 = 92$ and that only 92 frames out of 500 will probably survive. Note that this is the maximum throughput case, percentagewise. c. If the system creates 250 frames per second, this is (1/4) frame per millisecond. The load is (1/4). In this case $S = G \times e^{-2G}$ or $S = 0.152$ (15.2 percent). This means that the throughput is $250 \times 0.152 = 38$. Only 38 frames out of 250 will probably survive	6M Sol 6M	Analyzing (K4)	CO2

	Bit stuffing is the process of adding one extra 0 whenever five consecutive 1s follow a 0 in the data, so that the receiver does not mistakethe pattern 0111110 for a flag. 	**6M** **Dia 2M** **Exp 4M**	**K2 Understanding**	**CO2**
3b	1.Token passing  a. Physical ring  b. Dual ring	**6M**	**K2 Understanding**	**CO2**
4a	 c. Bus ring  d. Star ring ii. reservation: here all stations communicate & decide who should send frames 	**Dia-3M** **Exp-3M**		
	OR			

	Bit stuffing is the process of adding one extra 0 whenever five consecutive 1s follow a 0 in the data, so that the receiver does not mistakethe pattern 0111110 for a flag. 	**6M** **Dia 2M** **Exp 4M**	**K2 Understanding**	**CO2**
3b	1.Token passing  a. Physical ring  b. Dual ring	**6M**	**K2 Understanding**	**CO2**
4a	 c. Bus ring  d. Star ring ii. reservation: here all stations communicate & decide who should send frames 	**Dia-3M** **Exp-3M**		
	OR			

4(b)	3 persistence methods  a. 1-persistent b. Nonpersistent c. *p*-persistent	6M Dia-3M Exp-3M	K2 Understanding	CO2

Course In charge

HOD ECE

K.S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
SECOND INTERNAL TEST QUESTION PAPER 2022-23ODD SEMESTER

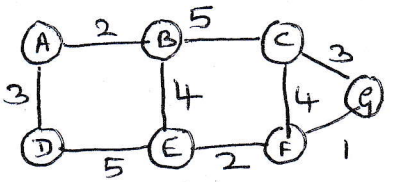
SET: A

USN | | | | | | | | | | |

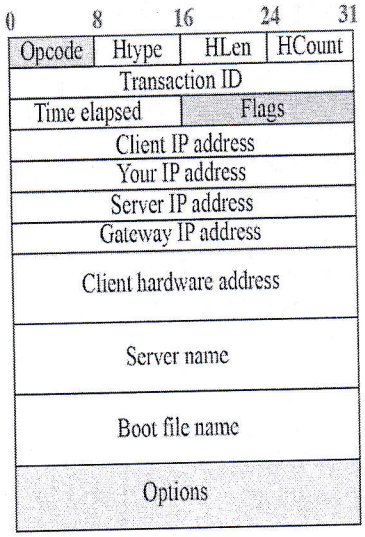
Degree	:	**B.E.,**	**Semester**	:	**VII**
Branch	:	**ECE**	**Course Code**	:	**18EC71**
Course Title	:	**Computer Networks**	**Date**	:	**28/11/2022**
Duration	:	**90 Minutes**	**Max Marks**	:	**30**

K-Levels: K1-Remebering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

Note: Answer ONE full question from each part.

Q No.	Question	Marks	CO mapping	K-Level
	Part-A			
1(a)	Discuss different services provided by network layer	6	CO3	K2
(b)	Analyze link state routing with link state database for the below network 	6	CO3	K4
(c)	Explain DHCP message format with neat diagram	6	CO3	K2
2(a)	A block of address is granted to a small organization.one of the address is 205.16.37.39/28.Evaluate first address, last address and number of addresses.	6	CO3	K4
(b)	Analyze IPV4 datagram format with all the necessary fields	6	CO3	K4
(c)	Analyze path vector routing with example (consider 5 nodes)	6	CO3	K4
	Part-B			
3(a)	Analyze different addressing mechanisms used in wireless LAN	6	CO2	K4
(b)	Discuss the general services provided by transport layer	6	CO4	K2
4(a)	Explain standard Ethernet frame format with neat diagram	6	CO2	K2
(b)	Analyze stop and wait protocol with FSM of transport layer	6	CO4	K4

Name &Signature of Course In charge | Name &Signature of Module Coordinator | HOD ECE | Principal

1(c)	*Figure 18.25: DHCP message format*  Fields: Opcode: Operation code, request (1) or reply (2) Htype. Hardware type (Ethernet, ...) HLen: Lengh of hardware address HCount: Maximum number of hops the packet can travel Transaction ID: An integer set by client and repeated by the server Time elapsed: The number of seconds since the client started to boot Flags: First bit defines unicast (0) or multicast (1); other 15 bits not used Client IP address: Set to 0 if the client does not know it Your IP address: The client IP address sent by the server Server IP address: A broadcast IP address if client does not know it Gateway IP address: The address of default router Server name: A 64-byte domain name of the server Boot file name: A 128-byte file name holding extra information Options: A 64-byte field with dual purpose described in text 18.51	**6 M** **Dia- 3M** **Exp- 3M**	**K2**	**CO3**
	OR			
2(a)	Solu:- The binary representation of given address is 205. 16. 37. 39/28 11001101 00010000 00100101 00100111 If we set 32-28 rightmost bits to "0", we get 11001101 00010000 00100101 00100000 or 205. 16. 37. 32 Last address:- The last address in the block can be found by setting the rightmost 32-n bits to 1's. Ex:- The binary representation of the given address is 11001101 00010000 00100101 00100111 If we set 32-28 rightmost bits to 1, we get 11001101 00010000 00100101 00101111 or 205. 16. 37. 47. Number of addresses:- The no of addresses in the block is the difference b/w the last & first address. It is given by 2^{32-n} Solu:- In this Example n = 28 $\therefore 2^{32-28} = 2^4 = 16$ addresses.	**6M** **Sol- 6M**	**K4**	**CO3**

K.S. INSTITUTE OF TECHNOLOGY, BENGALURU-560109

Department of Electronics & Communication Engineering

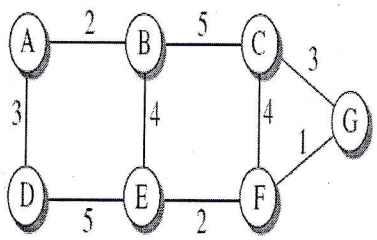
SESSION: 2022-2023 (ODD SEMESTER)

SECOND INTERNAL TEST SCHEME & SOLUTION-SET-A

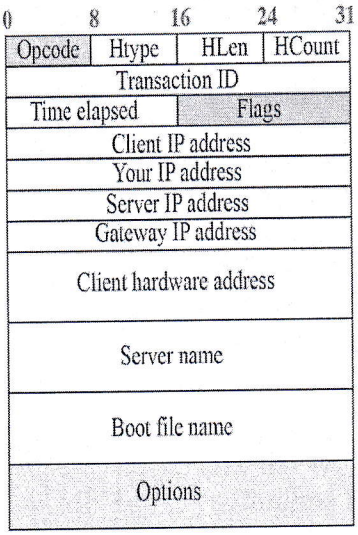
Degree	:	**B.E**	**Semester**	:	**VII A & B**
Branch	:	**ECE**	**Date**	:	**28-11-2022**
Course Title	:	**Computer Networks**	**Course Code**	:	**18EC71**
Duration	:	**90 Minutes**	**Max Marks**	:	**30**

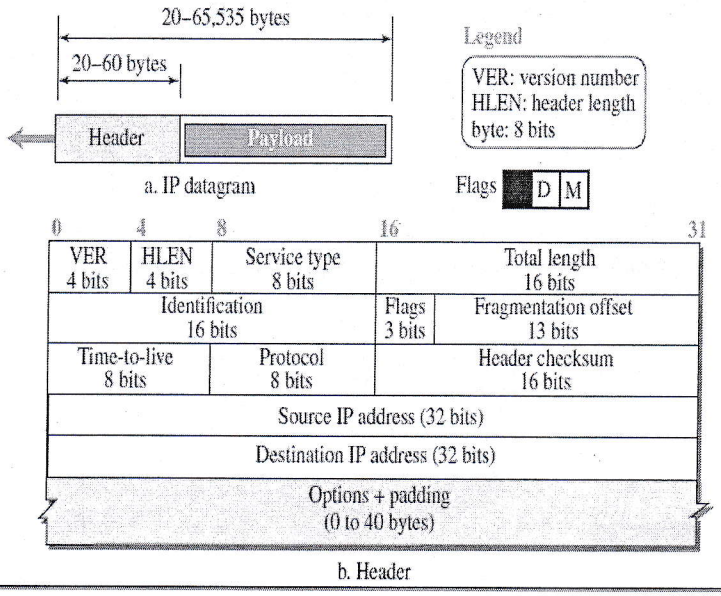
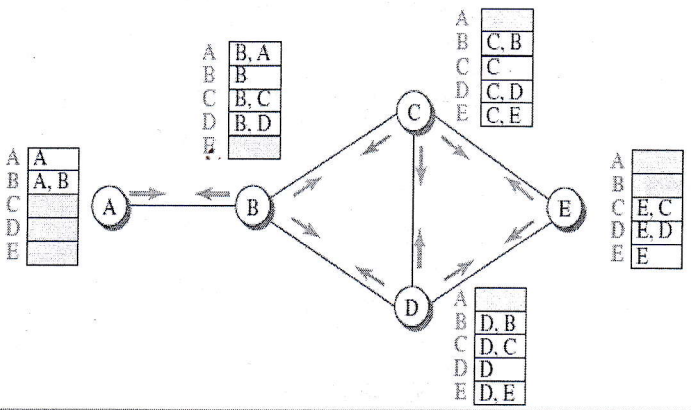
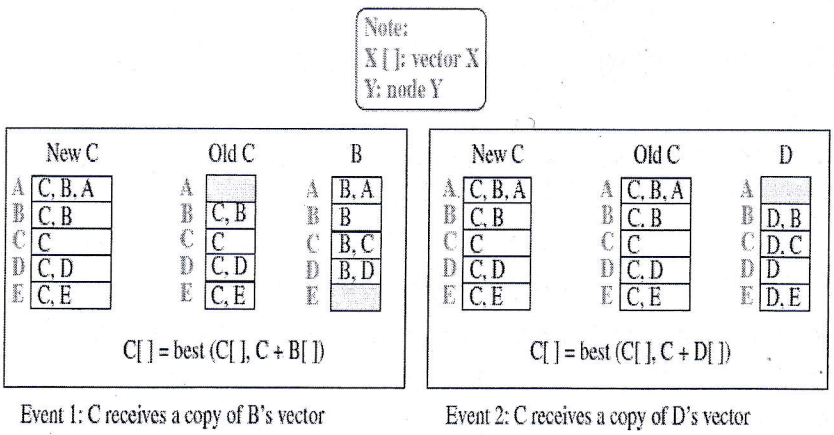
Note: Answer ONE full question from each part

K-Levels: K1-Remebering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

Q. No.	Scheme and Solution	Marks	K Level	CO
	PART-A			
1(a)	➢ Packetizing: Carry payload from source to destination Source cannot change payload content Routers cannot decapsulate ➢ Routing : Find the best possible routes ➢ Forwarding : action applied by each router when a packet arrives at one of its interfaces ➢ Error control: Has header checksum (Internet Control Message Protocol). ➢ Flow control: Upper layers (Transport layer) implement flow control. ➢ Congestion control: too many datagram's present. ➢ Quality of service: thrives to provide better quality of service	**6M** **6 services-6M**	**K2**	**CO3**
1(b)	Figure 20.8 *Example of a link-state database*  a. The weighted graph b. Link state database	**6M** **Sol-6M**	**K4**	**CO3**

	A	B	C	D	E	F	G
A	0	2	∞	3	∞	∞	∞
B	2	0	5	∞	4	∞	∞
C	∞	5	0	∞	∞	4	3
D	3	∞	∞	0	5	∞	∞
E	∞	4	∞	5	0	2	∞
F	∞	∞	4	∞	2	0	1
G	∞	∞	3	∞	∞	1	0

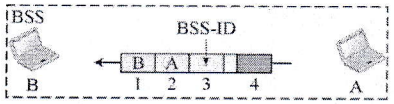
1(c)	*Figure 18.25: DHCP message format*  Fields: Opcode: Operation code, request (1) or reply (2) Htype: Hardware type (Ethernet, ...) HLen: Lengh of hardware address HCount: Maximum number of hops the packet can travel Transaction ID: An integer set by client and repeated by the server Time elapsed: The number of seconds since the client started to boot Flags: First bit defines unicast (0) or multicast (1); other 15 bits not used Client IP address: Set to 0 if the client does not know it Your IP address: The client IP address sent by the server Server IP address: A broadcast IP address if client does not know it Gateway IP address: The address of default router Server name: A 64-byte domain name of the server Boot file name: A 128-byte file name holding extra information Options: A 64-byte field with dual purpose described in text 18.51	**6 M** **Dia- 3M** **Exp- 3M**	**K2**	**CO3**
	OR			
2(a)	Solu:- The binary representation of given address is 205. 16. 37. 39 | 28 11001101 00010000 00100101 00100111 If we set 32-28 rightmost bits to '0', we get 11001101 00010000 00100101 00100000 or 205. 16. 37. 32 Last address:- The last address in the block can be found by setting the rightmost 32-n bits to 1's. Ex:- The binary representation of the given address is 11001101 00010000 00100101 00100111 if we set 32-28 rightmost bits to 1, we get 11001101 00010000 00100101 00101111 or 205. 16. 37. 47. Number of addresses:- The no of addresses in the block is the difference b/w the last & first address. It is given by 2^{32-n} Solu:- In this Example n = 28 $\therefore 2^{32-28} = 2^4 = 16$ addresses.	**6M** **Sol- 6M**	**K4**	**CO3**

2(b)	Figure 19.2 *IP datagram*  	6M Dia- 3M Exp- 3M	K4	CO3
2(c)	Figure 20.12 *Path vectors made at booting time*  Figure 20.13 *Updating path vectors*  Event 1: C receives a copy of B's vector Event 2: C receives a copy of D's vector	6M Sol-6M	K4	CO3

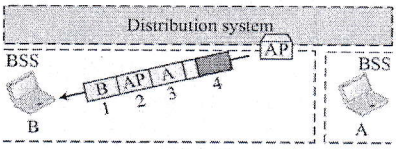
PART-B

3(a)		**6M** **Table- 2M** **Exp-4M**	**K4**	**CO2**

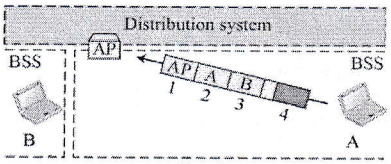
To DS	From DS	Address 1	Address 2	Address 3	Address 4
0	0	Destination	Source	BSS ID	N/A
0	1	Destination	Sending AP	Source	N/A
1	0	Receiving AP	Source	Destination	N/A
1	1	Receiving AP	Sending AP	Destination	Source



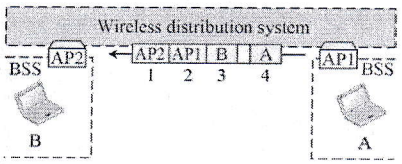
a. Case 1



b. Case 2

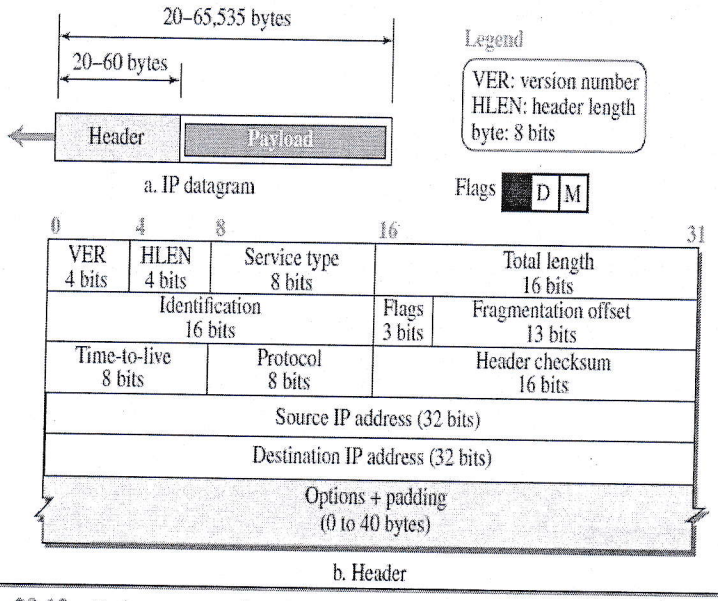
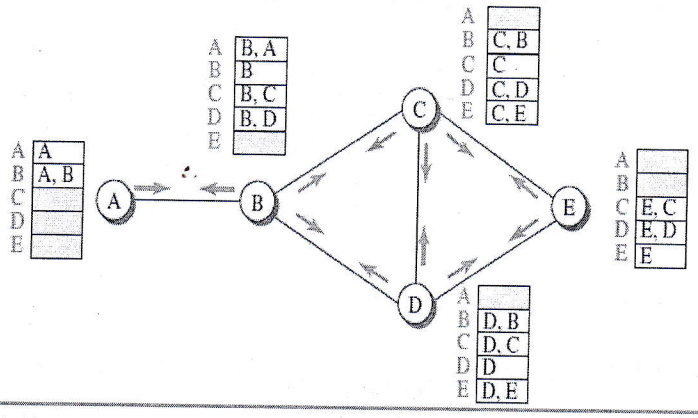
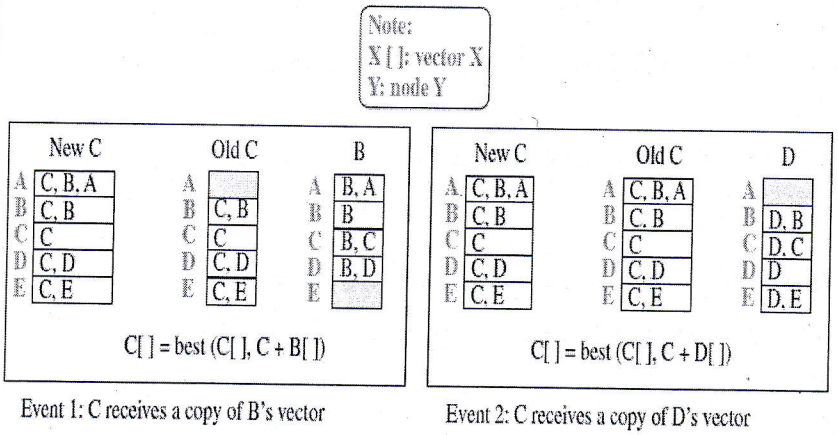


