FILE

Estd : 1986

||Jai Sri Gurudev||

Sri Adichunchanagiri Shikshana Trust (R.)

SJC INSTITUTE OF TECHNOLOGY

An Autonomous Institution under VTU from 2024-25

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DR.S.BHARGAVI

PROFESSOR

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

FEBRUARY 2025 – MAY 2025

(EVEN SEM-25)

COURSE FILE

COURSE FILE:

S.No.	Checklist
1	Syllabus, Lesson plan (Course Outcomes, CO-PO & PSO Mapping, Schedules)
2	Question Bank, Assignments/Tutorials, Quiz Questions
3	Handwritten Notes/Materials, PPTs, Videos
4	Internal Test Question Papers, Scheme of Evaluation
5	Previous Year Exam Question Papers
6	Data Sheets of Marks entry (IA & Exams), Attainment of COs, POs and PSOs, Analysis on Gaps, Action Plans

Multimedia Communication		Semester	6
Course Code	BCE613A	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	3:0:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	
Examination type (SEE)	Theory		

Course objectives:

- Gain fundamental knowledge in understanding the basics of different multimedia Networks and applications.
- Understand digitization principle techniques required to analyze different media Types.
- Analyze compression techniques required to compress text and image and gain Knowledge of DMS.
- Analyze compression techniques required to compress audio and video.
- Gain fundamental knowledge about multimedia communication across different Networks.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the functioning of various techniques.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOTS(Higher-order Thinking)questions in the class, which promotes critical thinking
5. Topics will be introduced in multiple representations.
6. Discuss how every concept can be applied to the real world-and when that's possible, it helps improve the students' understanding.

Module-1

Multimedia Communications: Introduction, Multimedia information representation, Multimedia networks, multimedia applications, Application and networking terminology.
(Chapter 1 of Text1)

Module-2

Information Representation: Introduction, Digitization principles, Text, Images, Audio and Video. (Chapter 2 of Text 1

Module-3

Text and Image Compression: Introduction, Compression principles, text compression, image Compression. (Chapter 3 of Text 1)

Module-4

Audio and video compression: Introduction, Audio compression, video compression, video compression principles, video compression. (Chapter 4 of Text 1)

Module-5

Multimedia Information Networks: Introduction, LANs, Ethernet, Token ring, Bridges, FDDI (Chapter 8.1 to8.6of Text 1).

Course outcome (Course Skill Set)

At the end of the course, the student will be able to :

1. Understand the basics of multimedia Communication and applications
2. Analyze media types to represent them in digital form.
3. Apply the compression techniques on text, images, audio and video.
4. Understand multimedia information networks.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50) and for the SEE minimum passing mark is 35% of the maximum marks (18 out of 50 marks). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

- For the Assignment component of the CIE, there are 25 marks and for the Internal Assessment Test component, there are 25 marks.
- The first test will be administered after 40-50% of the syllabus has been covered, and the second test will be administered after 85-90% of the syllabus has been covered
- Any two assignment methods mentioned in the 22OB2.4, if an assignment is project-based then only one assignment for the course shall be planned. The teacher should not conduct two assignments at the end of the semester if two assignments are planned.
- For the course, CIE marks will be based on a scaled-down sum of two tests and other methods of assessment.

Internal Assessment Test question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

Semester-End Examination:

Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the course (**duration 03 hours).**

1. The question paper will have ten questions. Each question is set for 20 marks.
2. There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), **should have a mix of topics** under that module.
3. The students have to answer 5 full questions, selecting one full question from each module.
4. Marks scored shall be proportionally reduced to 50 marks

Suggested Learning Resources:

Textbooks:

Multimedia Communications –Fred Halsall, Pearson Education,2001,ISBN-978813170994

ReferenceBooks:

1. Multimedia: Computing, Communications and Applications- Raif Steinmetz, Klara Nahrstedt, Pearson Education, 2002, ISBN-978817758
2. FundamentalsofMultimedia–Ze-NianLi,MarkSDrew,andJiangchuanLiu.