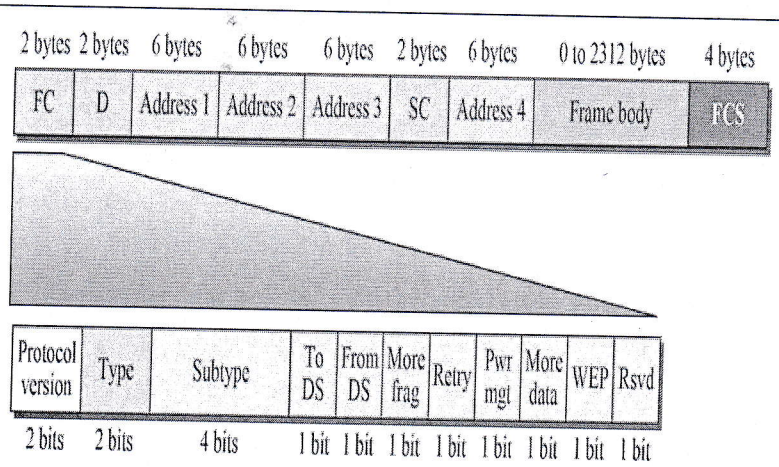
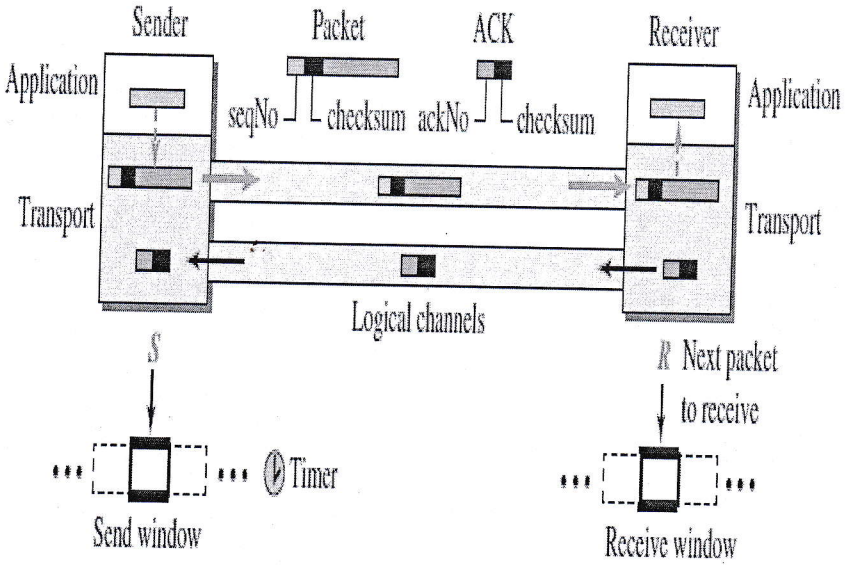
c. Case 3



d. Case 4

3b	Transport layer services: 1.process to process communication 2.Addreessing :port numbers AProcessesisidentifiedwith***portnumbers.*** IntheTCP/IPprotocolsuite,theportnumbersareintegersbetween0and65,535(16bits). MultipleclientProgramsrunsonacomputer Theclientprogramdefinesitselfwithaportnumber,calledtheephemeral[short-lived] portnumber Anephemeralportnumberisrecommendedtobegreaterthan1023forsomeclient/serverprogramstoworkproperly. Theserverprocess[portnumber]however,cannotbechosenrandomly. TCP/IPhasdecidedtouseuniversalportnumbersforservers;[well-knownportnumbers] Everyclientprocessknowsthewell-knownportnumberofthecorrespondingserverprocess	**6M** **6 services-6M**	**K2**	**CO4**

2(b)	Figure 19.2 *IP datagram*  	**6M** **Dia- 3M** **Exp- 3M**	**K4**	**CO3**
2(c)	Figure 20.12 *Path vectors made at booting time*  Figure 20.13 *Updating path vectors*  	**6M** **Sol-6M**	**K4**	**CO3**

4a		6M Dia-3M Exp-3M	K2	CO2
	OR			
4(b)	Figure 23.20 *Stop-and-Wait protocol* 	6M Dia-3M Exp-3M	K4	CO4

Course In charge

Module coordinator

HOD ECE

K.S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
SECOND INTERNAL TEST QUESTION PAPER 2022-23ODD SEMESTER

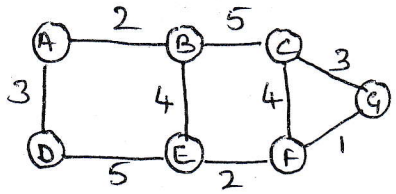
SET: B

USN										

Degree	:	**B.E.,**	**Semester**	:	**VII**
Branch	:	**ECE**	**Course Code**	:	**18EC71**
Course Title	:	**Computer Networks**	**Date**	:	**28/11/2022**
Duration	:	**90 Minutes**	**Max Marks**	:	**30**

K-Levels: K1-Remebering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

Note: Answer ONE full question from each part.

Q No.	Question	Marks	CO mapping	K-Level
	Part-A			
1(a)	Illustrate datagram approach and virtual circuit approach in packet switching with relevant diagram	6	CO3	K2
(b)	Analyze link state routing with link state database for the below network 	6	CO3	K4
(c)	Analyze DHCP protocol operation with flowchart	6	CO3	K4
2(a)	An organization is granted a block of address with beginning address 14.24.74.0/24. design a sub blocks with i.10 ii.60 & iii.120 addresses	6	CO3	K4
(b)	Analyze IPV4 datagram format with all the necessary fields	6	CO3	K4
(c)	Analyze distance vector routing using bellman ford equations	6	CO3	K4
	Part-B			
3(a)	Describe various fields of ARP packet format with neat diagram	6	CO2	K2
(b)	Analyze selective repeat protocol with FSM	6	CO4	K4
4(a)	Explain IEEE802.11 frame format with neat diagram	6	CO2	K2
(b)	Analyze Go –Back-N protocol with FSM	6	CO4	K4

Dinesh

Name &Signature of Course In charge **Name &Signature of Module Coordinator** **HOD ECE** **Principal**

Selected

K.S. INSTITUTE OF TECHNOLOGY, BENGALURU-560109

Department of Electronics & Communication Engineering

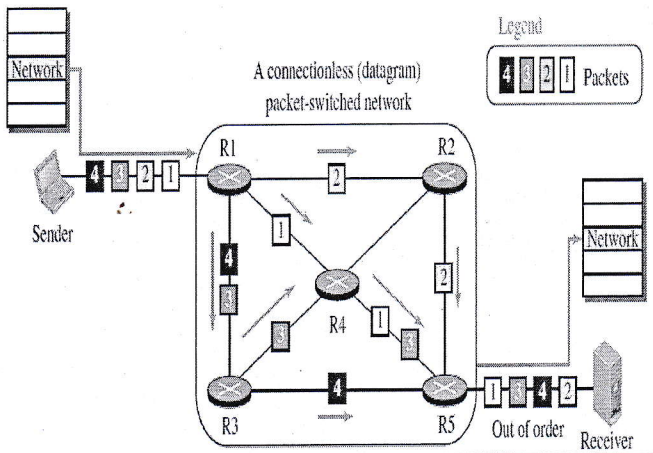
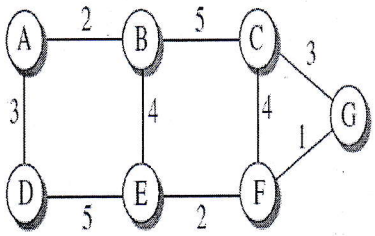
SESSION: 2022-2023 (ODD SEMESTER)

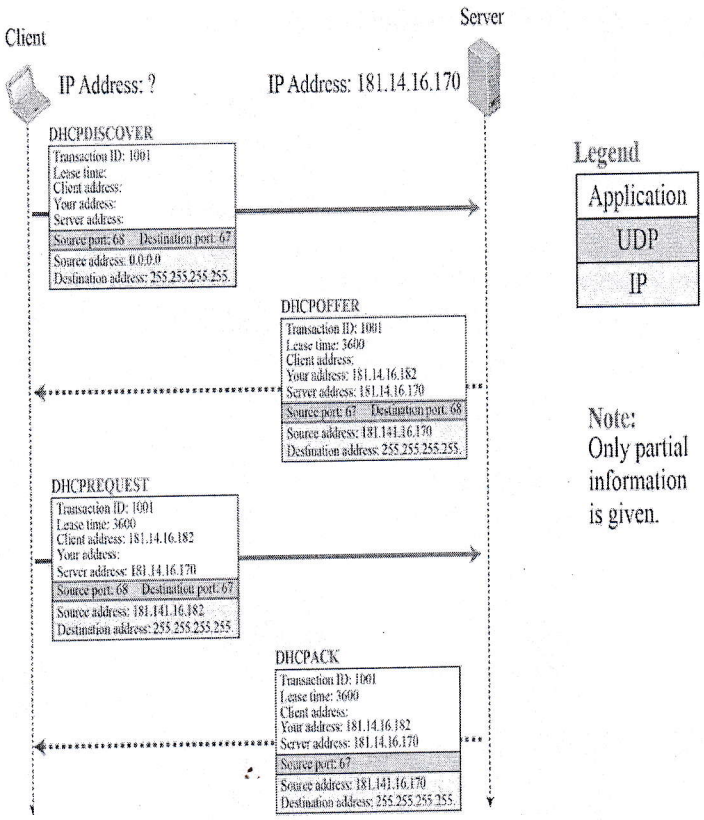
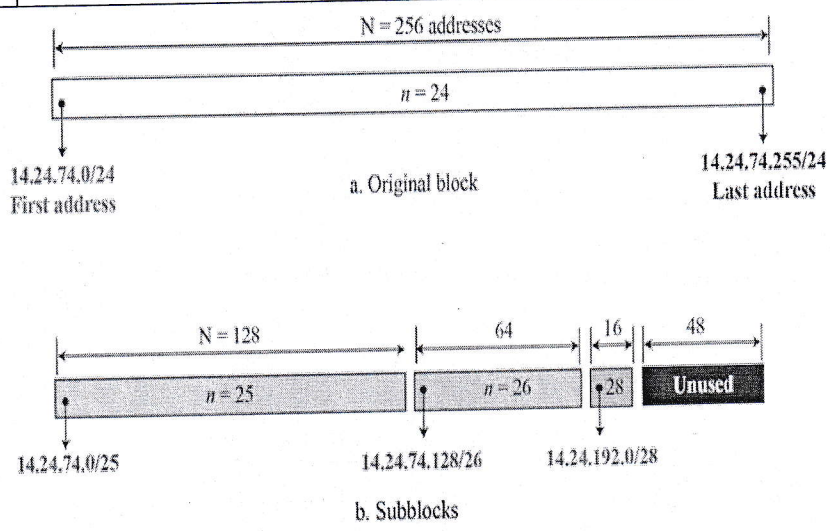
SECOND INTERNAL TEST SCHEME & SOLUTION-SET-B

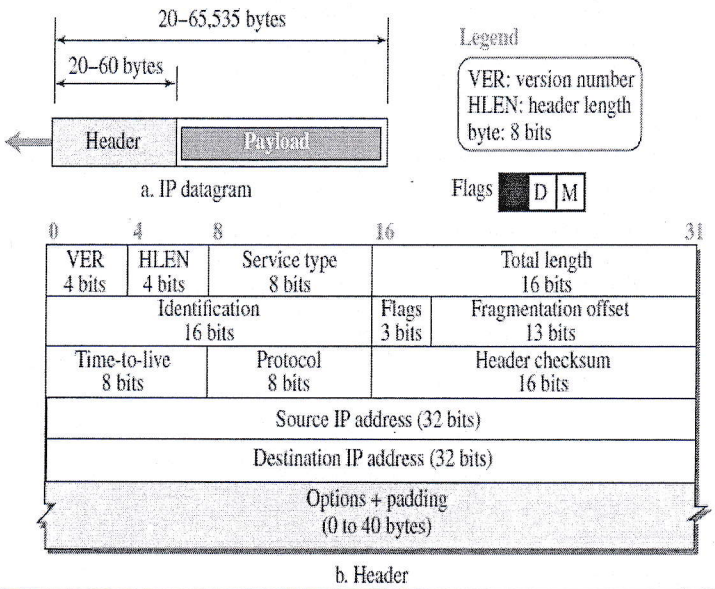
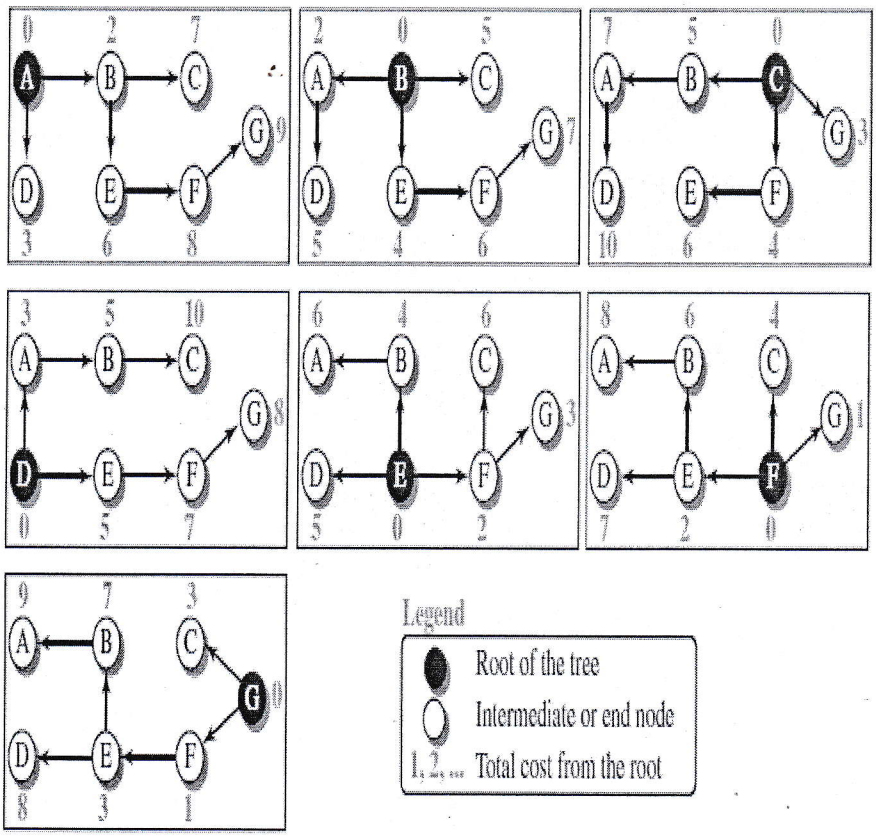
Degree	:	**B.E**	**Semester**	:	**VII A & B**
Branch	:	**ECE**	**Date**	:	**28-11-2022**
Course Title	:	**Computer Networks**	**Course Code**	:	**18EC71**
Duration	:	**90 Minutes**	**Max Marks**	:	**30**

Note: Answer ONE full question from each part

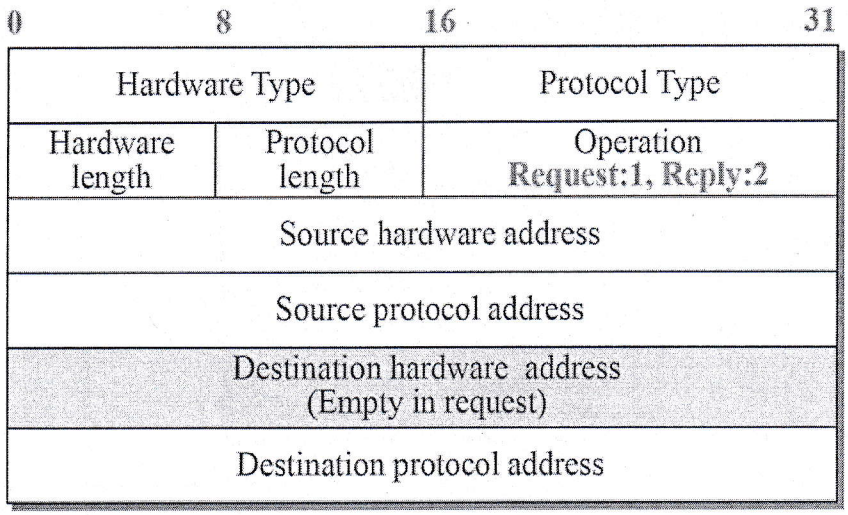
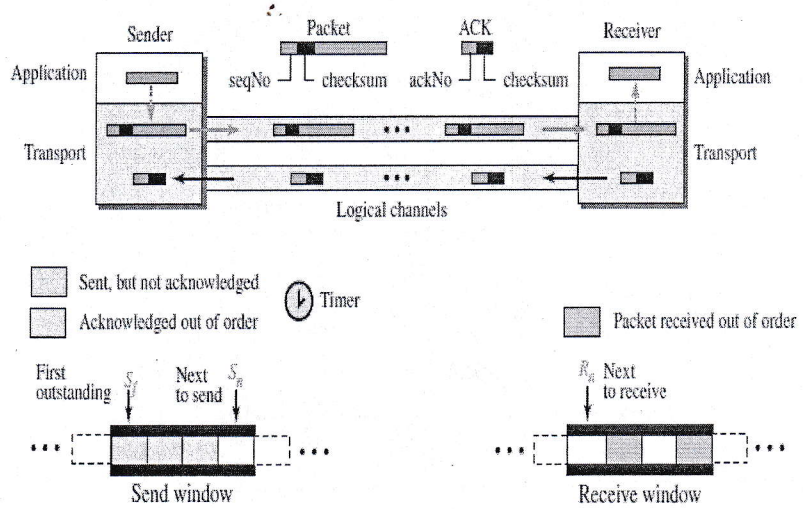
K-Levels: K1-Remebering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