Web links and Video Lectures (e-Resources):

• Implementation of compression algorithms using MATLAB/any open source tools (Python, Scilab, etc.)
Activity Based Learning (Suggested Activities in Class)/ Practical Based learning • https://www.slideshare.net NPTEL Video Lectures • https://archive.nptel.ac.in/courses/117/105/117105083/ • Multimedia Computing lecture: Communications & Networking –You Tube

27/01/2025.
Prof. & Head
Dept. of Electronics & Communication,
S.J.C. Institute of Technology
Chickballapur-562101

03.10.2022

VLSI Design and Testing LAB			
Course Code	**BECL606**	CIE Marks	50
Teaching Hours/Week (L: T: P: S)	0:0:2:0	SEE Marks	50
Credits	1	Exam Hours	3

Course objectives:

This laboratory course enables students to

- Design, model, simulate and verify digital circuits.
- Perform ASIC design flow and understand the process of synthesis, synthesis constraints andevaluating the synthesis reports to obtain optimum gate level netlist.
- Perform RTL-GDSII flow and understand the ASIC Design flow.

Sl.No.	Experiments
1	Design a 4-Bit Adder • Write a Verilog description • Verify the Functionality using Test-bench • Synthesize the design by setting proper constraints and generate the gate level netlist. From the report generated identify Critical path, Maximum delay, Total number of cells, Power requirement and Total area required
2	4-Bit Shift and add Multiplier • Write Verilog Code • Verify the Functionality using Test-bench • Synthesize the design by setting proper constraints and obtain the gate level netlist. From the report generated identify Critical path, Maximum delay, Total number of cells, Power requirement and Total area required
3	32-Bit ALU Supporting 4-Logical and 4-Arithmetic operations, using case and if statement for ALUBehavioral Modeling • Write Verilog description • Verify functionality using Test-bench • Synthesize the design targeting suitable library and by setting area and timing constraints • Tabulate the Area, Power and Delay for the Synthesized netlist • Identify Critical path
4	Flip-Flops (D,SR and JK) • Write the Verilog description • Verify the Functionality using Test-bench • Synthesize the design by setting proper constraints and obtain the gate level netlist. From the report gate level netlist identify Critical path, Maximum delay, Total number of cells, Power requirement and Total area required. • Verify the functionality using Gate level netlist and compare the results at RTL and gate level netlist.
5	Four bit Synchronous MOD-N counter with Asynchronous reset • Write Verilog Code • Verify functionality using Test-bench • Synthesize the design targeting suitable library and by setting area and timing constraints • Tabulate the Area, Power and Delay for the Synthesized netlist Identify Critical path

	• Verify the functionality using Gate level netlist and compare the results at RTL and gate level netlist.
6	a) Construct the schematic of CMOS inverter with load capacitance of 0.1pF and set the widths of inverter with Wn = Wp, Wn = 2Wp, Wn = Wp/2 and length at selected technology. Carry out the following: i. Set the input signal to a pulse with rise time, fall time of 1ns and pulse width of 10ns and the time period of 20ns and plot the input voltage and output voltage of designed inverter? ii. From the simulation result compute tpHL, tpLH and td for all three geometrical settings of width? iii. Tabulate the results of delay and find the best geometry for minimum delay for CMOS inverter. b) Draw layout of inverter with Wp/Wn = 40/20, use optimum layout methods. Verify for DRC and LVS, extract parasitic and perform post layout simulations, compare the results with pre layout simulations and compare the results.
7	Capture the schematic of 2-input CMOS NOR gate having similar delay as that of CMOS inverter computed in experiment above. Verify the functionality of NOR gate and also find out the delay td for all four possible combinations of input vectors. Table the results. Increasethe drive strength to 2X and 4X and tabulate the results.

8	Construct the schematic of the Boolean Expression $Y = \overline{AB+CD+E}$ using CMOS Logic. Verify the functionality of the expression find out the delay td for some combination of input vectors. Tabulate the results.
9	a) Construct the schematic of Common Source Amplifier with PMOS Current Mirror Load and find its transient response and AC response? Measure the Unit Gain Bandwidth (UGB), amplification factor by varying transistor geometries, study the impact of variation in width to UGB. b) Draw Layout of common source amplifier, use optimum layout methods. Verify for DRC & LVS, extract parasitic and perform post layout simulations, compare the results with pre-layout simulations. Record the observations.
10	a) Construct the schematic of two-stage operational amplifier and measure the following: i. Unity gain Bandwidth ii. dB Bandwidth iii. Gain Margin and phase margin with and without coupling capacitance iv. Use the op-amp in the inverting and non-inverting configuration and verify its functionality. v. Study the UGB, 3dB bandwidth, gain and power requirement in op-amp by varying the stage wise transistor geometries and record the observations. b) Draw layout of two-stage operational amplifier with minimum transistor width set to 300 (in 180/90/45 nm technology), choose appropriate transistor geometries as per the results obtained in part a. Use optimum layout methods. Verify for DRC and LVS, extract parasitic and perform post layout simulations, compare the results with pre-layout simulations and perform the comparative analysis.
	Demonstration Experiments (For CIE)

03.10.2022

11	UART • Write Verilog description • Verify the Functionality using Test-bench • Synthesize the design targeting suitable library and by setting area and timing constraints • Tabulate the Area, Power and Delay for the Synthesized netlist, Identify Critical path

12	Design and characterize 6T binary SRAM cell and measure the following: • Read Time, Write Time, SNM, Power • Draw Layout of 6T SRAM, use optimum layout methods. Verify for DRC & LVS, extract parasitic and perform post layout simulations, compare the results with pre-layout simulations. Record theobservations.

Course outcomes (Course Skill Set):

On the completion of this laboratory course, the students will be able to:

1. Design and simulate combinational and sequential digital circuits using Verilog HDL.
2. Understand the synthesis process of digital circuits using EDA tool.
3. Perform ASIC design flow and understand the process of synthesis, synthesis constraints andevaluating the synthesis reports to obtain optimum gate level netlist.
4. Design and simulate basic CMOS circuits like inverter, NOR gate and any Boolean expression .
5. Perform RTL_GDSII flow and understand the stages in ASIC design.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks). A student shallbe deemed to have satisfied the academic requirements and earned the credits allotted to each course. The student has to secure not less than 35% (18 Marks out of 50) in the semester-end examination (SEE).

Continuous Internal Evaluation (CIE):

CIE marks for the practical course is **50 Marks.**

The split-up of CIE marks for record/ journal and test are in the ratio **60:40.**

- Each experiment to be evaluated for conduction with observation sheet and record write-up. Rubrics for the evaluation of the journal/write-up for hardware/software experiments designed by the faculty who is handling the laboratory session and is made known to students at the beginning of thepractical session.
- Record should contain all the specified experiments in the syllabus and each experiment write-up willbe evaluated for 10 marks.
- Total marks scored by the students are scaled downed to 30 marks (60% of maximum marks).
- Weightage to be given for neatness and submission of record/write-up on time.
- Department shall conduct 02 tests for 100 marks, the first test shall be conducted after the 8th weekof the semester and the second test shall be conducted after the 14th week of the semester.
- In each test, test write-up, conduction of experiment, acceptable result, and procedural knowledge will carry a weightage of 60% and the rest 40% for viva-voce.
- The suitable rubrics can be designed to evaluate each student's performance and learning ability. Rubrics suggested in Annexure-II of Regulation book
- The average of 02 tests is scaled down to **20 marks** (40% of the maximum marks).

The Sum of scaled-down marks scored in the report write-up/journal and average marks of two tests is the total CIE marks scored by the student.

03.10.2022

Semester End Evaluation (SEE):
SEE marks for the practical course is 50 Marks.
SEE shall be conducted jointly by the two examiners of the same institute, examiners are appointed by the University
All laboratory experiments are to be included for practical examination. (Rubrics) Breakup of marks and the instructions printed on the cover page of the answer script to be strictly adhered to by the examiners. **OR** based on the course requirement evaluation rubrics shall be

21/01/25

Prof. & Head
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SJC INSTITUTE OF TECHNOLOGY