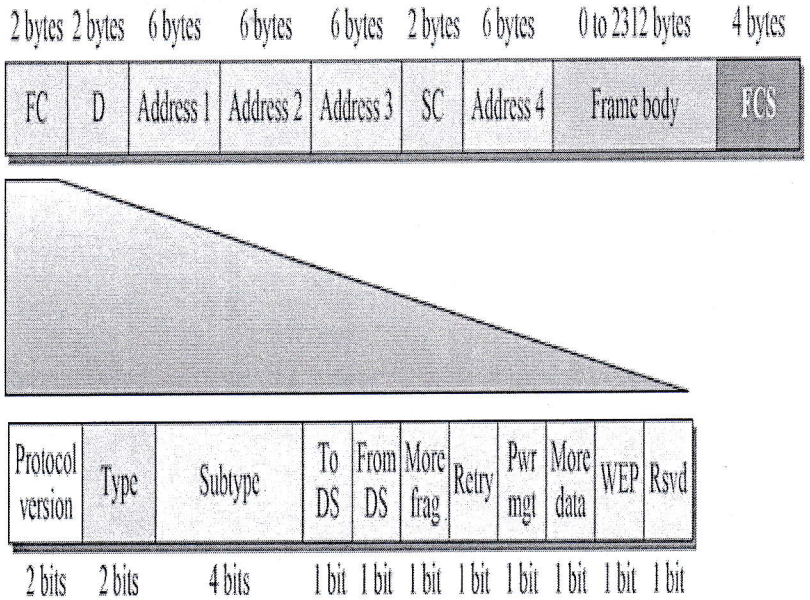
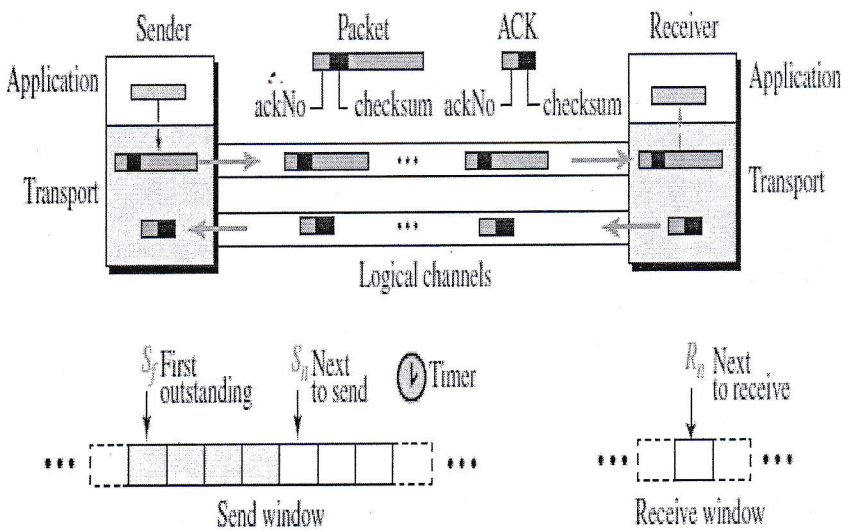
Q. No.	Scheme and Solution	Marks	K Level	CO
	PART-A			
1(a)	Figure 18.3 *A connectionless packet-switched network* 	**6M** **Dia-3M** **Exp-3M**	**K2**	**CO3**
1(b)	Figure 20.8 *Example of a link-state database*  a. The weighted graph b. Link state database A B C D E F G A 0 2 ∞ 3 ∞ ∞ ∞ B 2 0 5 ∞ 4 ∞ ∞ C ∞ 5 0 ∞ ∞ 4 3 D 3 ∞ ∞ 0 5 ∞ ∞ E ∞ 4 ∞ 5 0 2 ∞ F ∞ ∞ 4 ∞ 2 0 1 G ∞ ∞ 3 ∞ ∞ 1 0	**6M** **Sol-6M**	**K4**	**CO3**

1(c)	*Figure 18.27: Operation of DHCP*  	6 M Dia- 4M Exp- 2M	K2	CO3
	OR			
2(a)	 	6M Sol- 6M	K4	CO3

2(b)	Figure 19.2 *IP datagram*  	6M Dia- 3M Exp- 3M	K4	CO3
2(c)	Figure 20.2 *Least-cost trees for nodes in the internet of Figure 20.1*  	6M Sol-6M	K4	CO3

PART-B

3(a)	**Hardware:** LAN or WAN protocol **Protocol:** Network-layer protocol 	**6M** **Dia- 3M** **Exp- 3M**	**K4**	**CO2**
3b	Figure 23.31 *Outline of Selective-Repeat* 	**6M** **Dia- 3M** **Exp- 3M**	**K2**	**CO4**

4a		6M Dia-3M Exp-3M	K2	CO2
	OR			
4(b)	Figure 23.23 *Go-Back-N protocol* 	6M Dia-3M Exp-3M	K4	CO4

Course In charge

Module coordinator

HOD ECE

K.S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
THIRD INTERNAL TEST QUESTION PAPER 2022-23ODD SEMESTER

SET: A

USN										

Degree : **B.E.**
Branch : **E&CE**
Course Title : **Computer Networks**
Duration : **90 Minutes**

Semester : **VII**
Course Code : **18EC71**
Date : **22/12/2022**
Max Marks : **30**

K-Levels: K1-Remebering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

Note: Answer ONE full question from each part.

Q No.	Question	Marks	CO mapping	K-Level
	Part-A			
1(a)	Construct the architecture of E-mail with neat diagram	6	CO5	K3
(b)	Analyze data connection used in FTP	6	CO5	K4
(c)	Build WWW architecture with neat diagram	6	CO5	K3
2(a)	Construct FTP model with neat diagram	6	CO5	K3
(b)	Analyze i. Persistent ii. non persistent connections of HTTP with relevant diagrams	6	CO5	K4
(c)	Construct DNS model with neat diagram	6	CO5	K3
	Part-B			
3(a)	Solve i. Source port number ii. Destination port number iii.Length of the user datagram iv.length of data for the UDP headerv.is the packet is from client to server or vice versa vi.What is the client process in the following hexadecimal format-CB84000D001C001C	6	CO4	K4
(b)	Analyze TCP three-way handshaking with flowchart	6	CO4	K4
4(a)	Analyze TCP segment format with relevant fields	6	CO4	K4
(b)	Analyze sending buffers and receiving buffers used in TCP	6	CO4	K4

Name &Signature of Course In charge | Name &Signature of Module Coordinator | HOD ECE | Principal

K.S. INSTITUTE OF TECHNOLOGY, BENGALURU-560109

Department of Electronics & Communication Engineering

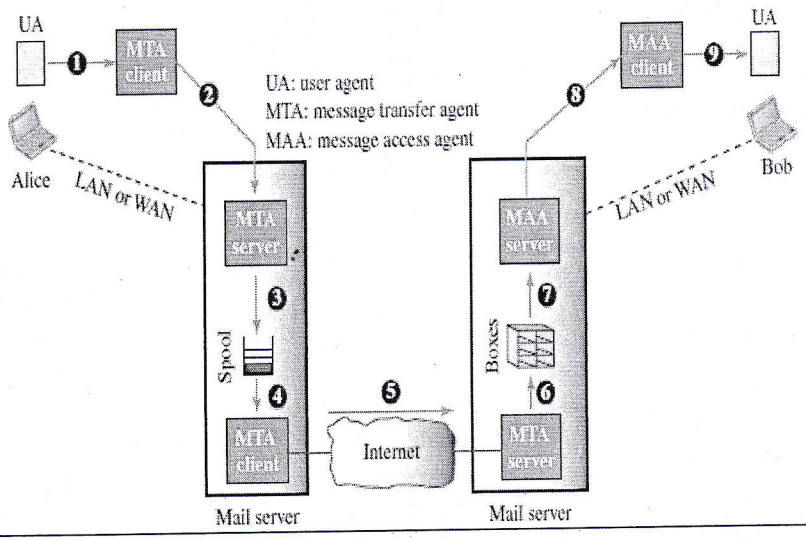
SESSION: 2022-2023 (ODD SEMESTER)

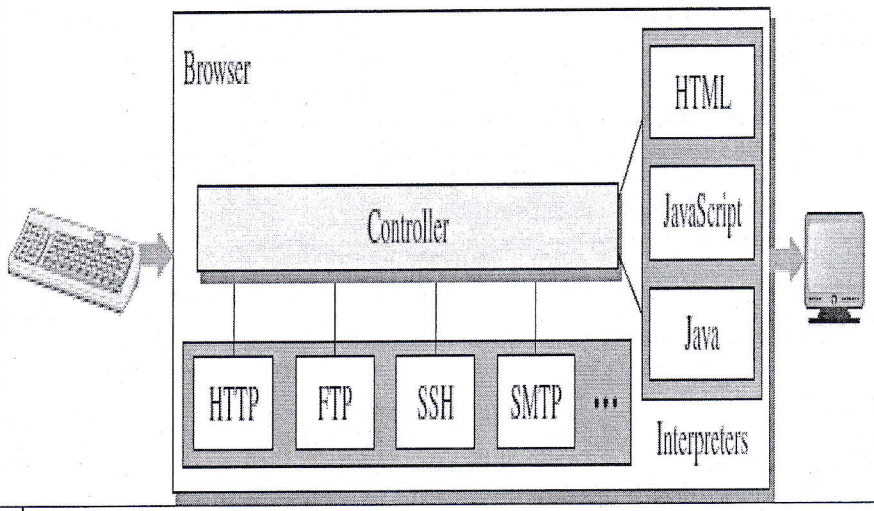
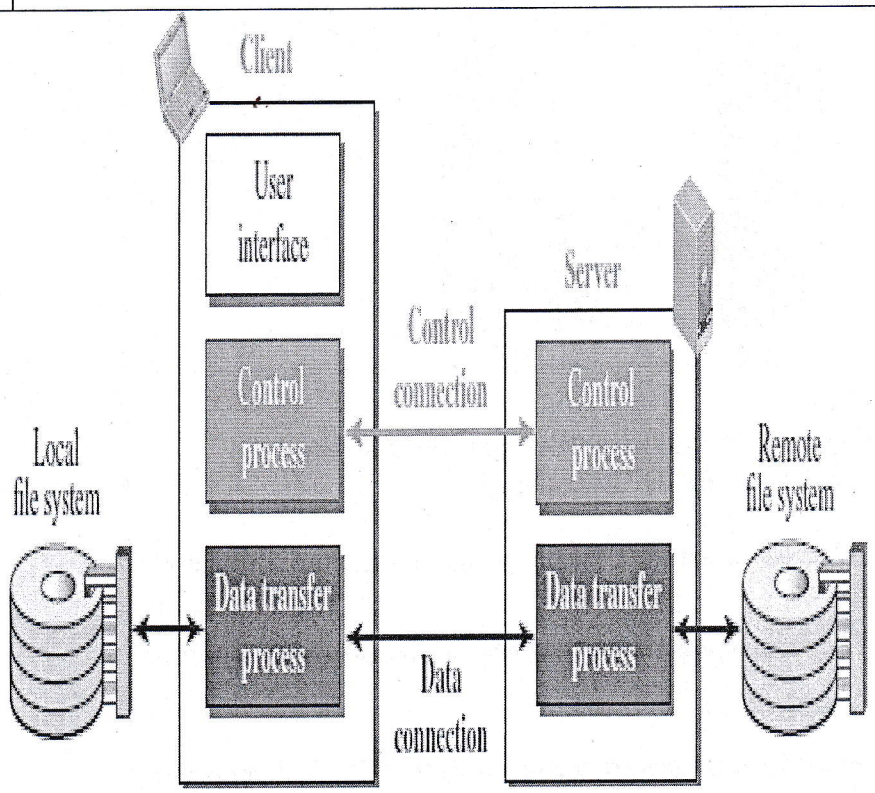
THIRD INTERNAL TEST SCHEME & SOLUTION-SET-A

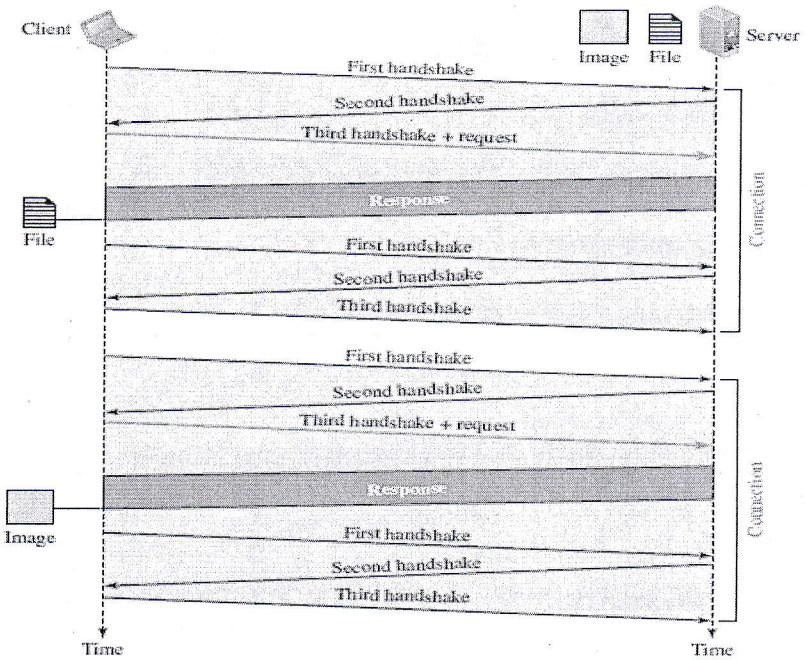
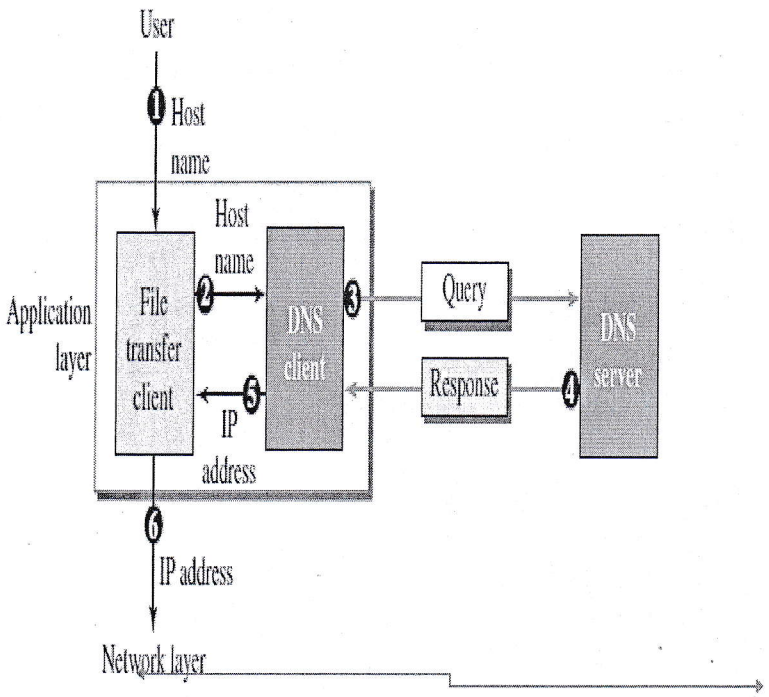
Degree	**:**	**B.E**	**Semester**	**:**	**VII A & B**
Branch	**:**	**E&CE**	**Date**	**:**	**22-12-2022**
Course Title	**:**	**Computer Networks**	**Course Code**	**:**	**18EC71**
Duration	**:**	**90 Minutes**	**Max Marks**	**:**	**30**

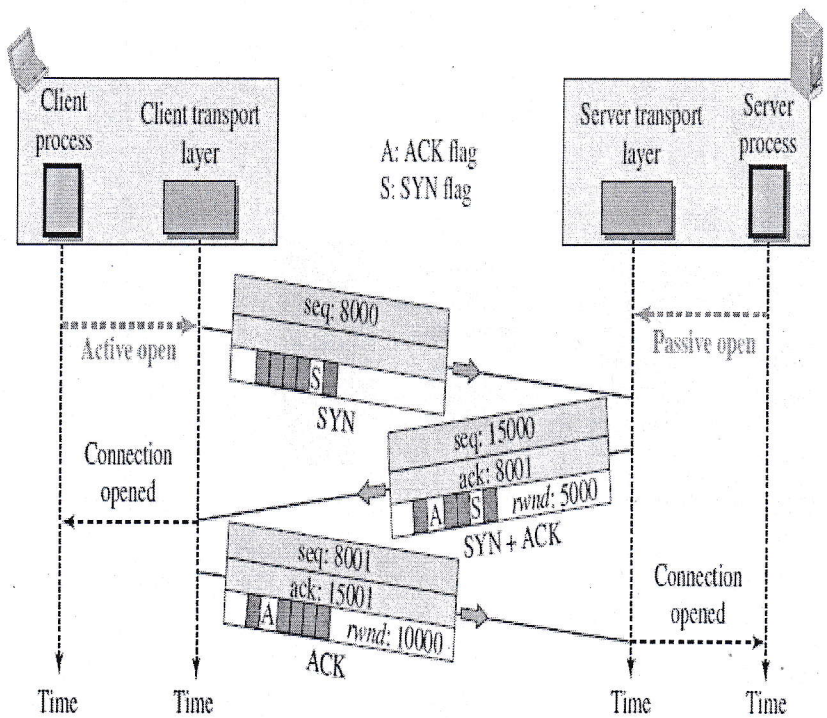
Note: Answer ONE full question from each part

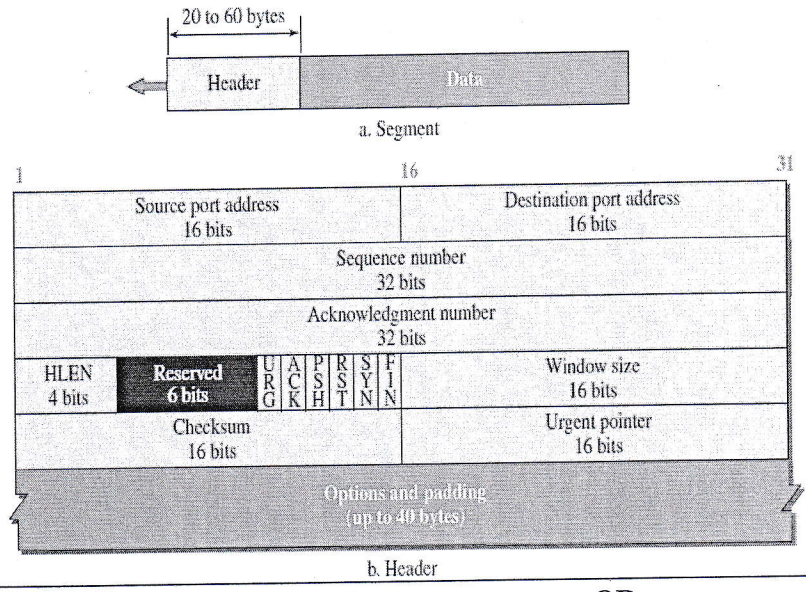
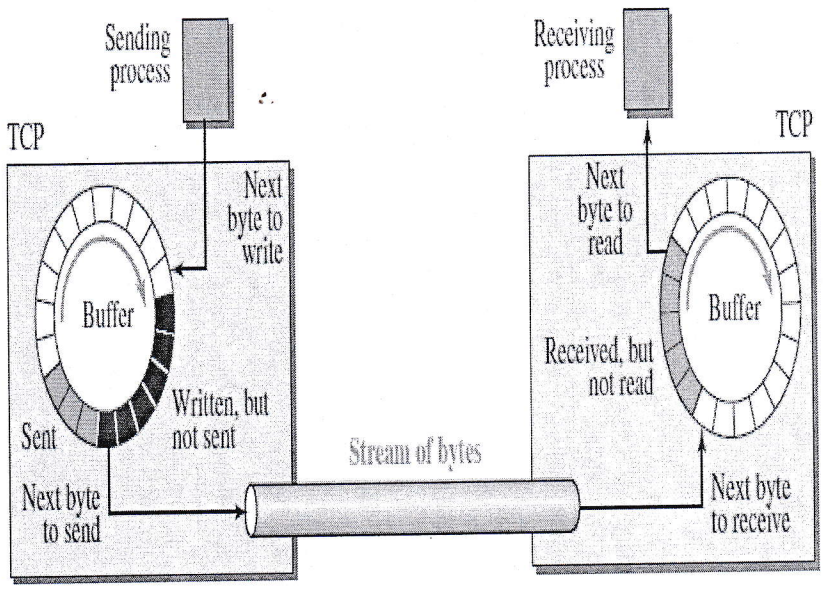
K-Levels: K1-Remebering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

Q. No.	Scheme and Solution	Marks	K Level	CO
	PART-A			
1(a)	Figure 26.12 *Common scenario*  	**6M** **Dia- 3M** **Exp- 3M**	**K3**	**CO5**
1(b)	Data connection: FTPcantransferoneofthefollowingfiletypesacrossthedata connection:ASCIIfile,EBCDICfile,orimage file. • **DataStructures:**filestructure,recordstructure,orpagestructure. • **TransmissionMode:**streammode,blockmode,orcompressedmode. Streammode:defaultmode;dataaredeliveredfromFTPtoTCPasacontinuousstreamofbytes. Blockmode:datacanbedeliveredfromFTPtoTCPinblocks.Inthiscase,eachblockispreceded bya3-byteheader.Thefirstbyteiscalledtheblock descriptor;the nexttwobytesdefinethesizeoftheblockin bytes.	**6M** **Sol-6M**	**K4**	**CO5**

1(c)	Figure 26.2 *Browser* 	**6 M** **Dia- 3M** **Exp- 3M**	**K3**	**CO5**
	OR			
2(a)		**6M** **Dia- 3M** **Exp- 3M**	**K3**	**CO5**

2(b)	Figure 26.3 *Example 26.3* 	6M Dia- 4M Exp- 2M	K4	CO5
2(c)	Figure 26.28 *Purpose of DNS* 	6M Sol-6M	K3	CO5

	PART-B			
3(a)	Solution a. The source port number is the first four hexadecimal digits $(CB84)_{16}$, which means that the source port number is 52100. b. The destination port number is the second four hexadecimal digits $(000D)_{16}$, which means that the destination port number is 13. c. The third four hexadecimal digits $(001C)_{16}$ define the length of the whole UDP packet as 28 bytes. d. The length of the data is the length of the whole packet minus the length of the header, or 28 – 8 = 20 bytes. e. Since the destination port number is 13 (well-known port), the packet is from the client to the server. f. The client process is the Daytime (see Table 24.1).	6M Sol-6M	K4	CO4
3b	Figure 24.10 *Connection establishment using three-way handshaking* 	6M Dia- 4M Exp- 2M	K4	CO4

4a	Figure 24.7 *TCP segment format*  	6M Dia-3M Exp-3M	K4	CO4
	OR			
4(b)	Figure 24.5 *Sending and receiving buffers*  	6M Dia-3M Exp-3M	K4	CO4

Course In charge

Module coordinator

HODECE

K S INSTITUTE OF TECHNOLOGY

Bangalore – 560109

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGG.

CIE Question paper Scrutiny format

Course Name	Computer Networks
Course Code	18ECT1
Course Incharge	Dr. Dinesh Kumar D.S
Academic year	2022-23 (ODD)
Semester	7th A & B
CIE #	3
Set	A ☑ B ☐
Scrutiny parameters	
Whether questions are according to assessment plan?	Yes ☑ No ☐ ; If No, Suggestions:
Whether questions prepared are within the covered syllabus?	Yes ☑ No ☐ ; If No, Suggestions:
Whether all questions are mapped to CO/PO properly?	Yes ☑ No ☐ ; If No, Suggestions:
Whether questions framed are according to Blooms level?	Yes ☑ No ☐ ; If No, Suggestions:
Whether marks distribution for each question is correct?	Yes ☑ No ☐ ; If No, Suggestions:
Whether questions paper follows the format displayed?	Yes ☑ No ☐ ; If No, Suggestions:
Difficulty level	Very High ☐ High ☑ Moderate ☐ Low ☐
Percentage of Similarity questions in Set A & B	20 %
Final decision	Accepted without corrections ☐ Accepted with minor corrections ☐ Not accepted ☐

Dinesh
15/12/22

Signature with date
of CIE Question paper setter

Name and Signature with date
of CIE Question paper Scrutiniser

K.S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
THIRD INTERNAL TEST QUESTION PAPER 2022-23ODD SEMESTER

SET: B

USN										

Degree : **B.E.**
Branch : **E&CE**
Course Title : **Computer Networks**
Duration : **90 Minutes**

Semester : **VII**
Course Code : **18EC71**
Date : **22/12/2022**
Max Marks : **30**

K-Levels: K1-Remebering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

Note: Answer ONE full question from each part.

Q No.	Question	Marks	CO mapping	K-Level
	Part-A			
1(a)	Make use of different documents used in WWW	6	CO5	K3
(b)	Analyze request and response message formats used in HTTP	6	CO5	K4
(c)	Identify commands and responses used in SMTP	6	CO5	K3
2(a)	Make use of control connection with some common commands and responses used in FTP	6	CO5	K3
(b)	Analyze i. Persistent ii. non persistent connections of HTTP with relevant diagrams	6	CO5	K4
(c)	Make use of DNS message format used in internet with relevant diagram	6	CO5	K3
	Part-B			
3(a)	Analyze UDP datagram format with relevant fields	6	CO4	K4
(b)	Analyze different protocols used in the transport layer with relevant diagram	6	CO4	K4
4(a)	Analyze connection establishment and data transfer used in TCP with flow chart	6	CO4	K4
(b)	Solve i. Source port number ii. Destination port number iii.Length of the user datagram iv. length of data for the UDP header v.is the packet is from client to server or vice versa vi. What is the client process in the following hexadecimal format-CB84000D001C001C	6	CO4	K4

Dinesh

Name &Signature of Course In charge **Name &Signature of Module Coordinator** **HOD ECE** **Principal**

K.S. INSTITUTE OF TECHNOLOGY, BENGALURU-560109

Department of Electronics & Communication Engineering

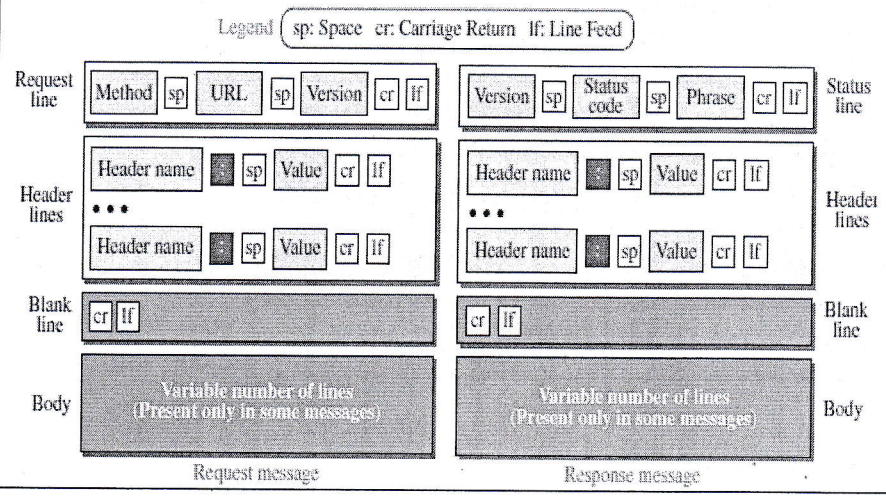
SESSION: 2022-2023 (ODD SEMESTER)

THIRD INTERNAL TEST SCHEME & SOLUTION-SET-B

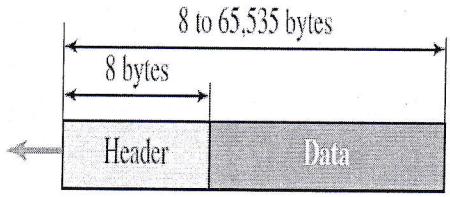
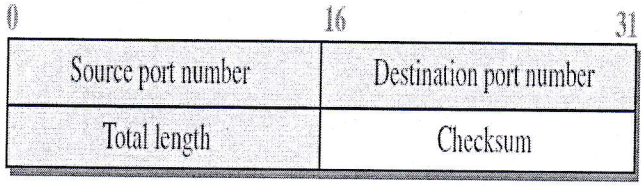
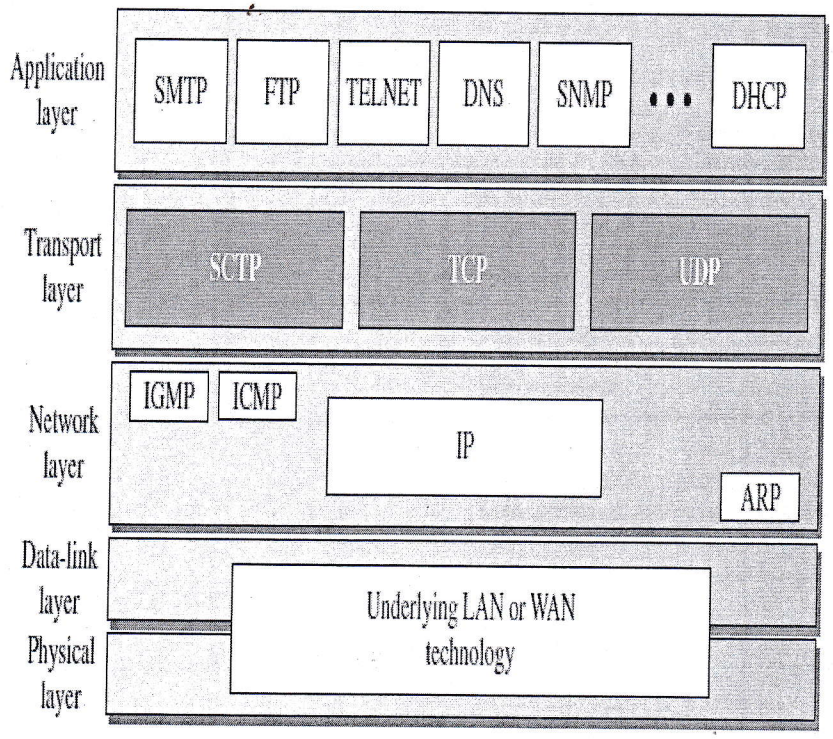
Degree	:	**B.E**	**Semester**	:	**VII A & B**
Branch	:	**E&CE**	**Date**	:	**22-12-2022**
Course Title	:	**Computer Networks**	**Course Code**	:	**18EC71**
Duration	:	**90 Minutes**	**Max Marks**	:	**30**

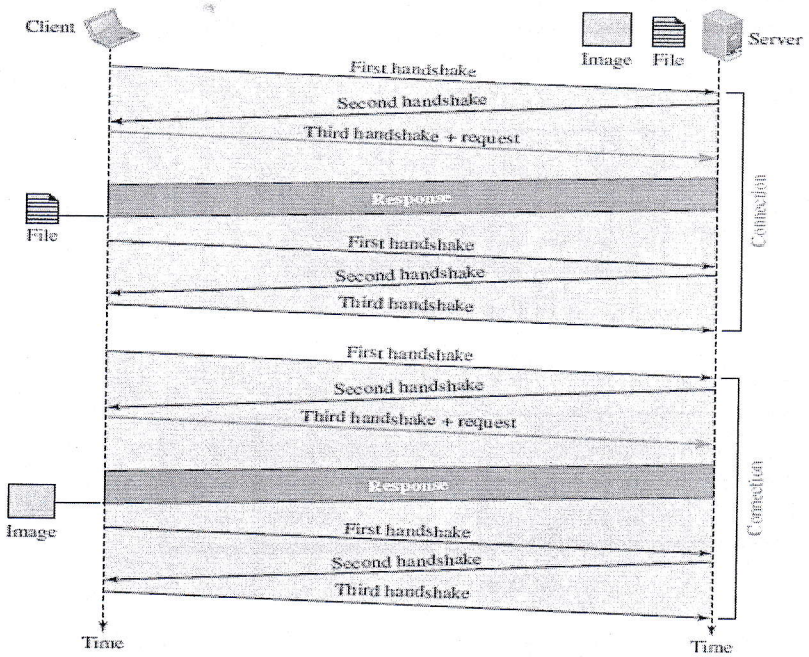
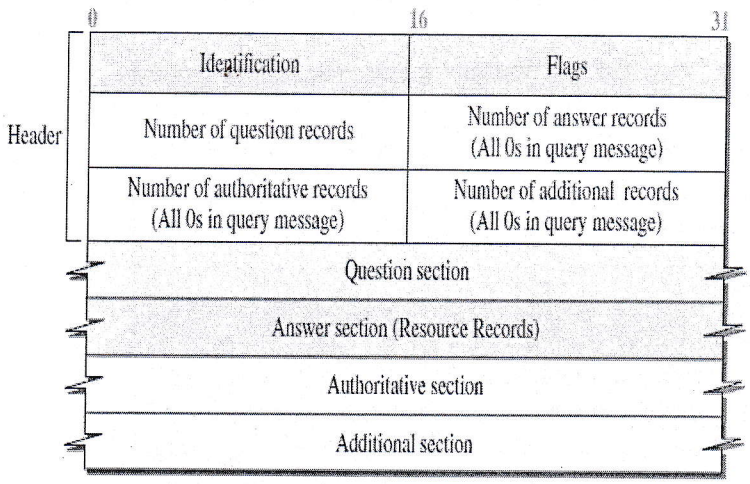
Note: Answer ONE full question from each part

K-Levels: K1-Remebering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

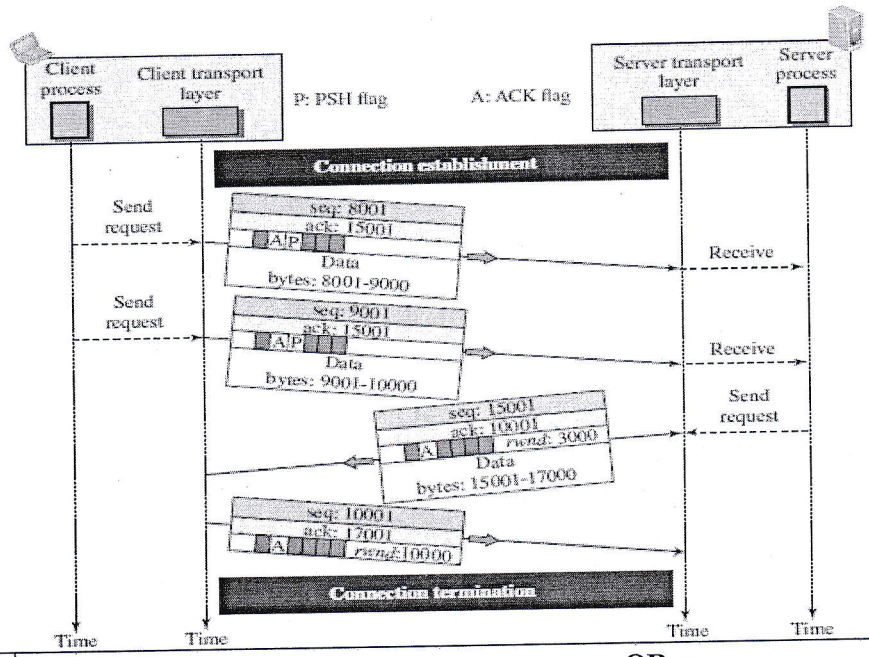
Q. No.	Scheme and Solution	Marks	K Level	CO
	PART-A			
1(a)	**WebDocuments:static,dynamic,andactive** **Static:**thecontentsofthefile aredeterminedwhen thefile iscreated,notwhen itisused. Staticdocumentsarepreparedusingoneofseverallanguages: **HyperTextMarkupLanguage(HTML)** **Dynamic:**Whenarequestarrives,thewebserverrunsanapplicationprogramorascript thatcreatesthedynamicdocument.Theserverreturnstheresultoftheprogramorscriptasaresponsetothebrowserthat requestedthedocument **ActiveDocuments:**Formanyapplications,weneedaprogramorascripttoberunattheclientsite.Thesearecalledactivedocuments.	**6M** **Exp- 6M**	**K3**	**CO5**
1(b)	Figure 26.5 *Formats of the request and response messages* 	**6M** **Dia- 3M** **Exp- 3M**	**K4**	**CO5**

1(c)	Table 26.6 *SMTP commands* *Keyword* / *Argument(s)* / *Description* HELO — Sender's host name — Identifies itself MAIL FROM — Sender of the message — Identifies the sender of the message RCPT TO — Intended recipient — Identifies the recipient of the message DATA — Body of the mail — Sends the actual message QUIT — Terminates the message RSET — Aborts the current mail transaction VRFY — Name of recipient — Verifies the address of the recipient NOOP — Checks the status of the recipient TURN — Switches the sender and the recipient EXPN — Mailing list — Asks the recipient to expand the mailing list HELP — Command name — Asks the recipient to send information about the command sent as the argument SEND FROM — Intended recipient — Specifies that the mail be delivered only to the terminal of the recipient, and not to the mailbox SMOL FROM — Intended recipient — Specifies that the mail be delivered to the terminal *or* the mailbox of the recipient SMAL FROM — Intended recipient — Specifies that the mail be delivered to the terminal *and* the mailbox of the recipient	**6 M** **Exp- 6M**	**K3**	**CO5**
	OR			
2(a)	Table 26.5 *Some responses in FTP* *Code* / *Description* / *Code* / *Description* 125 — Data connection open — 250 — Request file action OK 150 — File status OK — 331 — User name OK; password is needed 200 — Command OK — 425 — Cannot open data connection 220 — Service ready — 450 — File action not taken; file not available 221 — Service closing — 452 — Action aborted; insufficient storage 225 — Data connection open — 500 — Syntax error; unrecognized command 226 — Closing data connection — 501 — Syntax error in parameters or arguments 230 — User login OK — 530 — User not logged in	**6M** **Exp- 6M**	**K3**	**CO5**

3(a)	Figure 24.2 *User datagram packet format*  a. UDP user datagram  b. Header format	**6M** **Dia- 3M** **Exp- 3M**	**K4**	**CO4**
3b	Figure 24.1 *Position of transport-layer protocols in the TCP/IP protocol suite*  	**6M** **Dia- 3M** **Exp- 3M**	**K4**	**CO4**

2(b)	Figure 26.3 *Example 26.3*  	6M Dia- 4M Exp- 2M	K4	CO5
2(c)	Figure 26.38 *DNS message*  Note: The query message contains only the question section. The response message includes the question section, the answer section, and possibly two other sections.	6M Dia- 3M Exp- 3M	K3	CO5

PART-B

4a	Figure 24.11 *Data transfer*  	6M Dia-3M Exp-3M	K4	CO4
	OR			
4(b)	**Solution** a. The source port number is the first four hexadecimal digits $(CB84)_{16}$, which means that the source port number is 52100. b. The destination port number is the second four hexadecimal digits $(000D)_{16}$, which means that the destination port number is 13. c. The third four hexadecimal digits $(001C)_{16}$ define the length of the whole UDP packet as 28 bytes. d. The length of the data is the length of the whole packet minus the length of the header, or 28 – 8 = 20 bytes. e. Since the destination port number is 13 (well-known port), the packet is from the client to the server. f. The client process is the Daytime (see Table 24.1).	6M Sol-6M	K4	CO4

Course In charge **Module coordinator** **HOD ECE**

K S INSTITUTE OF TECHNOLOGY

Bangalore – 560109

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGG.

CIE Question paper Scrutiny format

Course Name	Computer Networks
Course Code	18EC71
Course Incharge	Dr. Dinesh Kumar D.S
Academic year	2022-23 (ODD)
Semester	7th A & B
CIE #	3
Set	A☐ B☑
Scrutiny parameters	
Whether questions are according to assessment plan?	Yes ☑ No☐ ; If No, Suggestions:
Whether questions prepared are within the covered syllabus?	Yes ☑ No ☐ ; If No, Suggestions:
Whether all questions are mapped to CO/PO properly?	Yes ☑ No ☐ ; If No, Suggestions:
Whether questions framed are according to Blooms level?	Yes ☑ No ☐ ; If No, Suggestions:
Whether marks distribution for each question is correct?	Yes ☑ No ☐ ; If No, Suggestions:
Whether questions paper follows the format displayed?	Yes ☑ No ☐ ; If No, Suggestions:
Difficulty level	Very High ☐ High ☑ Moderate ☐ Low☐
Percentage of Similarity questions in Set A & B	20%
Final decision	Accepted without corrections☐ Accepted with minor corrections☐ Not accepted☐

Dinesh 15/12/22

Signature with date
of CIE Question paper setter

Name and Signature with date
of CIE Question paper Scrutiniser

K. S. INSTITUTE OF TECHNOLOGY

#14, Raghuvanahalli, Kanakapura Main Road, Bengaluru-5600109

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

2022-23ODD SEMESTER

List of students who are identified as slow learners and their marks in every internal

Subject and Subject Code: Computer Networks - 18EC71

Semester and Section: VII/A&B

Sl No.	USN	NAME	First Test Marks (30)	Remedial Class Dates & Attendance		Improvement Test Marks (30)	Second Test Marks (30)	Remedial Class Dates & Attendance		Improvement Test Marks (30)	Third Test Marks (30)	Improvement Test Marks (30)	FINAL (30)
				2/11/22	9/11/22			5/12/22	10/12/22				
01	1KS19EC002	ABHISHEK CHANDRESH	16	Y	Y	10	AB	Y	Y	5	14	-	14
02	1KS19EC019	CHIRANTHANA YOGANANDA K	17	Y	Y	-	AB	Y	Y	13	24	-	17
03	1KS19EC023	DHANYA SUKANTH B K	AB	Y	Y	16	AB	Y	Y	-	25	-	14
04	1KS19EC029	GONUGUNTLA SAI SIDDARTHA	AB	Y	Y	11	AB	Y	Y	6	16	-	11
05	1KS19EC052	MOHAMMED RAKEEB M R	AB	Y	Y	23	6	Y	Y	-	17	-	16
06	1KS19EC058	PRADEEP GADED	12	Y	Y	AB	6	Y	Y	-	14	-	11
07	1KS19EC061	PRASHANTH S K	AB	Y	Y	14	AB	Y	Y	-	24	-	13
08	1KS19EC063	PREETHAM GH	AB	Y	Y	22	AB	Y	Y	-	29	-	17
09	1KS19EC067	SAMEEKSHA S	10	Y	Y	-	AB	Y	Y	15	18	-	15
10	1KS19EC087	SRINIVAS .S	12	Y	Y	-	AB	Y	Y	-	27	-	18

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

2022-23ODD SEMESTER

List of students who are identified as slow learners and their marks in every internal

Subject and Subject Code: Computer Networks - 18EC71

Semester and Section: VII/A&B

Sl No.	USN	NAME	First Test Marks (30)	Remedial Class Dates & Attendance		Improvement Test Marks (30)	Second Test Marks (30)	Remedial Class Dates & Attendance		Improvement Test Marks (30)	Third Test Marks (30)	Improvement Test Marks (30)	FINAL (30)
				2/11/22	9/11/22			5/12/22	10/12/22				
01	1KS19EC002	ABHISHEK CHANDRESH	16	Y	Y	10	AB	Y	Y	5	14	-	14
02	1KS19EC019	CHIRANTHANA YOGANANDA K	17	Y	Y	-	AB	Y	Y	13	24	-	17
03	1KS19EC023	DHANYA SUKANTH B K	AB	Y	Y	16	AB	Y	Y	-	25	-	14
04	1KS19EC029	GONUGUNTLA SAI SIDDARTHA	AB	Y	Y	11	AB	Y	Y	6	16	-	11
05	1KS19EC052	MOHAMMED RAKEEB M R	AB	Y	Y	23	6	Y	Y	-	17	-	16
06	1KS19EC058	PRADEEP GADED	12	Y	Y	AB	6	Y	Y	-	14	-	11
07	1KS19EC061	PRASHANTH S K	AB	Y	Y	14	AB	Y	Y	-	24	-	13
08	1KS19EC063	PREETHAM GH	AB	Y	Y	22	AB	Y	Y	-	29	-	17
09	1KS19EC067	SAMEEKSHA S	10	Y	Y	-	AB	Y	Y	15	18	-	15
10	1KS19EC087	SRINIVAS .S	12	Y	Y	-	AB	Y	Y	-	27	-	18

11	1KS19EC104	VIKAS S	AB	Y	Y	16	AB	Y	Y	-	21	-	13
12	1KS19EC0105	VINUTH S REDDY	AB	Y	Y	12	5	Y	Y	-	19	-	12
13	1KS20EC0400	MADALA VIVEK KUMAR	12	Y	Y	-	AB	Y	Y	-	25	-	13

Signature of the Faculty

Signature of the HOD

HEAD OF THE DEPARTMENT
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DEARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

TEACHING AND LEARNING

PEDAGOGY REPORT

Academic Year	2022-23 (Even)
Name of the Faculty	Dr.Dinesh Kumar D S
Course Name /Code	Computer Networks/18EC71
Semester/Section	VII/A &B
Activity Name	Literature survey Paper
Topic Covered	Computer NetworksSyllabus
Date	9/12/2022 to 25/12/2022
No. of Participants	105
Objectives/Goals	• To improve the self-learning skills ofstudents • To improve the communication skills ofstudents. • To improve the writing skills of journal paper
ICT Used	-
Appropriate Method/Instructional materials/Exam Questions • Journals / Conference papers referred	
Relevant PO's	1,2,5,9,10,12
Significance of Results/Outcomes	• This will teach & enhance working in team along with writing communication skills. • Students wrote individual paper and also a merged together paper after analyzing with other papers written by their groupmates.
Reflective Critique	• The activity improved the learningand communication skills ofstudents • The activity provided a platform for students to interact with peers, improve their communication skills and work as individuals. • The activity also helped them to write journal literature paper which will be required in future in research work.

Signature of CourseIncharge

Signature of HOD ECE

BATCH NO	USN	NAME	TITLE -SURVEY PAPER
1	1KS19EC025	Disha Shivani	Wireless network Protocols
	1KS19EC008	Amulya R	
	1KS19EC012	Ashritha R	
	1KS19EC027	Gayathri P K	
2	1KS19EC032	Harshitha B Y	TCP/IP protocol layering
	1KS19EC014	Bhavana S	
	1KS19EC009	Anitha S	
	1KS19EC052	Nidhi	
3	1KS19EC071	Sabarish I J	Application Layer Protocols
	1KS19EC076	Santosh Hegde	
	1KS19EC077	Sathvik U.M	
	1KS19EC096	T N L Ruthvik	
	1KS19EC090	Suhas M Gowda	
4	1KS19EC095	Swathi U	Network layer and Transport Layer Protocols
	1KS19EC102	Vandana S	
	1KS20EC401	Ranjana P	
	1KS20EC402	Sindhu J	
5	1KS19EC003	Aishwarya Basvaraja Ke	Wired and Wireless LAN
	1KS19EC006	Akshitha	
	1KS19EC010	Anjali Y J	
	1KS19EC044	Lokeshwari M	
6	1KS19EC004	Aishwarya M G	Connection and Connectionless protocol
	1KS19EC011	Archana Yadav M	
	1KS19EC046	Meghana H P	
	1KS19EC057	Pooja S P	
7	1KS19EC039	KASHYAP P	TELNET
	1KS19EC048	MOHITH KUMAR G	
	1KS19EC050	MONISHA B K	
	1KS19EC051	N ANILA	
8	1KS19EC054	NITHIN D	STOP AND WAIT PROTOCOL
	1KS19EC055	PAVAN KUMAR G R	
	1KS19EC062	PRAVEEN KUMAR N	
	1KS19EC063	PREETHAM G H	
9	1KS19EC088	SRINIVASAN M	Network layer protocols
	1KS19EC100	VAISHNAVI K	
10	1KS19EC068	Rangaswamy U	HTTP and HTTP Video Streaming
	1KS19EC070	S K Bharatesh	
	1KS19EC082	Shreyas B Aradhya	
	1KS19EC094	Swagath Aithal P G	
	1KS19EC099	Tushar R Vasishta	
11	1KS19EC056	Pokuri Mounika	World Wide Web
	1KS19EC061	Prashant SK	
	1KS19EC065	Radhakrishna L	
	1KS19EC066	Rajalakshmi S	

World Wide Web

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Abstract- This paper gives an overview of the history, the current state, and possible future directions for the World Wide Web. The Web is simply defined as the universe of global network-accessible information. It is an abstract space with which people can interact, and is currently chiefly populated by interlinked pages of text, images and animations, with occasional sounds, three dimensional worlds, and videos. The World Wide Web was designed originally as an interactive world of shared information through which people could communicate with each other and with machines. Since its inception in 1989 it has grown initially as a medium for the broadcast of read-only material from heavily loaded corporate servers to the mass of Internet connected consumers.

Keywords- Network-accessible, interact, three-dimensional, broadcast.

INTRODUCTION

World Wide Web (WWW), byname the Web, the leading information retrieval service of the Internet (the worldwide computer network). The Web gives users access to a vast array of documents that are connected to each other by means of hypertext or hypermedia links—i.e., hyperlinks, electronic connections that link related pieces of information in order to allow a user easy access to them. Hypertext allows the user to select a word or phrase from text and thereby access other documents that contain additional information pertaining to that word or phrase. Hypermedia documents feature links to images, sounds, animations, and movies. The Web operates within the Internet's basic client-server format; servers are computer programs that store and transmit documents to other computers on the network when asked to, while clients are programs that request documents from a server as the user asks for them. Browser software allows users to view the retrieved documents.

Working of WWW:

The World Wide Web is based on several different technologies: Web browsers, Hypertext Markup Language (HTML) and Hypertext Transfer Protocol (HTTP).

A Web browser is used to access web pages. Web browsers can be defined as programs which display text, data, pictures, animation and video on the Internet. Hyperlinked resources on the World Wide Web can be accessed using software interfaces provided by Web browsers. Initially, Web browsers were used only for surfing the Web but now they have become more universal. Web browsers can be used for several tasks including conducting searches, mailing, transferring files, and much more. Some of the commonly used browsers are Internet Explorer, Opera Mini, and Google Chrome.

LITERATURE SURVEY

[1] This paper attempts to characterize World Wide Web traffic patterns. First, the Web's HyperText Transfer Protocol (HTTP) is reviewed, with particular attention to latency factors. User access patterns and file size

distribution are then described. Next, the HTTP design issues are discussed, followed by a section on proposed revisions. Benefits and drawbacks to each of the proposals are covered. The paper ends with pointers toward more information on this area.

[2] A construction method of knowledge transfer from World Wide Web based on knowledge blogs was proposed to disseminate knowledge from appropriate knowledge sender to knowledge receiver. First, a model has been developed for knowledge dissemination in knowledge blogs from the knowledge reservoir of World Wide Web. This model is used to find out the frequently accessed blog in World Wide Web by the users. Second, an algorithm of KRR (Knowledge Request-Response) has been proposed to find out the appropriate transferred knowledge.

[3] Twenty million people now use the Internet, and the number of World Wide Web sites is well over one million and growing rapidly. Web sites are available all over the world, although most are located in the United States. Importantly, the Web's design is consistent with many of our information gathering instincts. It encourages browsing and experimentation and allows each person at computer sites around the world to design unique ways to present and use information. The author discusses its practical applications, explains how hypertext works, and discusses how it is can be used by power utilities. Reserving a password and gaining access to the World Wide Web are also discussed.

[4] The design principle of publishing program source code document on-line is presented. In this design, Knuth's literate programming is employed as the foundation of the publishing method. The concepts similar to World Wide Web are adapted to our publishing method utilizing the extended markup language design. Concrete syntax of the markup language and some discussions on the document delivery of the methodology are also presented. Finally, notes on the implementation are given, as closing remarks.

[5] The objective of this project is to create a compilation of educational resources in remote sensing accessible through the World-Wide Web (WWW). This compilation will be useful to anyone interested in learning about remote sensing. Educators might also find it useful as a place to locate useful resources for teaching courses in remote sensing. The remote sensing web resources were organized into several categories in the authors' web pages.The authors hope to provide a one-stop web page for accessing educational resources in remote sensing on the World Wide Web.

[6] The goal of implementing a DSM information service system on the World Wide Web (WebDISS) is to provide information service and decision-making support services for Government officers, customers, energy engineers and technicians. By providing these services, electric utilities try to find an easy-to-access way for everyone to understand DSM and adopt DSM programs to improve the end-use energy efficiency, thereby contributing to the successful application of DSM in China. From the authors' experiences, WebDISS is total solution to achieve DSM.

[7] Multimedia applications within the World Wide Web (WWW) have to deal with difficulties like executing within Web pages and being transferred via the Internet. However, the temporal aspects of hypermedia features for continuous media like audio and video resemble all other kinds of multimedia applications. These temporal aspects are discussed in consideration of presentation and authoring facilities. A system architecture and implementation relying on commercial WWW technology is presented.

[8] The World Wide Web can be used a powerful and convenient means of disseminating computer aided education because most students already have access to the Web and the necessary Web browsers such as Netscape. There are many benefits in this approach because students already tend to do significant amounts of Internet surfing and are familiar with the usage of Web sites and browsers. Therefore online instruction for their coursework using this all pervasive computer network which may be accessed from almost anywhere is a powerful and beneficial low cost alternative to other forms of computer aided learning. The key aims of this package development are to provide a compact and self contained package of instruction in the features and facilities provided by the C programming language together with an introduction to the Unix programming environment with its vast range of utilities and command interpreter shells. Part of this introduction to Unix is provided in the Bourne Shell as a programming language instruction module.

CONCLUSION

The WWW began with only one use but with enormous potential and a collective dream, not yet fully realized, of its creators. The WWW and the internet have many problems and can have negative consequences in society. However, it also has many positives, especially its impact on communication globally and locally.

The World wide web is an interconnected system of public web pages accessible through the Internet.The world wide web follows the client-server model.The world wide web provides features like HyperText Information System, Cross-Platform, Distributed, open standards, open-source, etc.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Course: Computer Networks	**Course Code:18EC71**	**Type: Core**
Course In Charge: Dr. Dinesh Kumar D S	**Academic year:2022-23**	

Question bank for Module – 1

1. Describe significant services of all layers in TCP/IP protocol suite along with the encapsulation and decapsulation processes with necessary figures
2. List different performance criteria of a network.
3. Explain different physical structures and network topologies with the help of diagrams.
4. Distinguish TCP/IP Model with OSI Model
5. Show the encapsulation and decapsulation representation in the TCP/IP model and explain.
6. Define framing. Explain role of bit stuffing in a framing.
7. Mention different network topologies. List out advantages and disadvantages of each topology.
8. What are the five components involved in data communication? Explain with a suitable diagram.
9. Explain the significance of layers in TCP/IP protocol suite with neat diagram.
10. With a neat diagram, explain the responsibilities of each layer in TCP/IP protocol suite.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Course: Computer Networks	**Course Code:18EC71**	**Type: Core**
Course In Charge: Dr. Dinesh Kumar D S	**Academic year:2022-23**	

Question bank for Module – 2

1. Describe various fields in the format of an ARP packet and analyze how ARP sends request and response message with suitable example
2. Write short notes on Implementation of standard Ethernet Topologies
3. Describe the concept of bit stuffing and byte stuffing in framing.
4. Explain CSMA/CD working with the help of flowchart.
5. List the characteristics of Wireless LANs-4M An ALOHA network transmits 200 bit frame using a shared channel with a 200kbps band width. Find the throughput of pure and slotted ALOHA if the system produces 500 frame per second.
6. Describe the frame format of IEEE 802.3 Ethernet. What are minimum and maximum length of frame?
7. Identify unicast, multicast and broadcast from the following MAC addresses:

i) 4A : 30 : 10 : 21 : 10 : 1A

ii) 47 : 20 : 1B : 2E : 08 : EE

iii) EE : FF : 10 : 01 : 11 : 00

iv)FF : FF : FF : FF : FF : FF .

8. A network using CSMA/CD has a band width of 10Mbps. If the maximum propagation time is 25.6μs. What is the minimum size of the frame?
9. In the standard Ethernet with the transmission rate of 10Mbps. Length of cable is 2500mt and frame size is 512 bits. The propagation speed in a cable is $2x10^8$ m/s. Find efficiency of standard Ethernet.
10. Explain the behavior of CSMA protocol with a neat diagram and show the vulnerable time in CSMA.
11. A pure ALOHA network transmits 200 bit frames on a shared channel of 200kbps. What is throughput if the system (all stations together) produces?

i) 1000 frames per second?

ii) 500 frames per second?

iii) 250 frames per second?

12. Explain the three strategies used in CSMA/CA collision avoidance.
13. With a neat diagram explain Ethernet frame format.
14. Describe persistence methods in CSMA with flow diagram.
15. Explain stop and wait protocol and show how adding sequence numbers can prevent duplicates with the help of flow diagram.
16. Demonstrate stop and wait protocol by considering acknowledgement, timer and sequence no with the help of flow diagram.
17. Describe link layer addressing with suitable illustration.
18. Describe the operation of STOP and WAIT protocol also FSM for STOP and WAIT protocol.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

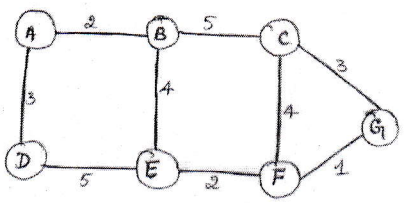
Course: Computer Networks	Course Code:18EC71	Type: Core
Course In Charge: Dr. Dinesh Kumar D S	Academic year:2022-23	

Question bank for Module – 3

1. Explain working of DHCP Protocol.
2. Inspect the following MAC addresses to categorize them as unicast, multicast and broadcast:

i) 4A : 30 : 10 : 21 : 10 : 1A
ii) 47 : 20 : 1B : 2E : 08 : EE
iii) EF : FF : 10 : 01 : 11 : 00
iv) FF : FF : FF : FF : FF : FF

3. Explain IPV4 Datagram format with a neat diagram
4. Explain a simple implementation of Network Address Translation (NAT) and address translation with a neat diagram.
5. Explain the occupation of the address space in classful addressing.
6. A block of addresses is granted to a small organization. We know that one of the addresses is 167.199.170.82/27 . What is the first address, last address and total number of address of the block?
7. Differentiate between datagram network and virtual circuit network.
8. An organization is granted a block of address with the beginning addresses 14.24.74.0.24 . The organization need to have 3 sub blocks of addresses to use in its three subnets: one sub block of 10 addresses, one sub block of 60 addresses, and one sub block of 120 addresses. Design the sub blocks.
9. Examine distance-vector-routing using a Bellman Ford algorithm providing a suitable illustration.
10. Describe Spanning Tree Algorithm with an example.
11. Explain with an example distance vector routing algorithm.
12. Explain with an example link state routing and also apply Dijkstra algorithm to find least cost path tree.
13. Find the shortest path from source 'A' to destination 'G' from given graph as shown in the Fig. using the Dijkstra algorithm.



14. Explain distance-vector-routing using a Bellman Ford algorithm providing a suitable illustration.
15. With relevant diagrams describe Distance Vector Routing. What is two node instability in DVR?
16. Explain operation of Border Gateway Protocol (BGP) with a diagram.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Course: Computer Networks	**Course Code:18EC71**	**Type: Core**
Course In Charge: Dr. Dinesh Kumar D S	**Academic year:2022-23**	

Question bank for Module – 4

1. Describe connectionless and connection-oriented services provided by the transport layer.
2. Discuss the general services provided by UDP.
3. Explain working of Go-back-N Protocol.
4. Describe sending and receiving buffers in TCP
5. Explain IPV4 Datagram format with a neat diagram.
6. Explain why the send window size for Go-Back N must be less than 2^m.
7. With a neat diagram explain TCP segment format.
8. Explain why the size of the send and receive window in selective repeat can be atmost one half of 2_m.
9. Explain with a neat diagram connection establishment using three-way handshaking in TCP.
10. Discuss TCP segment.
11. Demonstrate Go-back-n protocol with a forward channel is reliable but in the reverse channel, if an acknowledgement is delayed or lost.
12. Explain TCP connection establishment and connection termination using three way handshaking.
13. Describe slow start algorithm for handling congestion in TCP.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Course: Computer Networks	**Course Code:18EC71**	**Type: Core**
Course In Charge: Dr. Dinesh Kumar D S	**Academic year:2022-23**	

Question bank for Module – 5

1. Contrast the Persistent and non-persistent connections in HTTP.
2. Explain the architecture and format of Electronic Mail
3. Contrast Local and Remote Logging in TELNET
4. List the features of DNS Recursive and Iterative Resolutions.
5. Contrast the request and response message formats in HTTP
6. Explain the Simple Mail Transfer Protocol Operation
7. Analyze the concept of Web based Email with respect to general Email
8. Explain the concept of FTP in detail.
9. Analyse the concept MIME and associated datatypes.

CBCS SCHEME

USN | | | | | | | | | | |

18EC71

Seventh Semester B.E. Degree Examination, Feb./Mar. 2022
Computer Networks

Time: 3 hrs. Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Describe significant services of all layers in TCP/IP protocol suite along with the encapsulation and decapsulation processes with necessary figures. **(16 Marks)**

b. List different performance criteria of a network. **(04 Marks)**

OR

2 a. Explain different physical structures and networks topologies with the help of diagrams. **(16 Marks)**

b. Distinguish TCP/IP model with OSI model. **(04 Marks)**

Module-2

3 a. Describe various fields in the format of an ARP packet and explain how ARP sends request and response messages. **(12 Marks)**

b. Write short notes on implementation of standard Ethernet topologies. **(08 Marks)**

OR

4 a. Describe the concept of bit stuffing and byte stuffing. **(10 Marks)**

b. Explain CSMA/CD working with the help of flowchart. **(06 Marks)**

c. List the characteristics of wireless LANs. **(04 Marks)**

Module-3

5 a. Explain working of DHCP [Dynamic Host Configuration Protocol]. **(08 Marks)**

b. Inspect the following MAC addresses and categories them as unicast, multicast and broadcast. **(04 Marks)**

i) 4A : 30 : 10 : 21 : 10 : 1A
ii) 47 : 20 : 1B : 2E : 08 : EE
iii) EF : FF : 10 : 01 : 11 : 00
iv) FF : FF : FF : FF : FF: FF

c. Explain IPV4 datagram format with a neat diagram. **(08 Marks)**

OR

6 a. Explain a simple implementation of Networks Address Translation (NAT). **(10 Marks)**

b. Explain distance vector routing algorithm using Bellman ford equations. **(10 Marks)**

Module-4

7 a. Describe connectionless and connection – oriented services provided by the transport layer. **(14 Marks)**

b. Describe the general services provided by UDP. **(06 Marks)**

OR

8 a. Explain working of Go-back-N protocol. **(10 Marks)**

b. Describe sending and receiving buffers in TCP, and explain how segments are created form the bytes in the buffers. **(10 Marks)**

Module-5

9 a. Explain the architecture and format of electronic mail. **(10 Marks)**

b. Distinguish Local Logging and Remote Logging. **(10 Marks)**

OR

10 a. Explain persistent and non-persistent connections in HTTP. **(10 Marks)**

b. Write a short note on DNS recursive and iterative resolutions. **(10 Marks)**

CBCS SCHEME

USN | 1 | K | S | 2 | 0 | E | C | 4 | 0 | 0 | | 18EC71

Seventh Semester B.E. Degree Examination, Jan./Feb. 2023
Computer Networks

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. What is Physical Topology? With a neat diagram, explain the various types of physical topologies available in computer networks. **(10 Marks)**

b. With a neat diagram, explain the significance of layers in TCP/IP protocol suite. **(10 Marks)**

OR

2 a. Explain LAN and WAN with the help of neat diagrams. **(06 Marks)**

b. With a neat diagram, explain the five components of Data Communication. **(06 Marks)**

c. Explain encapsulation and decapsulation in TCP/IP model with the help of a neat diagram. **(08 Marks)**

Module-2

3 a. What is an ARP? Explain the operation of ARP and its packet format with suitable diagrams. **(10 Marks)**

b. Explain stop and wait protocol with a neat FSM diagram. Also explain how sequence and acknowledge numbers prevent duplication of frames with necessary diagrams. **(10 Marks)**

OR

4 a. A slotted ALOHA network transmits 200 bit frames using a shared channel with a 200 kbps bandwidth. Find the throughput if the system produces
(i) 1000 frames per second (ii) 500 frames per second (iii) 250 frames per second? **(06 Marks)**

b. Explain CSMA/CA protocol with a flow diagram. **(08 Marks)**

c. Explain the Ethernet Frame format of standard Ethernet. **(06 Marks)**

Module-3

5 a. Explain with a neat diagram, the virtual circuit packet switched network and its various phases of operation. **(10 Marks)**

b. With a neat diagram explain IPv4 Datagram format. **(10 Marks)**

OR

6 a. Explain with an example, the Distance Vector Routing algorithm. **(10 Marks)**

b. Explain with an example, Link State Routing and also apply Dijkstra algorithm to find least cost path tree. **(10 Marks)**

Module-4

7 a. Explain connectionless and connection oriented protocols in transport layer. **(10 Marks)**

b. With a neat diagram, explain state transition diagram of TCP. **(10 Marks)**

OR

8 a. Explain Go-Back-N protocol along with sliding window diagrams. **(10 Marks)**

b. Explain TCP connection establishment using three way hand shaking. **(10 Marks)**

Module-5

9 a. Explain World Wide Web and Web documents with necessary diagrams. **(10 Marks)**

b. Explain the Architecture of Electronic mail with a neat diagram. **(10 Marks)**

OR

10 a. Explain with an example, the working of Hyper Text Transfer Protocol. **(10 Marks)**

b. What is Name-address resolution? With a neat diagram, explain the various types of resolution that are available. **(10 Marks)**

* * * * *

K.S.Institute of Technology,Bangalore -109
Department of Electronics and Communication Engg
7th sem Course End Survey 2022-23

Course : Computer Networks **Course Code :18EC71**

Q1.How well are you able to examine the layering architecture of computer networks and distinguish between the OSI reference model and TCP/IP protocol suite?

Q2.To what extent are you able to evaluate the protocols and services of Data link layer and Media access control?

Q3.What is your level of knowledge to analyse the packetizing, routing and forwarding services and associated protocols of Network layer?

Q4. How efficient are you in analyzing the protocols and functions associated with the transport layer services?

Q5.How efficient are you in analyzing the protocols and functions associated with the Application layer?

Date	USN	Name of the Student	Faculty Name	Q1	Q2	Q3	Q4	Q5
01-01-23	1KS19EC025	Disha Shivani	Dr. Dinesh Kumar D S	3	3	3	3	3
01-01-23	1KS19EC016	Chandan Raj Y	Dr. Dinesh Kumar D S	3	3	3	3	3
01-01-23	1KS19EC089	Sriram	Dr. Dinesh Kumar D S	3	3	3	3	3
01-01-23	1KS19EC075	Samiksha S	Dr. Dinesh Kumar D S	3	3	3	3	3
01-01-23	1KS19EC020	D Nayan	Dr. Dinesh Kumar D S	3	3	3	3	3
01-01-23	1KS19EC014	Bhavana S	Dr. Dinesh Kumar D S	3	3	3	2	3
02-01-23	1KS19EC086	Shubham Kumar Singh A	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1ks19ec077	Sathvik UM	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC027	Gayathri P K	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC094	Swagath Aithal PG	Dr. Dinesh Kumar D S	3	2	3	2	3
02-01-23	1ks19ec049	Monika V ARYA	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC002	Abhishek C	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC017	Chandana L	Dr. Dinesh Kumar D S	2	2	2	2	2
02-01-23	1KS19EC022	Davino Joseph	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1ks19ec071	Sabarish I J	Dr. Dinesh Kumar D S	2	2	2	2	2
02-01-23	1KS19EC069	Rohan K R	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC040	Krupa A	Dr. Dinesh Kumar D S	2	3	2	2	2
02-01-23	1ks19ec098	Theerthana S R	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC041	Kruthik s	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC066	Rajalakshmi S	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC062	Praveen Kumar.N	Dr. Dinesh Kumar D S	1	1	1	1	1
02-01-23	1KS19EC051	N.Anila	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC036	Jayanth MB	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS20EC402	Sindhu j	Dr. Dinesh Kumar D S	3	2	2	2	2
02-01-23	1KS19EC009	Anitha.S	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC102	Vandana S	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC103	Vignesh Muthaiah R	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC042	LAKSHMAN KUMARA .B	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC047	MOHAMMAD RAKHEEB M R	Dr. Dinesh Kumar D S	3	2	3	2	3
02-01-23	1KS19EC050	Monisha B K	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC100	Vaishnavi k	Dr. Dinesh Kumar D S	2	2	2	2	2
02-01-23	1KS19EC056	Pokuri Mounika	Dr. Dinesh Kumar D S	2	3	3	3	3

02-01-23	1KS19EC011	Archana Yadav M	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC084	Shreyas V Bharadwaj	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC101	Vandana.G	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC065	Radhakrishna L	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC008	Amulya R	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KA19EC076	SANTOSH HEGDE	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC012	Ashritha.R	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC052	Nidhi S	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC035	Jagruti pai	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC079	Shashank Kashyap HR	Dr. Dinesh Kumar D S	3	3	2	3	3
02-01-23	1KS19EC073	Sahana.S	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC030	Gowri S N	Dr. Dinesh Kumar D S	3	3	3	3	2
02-01-23	1KS19EC001	Abhilash A S	Dr. Dinesh Kumar D S	2	2	2	2	2
02-01-23	1KS19EC083	Shreyas Gowda	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC007	Amruta	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC028	Gayathri R Warrier	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC004	Aishwarya M G	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC078	Shamitha Bijoor	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC086	Sinchana mn	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC074	Sai Priya TS	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC067	Ramya sree.R	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC059	Prakash Chegore	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC048	Mohith Kumar G	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC010	Anjali Y J	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC082	Shreyas B Aradhya	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC093	Sushmitha S	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC046	Meghana H P	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC003	Aishwarya Basavaraja Kembavi	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC033	Hemanth R Patil	Dr. Dinesh Kumar D S	2	2	3	2	2
02-01-23	1KS19EC092	SUMUKHA VASISHTA MR	Dr. Dinesh Kumar D S	3	2	2	2	3
02-01-23	1KS19EC024	Dheemanth KN	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC064	Priyanka K	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC096	TNL RUTHVIK	Dr. Dinesh Kumar D S	3	2	3	2	3
02-01-23	1KS19EC006	Akshitha	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC068	RANGASWAMY U	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC087	Srinivas S	Dr. Dinesh Kumar D S	2	3	2	3	3
02-01-23	1KS19EC053	Nisarga k	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC108	Yashaswini N	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC081	Shreyams D.K	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS20EC400	MADALA VIVEK KUMAR	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1ks19ec097	Tejashwini pv	Dr. Dinesh Kumar D S	3	3	3	2	2
02-01-23	1KS19EC070	S K Bharatesh	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC095	SWATHI.U	Dr. Dinesh Kumar D S	2	2	2	3	3
02-01-23	1KS19EC105	VINUTH S REDDY	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC015	Chaitra P	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1ks20ec401	Ranjana p	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC088	Srinivasan M	Dr. Dinesh Kumar D S	3	3	3	3	3

02-01-23	1KS19EC043	Likitha H	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC061	Prashanth SK	Dr. Dinesh Kumar D S	3	2	3	2	3
02-01-23	1KS19EC005	Akshay	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC055	Pavan Kumar G R	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC039	Kashyap P	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC023	DHANYA SUKANTH B K	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC044	M Lokeshwari	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC045	Manu N Kandra	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC037	Manogna K M	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19C054	Nithin D	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19ET005	Mr MRUTHYUNJAYA GUDIBANDE	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19ET004	Mahadev A C	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19ET007	Niranjan S Rao	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC090	Suhas M	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1ks19ec106	Vishal Sanjay Raju	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC057	Pooja Sp	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC107	Vishnuraata Yadunandan	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC021	Danesh Raju v	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1ks19ec099	TUSHAR	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1KS19EC038	Karthik K	Dr. Dinesh Kumar D S	3	3	3	3	3
02-01-23	1ks19ec104	Vikas S	Dr. Dinesh Kumar D S	3	2	3	3	3
02-01-23	1KS19EC029	GONUGUNTLA SAI SIDDARTHA	Dr. Dinesh Kumar D S	3	3	3	3	3
03-01-23	1KS19EC063	PREETHAM G H	Dr. Dinesh Kumar D S	3	2	2	3	2
03-01-23	1KS19EC032	B.Y Harshitha	Dr. Dinesh Kumar D S	3	3	3	3	3
04-01-23	1ks19ec019	Chiranthana Yogananda K	Dr. Dinesh Kumar D S	2	2	2	2	2
			NO. OF 1S	**1**	**1**	**1**	**1**	**1**
			Total count	**104**	**104**	**104**	**104**	**104**
			Percentage	**99.04**	**99.04**	**99.04**	**99.04**	**99.04**
			Average	**99.04**				

K.S. INSTITUTE OF TECHNOLOGY, BANGALORE
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGG

YEAR / SEMESTER	**IV/VII**
COURSE TITLE	**COMPUTER NETWORKS**
COURSE CODE	**18EC71**
ACADEMIC YEAR	**2021-22**
BATCH	**2018-19**

CO Attainment Level	Significance
Level 3	60% and above students should have scored >= 60% of Total marks
Level 2	55% to 59% of students should have scored >= 60% of Total marks
Level 1	50% to 54% of students should have scored >= 60% of Total marks

For Direct attainment , 50% of CIE and 50% of SEE marks are considered.
For indirect attainment, Course end survey is considered.
CO attainment is 90%of direct attainment + 10% of Indirect atttainment.
PO attainment = CO-PO mapping strength/3 * CO attainment .

SL NO	USN	NAME	IA1								Assignment 1							IA2											Assignment 2									IA3							Assignment 3							EXTERNAL MARKS		
			IA1	CO1	Score	Target 60%	CO2	Score	Target 60%		A1	CO1	Score	Target 60%	CO2	Score	Target 60%	IA2	CO2	Score	Target 60%	CO3	Score	Target 60%	CO4	Score	Target 60%		A2	CO2	Score	Target 60%	CO3	Scores	Target 60%	CO4	Score	Target 60%		IA3	CO4	Score	Target 60%	CO5	Score	Target 60%		A3	CO4	Score	Target 60%	CO5	Score	Target 60%		SEE	Score	Target 60%
	Maximum Marks		30	18			12				10	6			4			30	6			18			6				10	2			6			2				30	12			18				10	6			4				60		
1	1KS18EC001	A N BHOOMIKA CHOWDARY	29	18	3	Y	11	3	Y		9	5.4	3	Y	3.6	3	Y	27	6	3	Y	15	3	Y	6	3	Y		10	2	3	Y	6	3	Y	2	3	Y		30	12	3	Y	18	3	Y		10	6.0	3	Y	4	3	Y		42	3	Y
2	1KS18EC002	ABHISHEK.V	25	14	3	Y	11	3	Y		10	6	3	Y	4	3	Y	25	4	3	Y	18	3	Y	3	1	N		10	2	3	Y	6	3	Y	2	3	Y		26	12	3	Y	18	3	Y		8	4.8	3	Y	3.2	3	Y		41	3	Y
3	1KS18EC003	ADITHI.S	25	17	3	Y	8	3	Y		9	5.4	3	Y	3.6	3	Y	24	5	3	Y	14	3	Y	5	3	Y		10	2	3	Y	6	3	Y	2	3	Y		30	12	3	Y	18	3	Y		10	6.0	3	Y	4	3	Y		48	3	Y
4	1KS18EC004	AISHWARYA BANDIGANI	29	18	3	Y	11	3	Y		8	4.8	3	Y	3.2	3	Y	21	6	3	Y	9	1	N	6	3	Y		10	2	3	Y	6	3	Y	2	3	Y		24	12	3	Y	18	3	Y		6	3.6	3	Y	2.4	3	Y		44	3	Y
5	1KS18EC005	AISHWARYA R	22	15	3	Y	7	2	N		8	4.8	3	Y	3.2	3	Y	25	3	1	N	16	3	Y	6	3	Y		10	2	3	Y	6	3	Y	2	3	Y		28	12	3	Y	18	3	Y		6	3.6	3	Y	2.4	3	Y		38	3	Y
6	1KS18EC006	AKASH R	26	18	3	Y	8	3	Y		8	4.8	3	Y	3.2	3	Y	22	0	0	N	18	3	Y	4	3	Y		10	2	3	Y	6	3	Y	2	3	Y		19	12	3	Y	15	3	Y		8	4.8	3	Y	3.2	3	Y		38	3	Y
7	1KS18EC007	AKHILA V	27	17	3	Y	10	3	Y		8	4.8	3	Y	3.2	3	Y	14	5	3	Y	3	0	N	6	3	Y		10	2	3	Y	6	3	Y	2	3	Y		25	12	3	Y	13	3	Y		7	4.2	3	Y	2.8	3	Y		42	3	Y
8	1KS18EC008	ANAGHA S	24	16	3	Y	8	3	Y		9	5.4	3	Y	3.6	3	Y	12	0	0	N	11	3	Y	1	0	N		10	2	3	Y	6	3	Y	2	3	Y		21	12	3	Y	17	3	Y		6	3.6	3	Y	2.4	3	Y		42	3	Y
9	1KS18EC009	ANANTA ANANTPUR	23	13	3	Y	10	3	Y		8	4.8	3	Y	3.2	3	Y	28	5	3	Y	17	3	Y	6	3	Y		10	2	3	Y	6	3	Y	2	3	Y		20	12	3	Y	10	2	N		8	4.8	3	Y	3.2	3	Y		49	3	Y
10	1KS18EC010	ASHRITHA S C	25	15	3	Y	10	3	Y		9	5.4	3	Y	3.6	3	Y	20	5	3	Y	9	1	N	6	3	Y		10	2	3	Y	6	3	Y	2	3	Y		25	12	3	Y	14	3	Y		9	5.4	3	Y	3.6	3	Y		39	3	Y
11	1KS18EC011	AYEESHA RUMAN	24	12	3	Y	12	3	Y		7	4.2	3	Y	2.8	3	Y	20	2	0	N	14	3	Y	4	3	Y		10	2	3	Y	6	3	Y	2	3	Y		27	12	3	Y	17	3	Y		8	4.8	3	Y	3.2	3	Y		33	2	N
12	1KS18EC012	C A SUSHMA	22	16	3	Y	6	1	N		8	4.8	3	Y	3.2	3	Y	19	0	0	N	14	3	Y	5	3	Y		10	2	3	Y	6	3	Y	2	3	Y		17	12	3	Y	15	3	Y		7	4.2	3	Y	2.8	3	Y		44	3	Y
13	1KS18EC013	C M CHAITHANYA	15	13	3	Y	2	0	N		9	5.4	3	Y	3.6	3	Y	7	0	0	N	3	0	N	4	3	Y		8	1.6	3	Y	4.8	3	Y	1.6	3	Y		12	12	3	Y	8	0	N		6	3.6	3	Y	2.4	3	Y		26	0	N
14	1KS18EC014	CHANDAN Y C	18	11	3	Y	7	2	N		6	3.6	3	Y	2.4	3	Y	17	2	0	N	15	3	Y	0	0	N		8	1.6	3	Y	4.8	3	Y	1.6	3	Y		10	12	3	Y	8	0	N		8	4.8	3	Y	3.2	3	Y		45	3	Y
15	1KS18EC015	CHARAN G	27	17	3	Y	10	3	Y		9	5.4	3	Y	3.6	3	Y	20	4	3	Y	12	3	Y	4	3	Y		10	2	3	Y	6	3	Y	2	3	Y		22	12	3	Y	17	3	Y		4	2.4	0	N	1.6	0	N		46	3	Y
16	1KS18EC016	CHINNAPU CHARAN	22	15	3	Y	7	2	N		8	4.8	3	Y	3.2	3	Y	22	5	3	Y	13	3	Y	4	3	Y		10	2	3	Y	6	3	Y	2	3	Y		24	12	3	Y	15	3	Y		4	2.4	0	N	1.6	0	N		30	1	N
17	1KS18EC017	CHITHRITHA G R	26	16	3	Y	10	3	Y		10	6	3	Y	4	3	Y	24	0	0	N	18	3	Y	6	3	Y		9	1.8	3	Y	5.4	3	Y	1.8	3	Y		24	12	3	Y	18	3	Y		9	5.4	3	Y	3.6	3	Y		44	3	Y
18	1KS18EC018	DARSHAN V	16	8	0	N	8	3	Y		7	4.2	3	Y	2.8	3	Y	16	5	3	Y	5	0	N	6	3	Y		10	2	3	Y	6	3	Y	2	3	Y		20	12	3	Y	11	3	Y		4	2.4	0	N	1.6	0	N		44	3	Y
19	1KS18EC019	DARSHAN S	27	16	3	Y	11	3	Y		7	4.2	3	Y	2.8	3	Y	22	5	3	Y	17	3	Y	0	0	N		10	2	3	Y	6	3	Y	2	3	Y		25	12	3	Y	13	3	Y		2	1.2	0	N	0.8	0	N		40	3	Y
20	1KS18EC020	DEEKSHA S N	15	13	3	Y	2	0	N		9	5.4	3	Y	3.6	3	Y	18	0	0	N	12	3	Y	6	3	Y		10	2	3	Y	6	3	Y	2	3	Y		21	12	3	Y	15	3	Y		9	5.4	3	Y	3.6	3	Y		41	3	Y
21	1KS18EC021	DEEPTHI ANDANI	23	14	3	Y	9	3	Y		8	4.8	3	Y	3.2	3	Y	17	5	3	Y	12	3	Y	0	0	N		10	2	3	Y	6	3	Y	2	3	Y		24	12	3	Y	12	3	Y		6	3.6	3	Y	2.4	3	Y		35	2	N
22	1KS18EC022	DHANUSHREE C	22	14	3	Y	8	3	Y		9	5.4	3	Y	3.6	3	Y	14	6	3	Y	8	0	N	0	0	N		10	2	3	Y	6	3	Y	2	3	Y		12	12	3	Y	12	3	Y		8	4.8	3	Y	3.2	3	Y		38	3	Y
23	1KS18EC023	DHEERAJ M S	28	16	3	Y	12	3	Y		10	6	3	Y	4	3	Y	27	5	3	Y	16	3	Y	6	3	Y		10	2	3	Y	6	3	Y	2	3	Y		23	12	3	Y	16	3	Y		8	4.8	3	Y	3.2	3	Y		31	1	N
24	1KS18EC024	DHRITHIRHUTH DANDA KUMAR NAYAK	20	14	3	Y	6	1	N		8	4.8	3	Y	3.2	3	Y	25	3	1	N	16	3	Y	6	3	Y		10	2	3	Y	6	3	Y	2	3	Y		14	12	3	Y	12	3	Y		7	4.2	3	Y	2.8	3	Y		38	3	Y
25	1KS18EC025	DINESH KUMAR	25	17	3	Y	8	3	Y		10	6	3	Y	4	3	Y	20	5	3	Y	11	3	Y	4	3	Y		10	2	3	Y	6	3	Y	2	3	Y		25	12	3	Y	15	3	Y		7	4.2	3	Y	2.8	3	Y		44	3	Y
26	1KS18EC026	DIVAKARBABU Y	27	17	3	Y	10	3	Y		7	4.2	3	Y	2.8	3	Y	28	6	3	Y	16	3	Y	6	3	Y		10	2	3	Y	6	3	Y	2	3	Y		28	12	3	Y	18	3	Y		9	5.4	3	Y	3.6	3	Y		52	3	Y
27	1KS18EC027	G.J.NITHIN	23	15	3	Y	8	3	Y		9	5.4	3	Y	3.6	3	Y	20	6	3	Y	12	3	Y	2	0	N		10	2	3	Y	6	3	Y	2	3	Y		24	12	3	Y	18	3	Y		9	5.4	3	Y	3.6	3	Y		32	1	N
28	1KS18EC028	GANESH P	27	17	3	Y	10	3	Y		9	5.4	3	Y	3.6	3	Y	23	4	3	Y	16	3	Y	3	1	N		10	2	3	Y	6	3	Y	2	3	Y		20	12	3	Y	12	3	Y		4	2.4	0	N	1.6	0	N		43	3	Y
29	1KS18EC029	GOKUL G	27	16	3	Y	11	3	Y		10	6	3	Y	4	3	Y	24	1	0	N	17	3	Y	6	3	Y			0	0	N	0	0	N	0	0	N		20	12	3	Y	12	3	Y		0	0.0	0	N	0	0	N		40	3	Y
30	1KS18EC030	HARSH SHARMA	18	9	1	N	9	3	Y		8	4.8	3	Y	3.2	3	Y	0	0	0	N	0	0	N	0	0	N		8	1.6	3	Y	4.8	3	Y	1.6	3	Y		20	12	3	Y	10	2	N		6	3.6	3	Y	2.4	3	Y		48	3	Y
31	1KS18EC031	HARSHITHA S	26	15	3	Y	11	3	Y		10	6	3	Y	4	3	Y	27	6	3	Y	16	3	Y	5	3	Y		10	2	3	Y	6	3	Y	2	3	Y		29	12	3	Y	18	3	Y		10	6.0	3	Y	4	3	Y		49	3	Y
32	1KS18EC032	JAHNAVI A P	25	15	3	Y	10	3	Y		7	4.2	3	Y	2.8	3	Y	28	6	3	Y	17	3	Y	5	3	Y		6	1.2	3	Y	3.6	3	Y	1.2	3	Y		18	12	3	Y	18	3	Y		10	6.0	3	Y	4	3	Y		44	3	Y
33	1KS18EC033	JANHAVI K P	24	14	3	Y	10	3	Y		8	4.8	3	Y	3.2	3	Y	25	6	3	Y	14	3	Y	5	3	Y		10	2	3	Y	6	3	Y	2	3	Y		21	12	3	Y	16	3	Y		7	4.2	3	Y	2.8	3	Y		45	3	Y
34	1KS18EC034	JHANAVI V	22	12	3	Y	10	3	Y		8	4.8	3	Y	3.2	3	Y	28	6	3	Y	16	3	Y	6	3	Y		6	1.2	3	Y	3.6	3	Y	1.2	3	Y		20	12	3	Y	17	3	Y		8	4.8	3	Y	3.2	3	Y		44	3	Y
35	1KS18EC035	JISHNU S	23	15	3	Y	8	3	Y		7	4.2	3	Y	2.8	3	Y	23	1	0	N	17	3	Y	5	3	Y		10	2	3	Y	6	3	Y	2	3	Y		18	12	3	Y	10	2	N		8	4.8	3	Y	3.2	3	Y		36	3	Y
36	1KS18EC036	JYOTSNA B	25	14	3	Y	11	3	Y		7	4.2	3	Y	2.8	3	Y	20	0	0	N	14	3	Y	6	3	Y		10	2	3	Y	6	3	Y	2	3	Y		12	12	3	Y	6	0	N		7	4.2	3	Y	2.8	3	Y		24	0	N
37	1KS18EC037	K RISHIKA RAVI	21	14	3	Y	7	2	N		8	4.8	3	Y	3.2	3	Y	19	0	0	N	14	3	Y	5	3	Y		9	1.8	3	Y	5.4	3	Y	1.8	3	Y		28	12	3	Y	18	3	Y		7	4.2	3	Y	2.8	3	Y		36	3	Y

38	1KS18EC038	KARISHMA M	29	17	3	Y	12	3	Y	7	4.2	3	Y	2.8	3	Y	14	2	0	N	8	0	N	4	3	Y	10	2	3	Y	6	3	Y	2	3	Y	11	12	3	Y	9	0	N	9	5.4	3	Y	3.6	3	Y	37	3	Y
39	1KS18EC039	KOMALA K V	27	15	3	Y	12	3	Y	7	4.2	3	Y	2.8	3	Y	25	4	3	Y	16	3	Y	5	3	Y	10	2	3	Y	6	3	Y	2	3	Y	10	12	3	Y	6	0	N	10	6.0	3	Y	4	3	Y	24	0	N
40	1KS18EC040	LAVANYA M	25	15	3	Y	10	3	Y	8	4.8	3	Y	3.2	3	Y	23	6	3	Y	17	3	Y	0	0	N	10	2	3	Y	6	3	Y	2	3	Y	24	12	3	Y	18	3	Y	4	2.4	0	N	1.6	0	N	42	3	Y
41	1KS18EC041	M.NIHITHA YADAV	24	14	3	Y	10	3	Y	8	4.8	3	Y	3.2	3	Y	28	5	3	Y	18	3	Y	5	3	Y	10	2	3	Y	6	3	Y	2	3	Y	30	12	3	Y	18	3	Y	10	6.0	3	Y	4	3	Y	46	3	Y
42	1KS18EC042	MAHANTH SAI M	23	16	3	Y	7	2	N	8	4.8	3	Y	3.2	3	Y	21	4	3	Y	13	3	Y	4	3	Y	10	2	3	Y	6	3	Y	2	3	Y	21	12	3	Y	11	3	Y	7	4.2	3	Y	2.8	3	Y	47	3	Y
43	1KS18EC043	MANOJ G S	20	14	3	Y	6	1	N	8	4.8	3	Y	3.2	3	Y	16	0	0	N	14	3	Y	2	0	N	8	1.6	3	Y	4.8	3	Y	1.6	3	Y	11	12	3	Y	9	0	N	6	3.6	3	Y	2.4	3	Y	41	3	Y
44	1KS18EC044	MEGHA R	28	16	3	Y	12	3	Y	9	5.4	3	Y	3.6	3	Y	23	2	0	N	17	3	Y	4	3	Y	10	2	3	Y	6	3	Y	2	3	Y	29	12	3	Y	18	3	Y	9	5.4	3	Y	3.6	3	Y	44	3	Y
45	1KS18EC045	MEGHANA B S	27	16	3	Y	11	3	Y	9	5.4	3	Y	3.6	3	Y	13	0	0	N	13	3	Y	0	0	N	10	2	3	Y	6	3	Y	2	3	Y	19	12	3	Y	18	3	Y	9	5.4	3	Y	3.6	3	Y	45	3	Y
46	1KS18EC046	MEGHANA GOWDA V	26	14	3	Y	12	3	Y	8	4.8	3	Y	3.2	3	Y	17	6	3	Y	9	1	N	2	0	N	10	2	3	Y	6	3	Y	2	3	Y	21	12	3	Y	15	3	Y	4	2.4	0	N	1.6	0	N	38	3	Y
47	1KS18EC047	MOHAMMED FAIZAN	24	14	3	Y	10	3	Y	6	3.6	3	Y	2.4	3	Y	20	6	3	Y	8	0	N	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	10	12	3	Y	10	2	N	4	2.4	0	N	1.6	0	N	41	3	Y
48	1KS18EC048	MONISHA B R	A	0	0	N	0	0	N	8	4.8	3	Y	3.2	3	Y	27	6	3	Y	16	3	Y	5	3	Y	10	2	3	Y	6	3	Y	2	3	Y	20	12	3	Y	10	2	N	10	6.0	3	Y	4	3	Y	32	1	N
49	1KS18EC049	N S V YASHWANTH	26	16	3	Y	10	3	Y	6	3.6	3	Y	2.4	3	Y	20	4	3	Y	12	3	Y	4	3	Y	10	2	3	Y	6	3	Y	2	3	Y	20	12	3	Y	14	3	Y	7	4.2	3	Y	2.8	3	Y	41	3	Y
50	1KS18EC050	NAGA OMKAR N	25	17	3	Y	8	3	Y	7	4.2	3	Y	2.8	3	Y	27	4	3	Y	17	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	28	12	3	Y	17	3	Y	6	3.6	3	Y	2.4	3	Y	45	3	Y
51	1KS18EC051	NAGASHREE A	23	13	3	Y	10	3	Y	7	4.2	3	Y	2.8	3	Y	20	5	3	Y	9	1	N	6	3	Y	9	1.8	3	Y	5.4	3	Y	1.8	3	Y	20	12	3	Y	12	3	Y	4	2.4	0	N	1.6	0	N	41	3	Y
52	1KS18EC052	NAMITH R	17	11	3	Y	6	1	N	7	4.2	3	Y	2.8	3	Y	21	0	0	N	15	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	19	12	3	Y	12	3	Y	4	2.4	0	N	1.6	0	N	38	3	Y
53	1KS18EC053	NAVYA M S	26	16	3	Y	10	3	Y	7	4.2	3	Y	2.8	3	Y	16	6	3	Y	5	0	N	5	3	Y	10	2	3	Y	6	3	Y	2	3	Y	20	12	3	Y	11	3	Y	8	4.8	3	Y	3.2	3	Y	49	3	Y
54	1KS18EC054	NIHARIKA S A	24	17	3	Y	7	2	N	10	6	3	Y	4	3	Y	27	5	3	Y	18	3	Y	4	3	Y	10	2	3	Y	6	3	Y	2	3	Y	28	12	3	Y	18	3	Y	4	2.4	0	N	1.6	0	N	50	3	Y
55	1KS18EC055	NIROSHA G J	25	16	3	Y	9	3	Y	8	4.8	3	Y	3.2	3	Y	12	6	3	Y	6	0	N	0	0	N	10	2	3	Y	6	3	Y	2	3	Y	18	12	3	Y	18	3	Y	4	2.4	0	N	1.6	0	N	45	3	Y
56	1KS18EC056	NISHANTH J RAO	26	16	3	Y	10	3	Y	8	4.8	3	Y	3.2	3	Y	11	5	3	Y	3	0	N	3	1	N		0	0	N	0	0	N	0	0	N	17	12	3	Y	11	3	Y	4	2.4	0	N	1.6	0	N	41	3	Y
57	1KS18EC057	P SAI GOVARDHAN	25	17	3	Y	8	3	Y	9	5.4	3	Y	3.6	3	Y	25	6	3	Y	15	3	Y	4	3	Y	10	2	3	Y	6	3	Y	2	3	Y	23	12	3	Y	15	3	Y	7	4.2	3	Y	2.8	3	Y	47	3	Y
58	1KS18EC058	PARIKSHITH S	26	16	3	Y	10	3	Y	6	3.6	3	Y	2.4	3	Y	26	6	3	Y	16	3	Y	4	3	Y	10	2	3	Y	6	3	Y	2	3	Y	18	12	3	Y	10	2	N	8	4.8	3	Y	3.2	3	Y	34	2	N
59	1KS18EC059	PAVAN KUMAR P	20	11	3	Y	9	3	Y	7	4.2	3	Y	2.8	3	Y	14	5	3	Y	4	0	N	5	3	Y		0	0	N	0	0	N	0	0	N	18	12	3	Y	10	2	N	0	0.0	0	N	0	0	N	38	3	Y
60	1KS16EC005	AKASH CHANDRAPPA	25	17	3	Y	8	3	Y	8	4.8	3	Y	3.2	3	Y	23	5	3	Y	14	3	Y	4	3	Y	10	2	3	Y	6	3	Y	2	3	Y	21	12	3	Y	18	3	Y	4	2.4	0	N	1.6	0	N	33	2	N
61	1KS18EC060	POOJA S	19	12	3	Y	7	2	N	8	4.8	3	Y	3.2	3	Y	11	6	3	Y	5	0	N	0	0	N	10	2	3	Y	6	3	Y	2	3	Y	22	12	3	Y	12	3	Y	4	2.4	0	N	1.6	0	N	34	2	N
62	1KS18EC061	PRAKRUTHI S H	24	16	3	Y	8	3	Y	9	5.4	3	Y	3.6	3	Y	11	5	3	Y	3	0	N	3	1	N	10	2	3	Y	6	3	Y	2	3	Y	20	12	3	Y	12	3	Y	9	5.4	3	Y	3.6	3	Y	32	1	N
63	1KS18EC063	PUNEETH M	28	17	3	Y	11	3	Y	9	5.4	3	Y	3.6	3	Y	28	6	3	Y	16	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	18	12	3	Y	11	3	Y	9	5.4	3	Y	3.6	3	Y	48	3	Y
64	1KS18EC064	PURUSHOTHAM V R	22	12	3	Y	10	3	Y	9	5.4	3	Y	3.6	3	Y	21	6	3	Y	15	3	Y	0	0	N	10	2	3	Y	6	3	Y	2	3	Y	23	12	3	Y	18	3	Y	9	5.4	3	Y	3.6	3	Y	39	3	Y
65	1KS18EC066	RAGHAVENDRA.K R	29	18	3	Y	11	3	Y	10	6	3	Y	4	3	Y	22	5	3	Y	15	3	Y	2	0	N	10	2	3	Y	6	3	Y	2	3	Y	28	12	3	Y	18	3	Y	9	5.4	3	Y	3.6	3	Y	42	3	Y
66	1KS18EC067	RAGHU B T	22	14	3	Y	8	3	Y	10	6	3	Y	4	3	Y	25	5	3	Y	14	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	13	12	3	Y	7	0	N	9	5.4	3	Y	3.6	3	Y	44	3	Y
67	1KS18EC068	RAJ KRISHNA	16	8	0	N	8	3	Y	8	4.8	3	Y	3.2	3	Y	13	0	0	N	11	3	Y	2	0	N	10	2	3	Y	6	3	Y	2	3	Y	14	12	3	Y	11	3	Y	10	6.0	3	Y	4	3	Y	33	2	N
68	1KS18EC069	RAJATH S BHUSHAN	22	12	3	Y	10	3	Y	10	6	3	Y	4	3	Y	14	5	3	Y	9	1	N	0	0	N	9	1.8	3	Y	5.4	3	Y	1.8	3	Y		12	3	Y	0	0	N	9	5.4	3	Y	3.6	3	Y	29	0	N
69	1KS18EC070	RAM BAHADUR	22	14	3	Y	8	3	Y	9	5.4	3	Y	3.6	3	Y	19	0	0	N	16	3	Y	3	1	N	9	1.8	3	Y	5.4	3	Y	1.8	3	Y	21	12	3	Y	16	3	Y	7	4.2	3	Y	2.8	3	Y	54	3	Y
70	1KS18EC071	RASETTY SANDEEP	14	10	2	N	4	0	N	8	4.8	3	Y	3.2	3	Y	11	0	0	N	10	2	N	1	0	N	6	1.2	3	Y	3.6	3	Y	1.2	3	Y	16	12	3	Y	6	0	N	6	3.6	3	Y	2.4	3	Y	33	2	N
71	1KS18EC073	RITHVIK P	23	14	3	Y	9	3	Y	8	4.8	3	Y	3.2	3	Y	24	5	3	Y	14	3	Y	5	3	Y	6	1.2	3	Y	3.6	3	Y	1.2	3	Y	18	12	3	Y	10	2	N	7	4.2	3	Y	2.8	3	Y	36	3	Y
72	1KS18EC074	S MANOJ	24	14	3	Y	10	3	Y	10	6	3	Y	4	3	Y	25	6	3	Y	18	3	Y	1	0	N	9	1.8	3	Y	5.4	3	Y	1.8	3	Y	24	12	3	Y	16	3	Y	10	6.0	3	Y	4	3	Y	44	3	Y
73	1KS18EC075	S RAHUL	28	16	3	Y	12	3	Y	10	6	3	Y	4	3	Y	26	5	3	Y	17	3	Y	4	3	Y	10	2	3	Y	6	3	Y	2	3	Y	21	12	3	Y	13	3	Y	4	2.4	0	N	1.6	0	N	42	3	Y
74	1KS18EC076	S TUSHAR HARINATH	26	15	3	Y	11	3	Y	10	6	3	Y	4	3	Y	27	6	3	Y	17	3	Y	4	3	Y	10	2	3	Y	6	3	Y	2	3	Y	22	12	3	Y	18	3	Y	9	5.4	3	Y	3.6	3	Y	44	3	Y
75	1KS18EC077	SAGAR T C	25	14	3	Y	11	3	Y	7	4.2	3	Y	2.8	3	Y	15	0	0	N	10	2	N	5	3	Y		0	0	N	0	0	N	0	0	N	10	12	3	Y	10	2	N	9	5.4	3	Y	3.6	3	Y	23	0	N
76	1KS18EC078	SANJANA B	29	17	3	Y	12	3	Y	10	6	3	Y	4	3	Y	27	4	3	Y	17	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	24	12	3	Y	18	3	Y	10	6.0	3	Y	4	3	Y	37	3	Y
77	1KS18EC079	SANKET B PASCHAPURI	18	11	3	Y	7	2	N	8	4.8	3	Y	3.2	3	Y	16	5	3	Y	8	0	N	3	1	N	10	2	3	Y	6	3	Y	2	3	Y	13	12	3	Y	5	0	N	4	2.4	0	N	1.6	0	N	34	2	N
78	1KS18EC080	SHASHANK H K	20	14	3	Y	6	1	N	9	5.4	3	Y	3.6	3	Y	13	4	3	Y	9	1	N	0	0	N	6	1.2	3	Y	3.6	3	Y	1.2	3	Y	7	12	3	Y	4	0	N	6	3.6	3	Y	2.4	3	Y	42	3	Y
79	1KS18EC081	SHEETAL N GOWDA	26	16	3	Y	10	3	Y	8	4.8	3	Y	3.2	3	Y	24	2	0	N	18	3	Y	4	3	Y	9	1.8	3	Y	5.4	3	Y	1.8	3	Y	29	12	3	Y	17	3	Y	10	6.0	3	Y	4	3	Y	48	3	Y
80	1KS18EC082	SHIVA SHANKAR R	22	14	3	Y	8	3	Y	8	4.8	3	Y	3.2	3	Y	24	5	3	Y	18	3	Y	1	0	N	10	2	3	Y	6	3	Y	2	3	Y	27	12	3	Y	18	3	Y	10	6.0	3	Y	4	3	Y	46	3	Y
81	1KS18EC083	SHREYA V DEV	26	16	3	Y	10	3	Y	8	4.8	3	Y	3.2	3	Y	24	3	1	N	15	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	23	12	3	Y	17	3	Y	4	2.4	0	N	1.6	0	N	36	3	Y
82	1KS18EC084	SHREYAS C	26	16	3	Y	10	3	Y	10	6	3	Y	4	3	Y	23	6	3	Y	11	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	28	12	3	Y	18	3	Y	4	2.4	0	N	1.6	0	N	45	3	Y
83	1KS18EC085	SHREYAS D R	28	17	3	Y	11	3	Y	10	6	3	Y	4	3	Y	27	6	3	Y	15	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	26	12	3	Y	17	3	Y	10	6.0	3	Y	4	3	Y	49	3	Y
84	1KS18EC086	SHRIKANTH C K	22	16	3	Y	6	1	N	8	4.8	3	Y	3.2	3	Y	16	2	0	N	9	1	N	5	3	Y	8	1.6	3	Y	4.8	3	Y	1.6	3	Y	12	12	3	Y	4	0	N	4	2.4	0	N	1.6	0	N	41	3	Y
85	1KS18EC087	SIRI RAVINATH	25	15	3	Y	10	3	Y	10	6	3	Y	4	3	Y	25	5	3	Y	14	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	2	12	3	Y	0	0	N	7	4.2	3	Y	2.8	3	Y	31	1	N
86	1KS18EC088	SIRISHA.M	29	18	3	Y	11	3	Y	10	6	3	Y	4	3	Y	26	6	3	Y	18	3	Y	2	0	N	10	2	3	Y	6	3	Y	2	3	Y	24	12	3	Y	12	3	Y	10	6.0	3	Y	4	3	Y	42	3	Y
87	1KS18EC090	SOMASHEKAR M	26	14	3	Y	12	3	Y	8	4.8	3	Y	3.2	3	Y	25	6	3	Y	17	3	Y	2	0	N	10	2	3	Y	6	3	Y	2	3	Y	28	12	3	Y	16	3	Y	10	6.0	3	Y	4	3	Y	45	3	Y
88	1KS18EC091	SUDHEER B	24	16	3	Y	8	3	Y	9	5.4	3	Y	3.6	3	Y	17	0	0	N	14	3	Y	3	1	N	10	2	3	Y	6	3	Y	2	3	Y	14	12	3	Y	6	0	N	7	4.2	3	Y	2.8	3	Y	33	2	N
89	1KS18EC092	SUJAY R	26	16	3	Y	10	3	Y	9	5.4	3	Y	3.6	3	Y	25	5	3	Y	15	3	Y	5	3	Y	10	2	3	Y	6	3	Y	2	3	Y	24	12	3	Y	15	3	Y	10	6.0	3	Y	4	3	Y	30	1	N
90	1KS18EC093	SUPRIYA S	26	17	3	Y	9	3	Y	9	5.4	3	Y	3.6	3	Y	27	6	3	Y	15	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	27	12	3	Y	16	3	Y	7	4.2	3	Y	2.8	3	Y	46	3	Y
91	1KS18EC094	SURAJ V GHORPADE	29	18	3	Y	11	3	Y	10	6	3	Y	4	3	Y	29	6	3	Y	17	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	26	12	3	Y	16	3	Y	10	6.0	3	Y	4	3	Y	44	3	Y
92	1KS18EC095	SUSHMA.A.V	28	16	3	Y	12	3	Y	9	5.4	3	Y	3.6	3	Y	21	6	3	Y	15	3	Y	0	0	N	10	2	3	Y	6	3	Y	2	3	Y	17	12	3	Y	14	3	Y	4	2.4	0	N	1.6	0	N	54	3	Y
93	1KS18EC096	SUSHMITHA R	27	17	3	Y	10	3	Y	9	5.4	3	Y	3.6	3	Y	26	6	3	Y	15	3	Y	5	3	Y	9	1.8	3	Y	5.4	3	Y	1.8	3	Y	11	12	3	Y	5	0	N	7	4.2	3	Y	2.8	3	Y	45	3	Y
94	1KS18EC097	THANUSH R S	25	15	3	Y	10	3	Y	9	5.4	3	Y	3.6	3	Y	20	5	3	Y	10	2	N	5	3	Y	10	2	3	Y	6	3	Y	2	3	Y	15	12	3	Y	11	3	Y	4	2.4	0	N	1.6	0	N	40	3	Y
95	1KS18EC098	THANUSHREE D	25	15	3	Y	10	3	Y	10	6	3	Y	4	3	Y	11	0	0	N	9	1	N	2	0	N	10	2	3	Y	6	3	Y	2	3	Y	26	12	3	Y	16	3	Y	10	6.0	3	Y	4	3	Y	55	3	Y
96	1KS18EC099	VAISHNAVI G	29	18	3	Y	11	3	Y	10	6	3	Y	4	3	Y	18	6	3	Y	12	3	Y	0	0	N	10	2	3	Y	6	3	Y	2	3	Y	12	12	3	Y	10	2	N	10	6.0	3	Y	4	3	Y	29	0	N
97	1KS18EC100	VAKKALAGADDA ANIL	19	11	3	Y	8	3	Y	6	3.6	3	Y	2.4	3	Y	14	5	3	Y	9	1	N	0	0	N	6	1.2	3	Y	3.6	3	Y	1.2	3	Y	10	12	3	Y	1	0	N	4	2.4	0	N	1.6	0	N	8	0	N
98	1KS18EC101	VANDANA K	24	14	3	Y	10	3	Y	8	4.8	3	Y	3.2	3	Y	24	6	3	Y	12	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	20	12	3	Y	12	3	Y	10	6.0	3	Y	4	3	Y	44	3	Y
99	1KS18EC102	VARSHINI.B.M	24	14	3	Y	10	3	Y	10	6	3	Y	4	3	Y	25	5	3	Y	14	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	23	12	3	Y	14	3	Y	4	2.4	0	N	1.6	0	N	42	3	Y
100	1KS18EC103	VASANTH PAI.M	21	9	1	N	12	3	Y	10	6	3	Y	4	3	Y	26	6	3	Y	14	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	7	12	3	Y	7	0	N	4	2.4	0	N	1.6	0	N	34	2	N
101	1KS18EC104	VIJAY BABU K	23	14	3	Y	9	3	Y	9	5.4	3	Y	3.6	3	Y	27	6	3	Y	15	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	20	12	3	Y	10	2	N	4	2.4	0	N	1.6	0	N	36	3	Y

102	1KS18EC105	VINAY K	28	17	3	Y	11	3	Y	10	6	3	Y	4	3	Y	27	5	3	Y	16	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	19	12	3	Y	17	3	Y	4	2.4	0	N	1.6	0	N	32	1	N
103	1KS18EC106	VINAY S	26	16	3	Y	10	3	Y	10	6	3	Y	4	3	Y	19	4	3	Y	13	3	Y	2	0	N	10	2	3	Y	6	3	Y	2	3	Y	10	12	3	Y	2	0	N	4	2.4	0	N	1.6	0	N	44	3	Y
104	1KS18EC108	VISHAL MADHUSUDAN	26	16	3	Y	10	3	Y	10	6	3	Y	4	3	Y	26	5	3	Y	15	3	Y	6	3	Y	10	2	3	Y	6	3	Y	2	3	Y	13	12	3	Y	11	3	Y	4	2.4	0	N	1.6	0	N	45	3	Y
105	1KS18EC109	VISHWAS P	22	14	3	Y	8	3	Y	10	6	3	Y	4	3	Y	15	4	3	Y	11	3	Y	0	0	N	10	2	3	Y	6	3	Y	2	3	Y	16	12	3	Y	16	3	Y	4	2.4	0	N	1.6	0	N	32	1	N
106	1KS18EC110	VIVEKGOWDA J	22	14	3	Y	8	3	Y	7	4.2	3	Y	2.8	3	Y	26	6	3	Y	15	3	Y	5	3	Y	10	2	3	Y	6	3	Y	2	3	Y	20	12	3	Y	10	2	N	4	2.4	0	N	1.6	0	N	40	3	Y
107	1KS18EC111	VRINDHA SHAM BHATT	27	16	3	Y	11	3	Y	9	5.4	3	Y	3.6	3	Y	28	5	3	Y	18	3	Y	5	3	Y	10	2	3	Y	6	3	Y	2	3	Y	25	12	3	Y	14	3	Y	7	4.2	3	Y	2.8	3	Y	51	3	Y
108	1KS19EC400	HEMANTHA V	20	14	3	Y	6	1	N	10	6	3	Y	4	3	Y	14	5	3	Y	9	1	N	0	0	N	8	1.6	3	Y	4.8	3	Y	1.6	3	Y	17	12	3	Y	12	3	Y	4	2.4	0	N	1.6	0	N	27	0	N
109	1KS19EC401	KARTHIK B P	14	9	1	N	5	0	N	9	5.4	3	Y	3.6	3	Y	18	6	3	Y	9	1	N	3	1	N	8	1.6	3	Y	4.8	3	Y	1.6	3	Y	15	12	3	Y	15	3	Y	4	2.4	0	N	1.6	0	N	22	0	N
110	1KS19EC402	KRISHNA PRASAD D	24	16	3	Y	8	3	Y	10	6	3	Y	4	3	Y	16	5	3	Y	9	1	N	2	0	N	8	1.6	3	Y	4.8	3	Y	1.6	3	Y	10	12	3	Y	4	0	N	4	2.4	0	N	1.6	0	N	36	3	Y
111	1KS19EC403	NAVEEN G	18	9	1	N	9	3	Y	10	6	3	Y	4	3	Y	13	5	3	Y	8	0	N	0	0	N	8	1.6	3	Y	4.8	3	Y	1.6	3	Y	20	12	3	Y	13	3	Y	4	2.4	0	N	1.6	0	N	35	2	N
112	1KS19EC405	PRUTHVI DINESH	17	11	3	Y	6	1	N	10	6	3	Y	4	3	Y	13	2	0	N	11	3	Y	0	0	N	10	2	3	Y	6	3	Y	2	3	Y	15	12	3	Y	12	3	Y	10	6.0	3	Y	4	3	Y	36	3	Y
113	1KS19EC406	RAGHOTHAM C G	17	11	3	Y	6	1	N	9	5.4	3	Y	3.6	3	Y	19	5	3	Y	11	3	Y	3	1	N	10	2	3	Y	6	3	Y	2	3	Y	16	12	3	Y	12	3	Y	10	6.0	3	Y	4	3	Y	22	0	N
114	1KS19EC407	SADHANA M	10	10	2	N	0	0	N	10	6	3	Y	4	3	Y	12	4	3	Y	3	0	N	5	3	Y	8	1.6	3	Y	4.8	3	Y	1.6	3	Y	9	12	3	Y	6	0	N	8	4.8	3	Y	3.2	3	Y	21	0	N
115	1KS19EC408	SINDHU G	21	13	3	Y	8	3	Y	8	4.8	3	Y	3.2	3	Y	10	4	3	Y	0	0	N	6	3	Y	8	1.6	3	Y	4.8	3	Y	1.6	3	Y	14	12	3	Y	8	0	N	4	2.4	0	N	1.6	0	N	35	2	N
116	1KS19EC409	VARSHA M S	22	15	3	Y	7	2	N	8	4.8	3	Y	3.2	3	Y	15	4	3	Y	11	3	Y	0	0	N	8	1.6	3	Y	4.8	3	Y	1.6	3	Y	8	12	3	Y	8	0	N	4	2.4	0	N	1.6	0	N	28	0	N
	CO				CO1			CO2				CO1			CO2				CO2			CO3			CO4				CO2			CO3			CO4				CO4			CO5				CO4			CO5			SEE	
	Number of Not Attempted(NA)					0			0				0			0				0			0			0				0			0			0				0			0				0			0			0
	Score index & No of Y's				0.0	107		2.61	92			3.0	116		3.0	116			2.3	55		2.3	84			73			2.9	112		2.9	112		2.9	112			3	116		2.3	82			2.0	77		2.0	77		2.4	83
	No. of N's					9			24				0			0				26			32			43				4			4			4				0			34				39			39			33
	CO Attainment					92			79				100			100				68			72			63				97			97			97				100			71				66			66			72
	Level					3			3				3			3				3			3							3			3							3			3				3			3			3

CO	CIE	SEE	DIRECT	Leve	ATT	Fina
CO1	96.12	72	83.84	3	3	3
CO2	85.94	72	78.75	3	3	3
CO3	84.48	72	78.02	3	3	3
CO4	81.47	72	76.51	3	3	3
CO5	68.53	72	70.04	3	3	3
AVERAGE						3.0

CO	Score
CO1	1.22
CO2	2.43
CO3	2.38
CO4	2.72
CO5	2.38

Co-Po Mapping Table

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	_	_	2	_	_	_	2	2	_	_	3	2
CO2	3	2	_	_	2	_	_	_	2	2	_	_	3	2
CO3	3	2	_	_	2	_	_	_	2	2	_	_	3	2
CO4	3	2	_	_	2	_	_	_	2	2	_	_	3	2
CO5	3	2	_	_	2	_	_	_	2	2	_	_	3	2
AVG	3.0	2.0			2.0				2.00	2.00			3.0	2.0

PO Attainment

CO'S	CO Attainment	CO RES	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3.00	Y	3	2			2.0				2.0	2.0			3	2
CO2	3.00	Y	3	2			2.0				2.0	2.0			3	2
CO3	3.00	Y	3	2			2.0				2.0	2.0			3	2
CO4	3.00	Y	3	2			2.0				2.0	2.0			3	2
CO5	3.00	Y	3	2			2.0				2.0	2.0			3	2
Average			3	2			**2**				**2**	**2**			3	2