Chickballapur – 562 101

Estd: 1986

Department of Electronics And Communication Engineering

LESSON PLAN

SUBJECT TITLE	**MULTIMEDIA COMMUNICATION**		
SUBJECT TYPE	**ELECTIVE**		
SUBJECT CODE	**BCE613A**		
ACADEMIC YEAR	**2025 (EVEN SEM)**	**BATCH**	**2022-2026**
SCHEME	**2022**		
SEMESTER & SECTION	**6th A, B & C**		
IA MARKS	**50**	***EXAM MARKS***	**50**
NUMBER OF LECTURE HOURs/WEEK	**4**	***TOTAL NUMBER OF LECTURE HOURS***	**40**
FACULTY NAME	**Dr. S. Bhargavi, Dr. Bhaskar S, Prof. Anil Kumar R**	***NO. OF TIMES HANDLED***	**Second Time**

COURSE LEARNING OBJECTIVES: This course will enable students to

1. Gain fundamental knowledge in understanding the basics of different multimedia Networks and applications.
2. Understand digitization principle techniques required to analyze different media Types.
3. Analyze compression techniques required to compress text and image and gain Knowledge of DMS.
4. Analyze compression techniques required to compress audio and video.
5. Gain fundamental knowledge about multimedia communication across different Networks.

Course Outcomes: At the end of this course, students are able to:

CO1	Interpret the concepts of multimedia communication, networking and its applications.
CO2	Apply digitization techniques to represent different types of media.
CO3	Compute compression ratios, bandwidth requirements and storage capacity for multimedia data.
CO4	Analyze various compression techniques for text, images, audio and video.
CO5	Examine multimedia concepts and demonstrate media compression using Spyder Python IDE.

COURSE OUTCOMES	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2				1						1	3	
CO2	3	2	1									2	2	
CO3	3	3	2	1			1						2	
CO4	3	3	3	1	2			1	2			2	2	2
CO5	3	3	2	2	3	1		1	3	2	1	1	2	2
AVG	3	2.6	2.0	1.3	2.5	1	1	1	2.5	2	1	1.5	2.2	2.0

CO-PO-PSO MAPPING JUSTIFICATION

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	Justification
1.Interpret the concepts of multimedia communication, networking and its applications.	3	2				1						1	3		**PO1:** Strong foundational knowledge is needed to interpret multimedia and network concepts. **PO2:** Moderate level of problem analysis involved in understanding application domains. **PO6:** Awareness of societal and environmental relevance of multimedia applications. **PO12:** Lifelong learning to keep up with evolving multimedia technologies. **PSO1:** Understanding multimedia communication lays a foundation for analyzing and interpreting ECE systems.
2. Apply digitization techniques to represent different types of media.	3	2	1									2	2		**PO1:** Requires strong engineering fundamentals in signal processing. **PO2:** Medium level of analytical skills to digitize different media types. **PO3:** Basic design knowledge to choose proper sampling and quantization methods. **PO12:** Keeping updated with new digitization technologies. **PSO1:** Applying digitization techniques reflects use of core ECE knowledge in signal representation.

3: Compute compression ratios, bandwidth requirements and storage capacity for multimedia data.	3	3	2	1			1						2		**PO1:** Fundamental maths and science used in calculating bandwidth/storage. **PO2:** High-level analytical thinking for solving engineering problems. **PO3:** Involves formulation of solutions using compression and storage parameters. **PO4:** Some investigation and analysis of bandwidth vs. storage constraints. **PO7:** Basic understanding of sustainability through efficient resource usage. **PSO1:** Computation of multimedia parameters needs core concepts and analytical problem-solving.
4. Analyze various compression techniques for text, images, audio and video.	3	3	3	1	2			1	2			2	2	2	**PO1-3:** Strong theoretical and practical understanding is needed for comparative analysis. **PO4:** Minor investigation and performance evaluation of compression methods. **PO5:** Use of modern tools and algorithms in evaluating multimedia formats. **PO7:** Minor contribution to sustainable use of data transmission/storage. **PO9:** Team-based analysis or discussions in labs/projects. **PO12:** Continuous upskilling due to rapid advancements.

															PSO1-2: Analyzing compression techniques align with system design skills and modern tool application.
5. Examine multimedia concepts and demonstrate media compression using Spyder Python IDE.	3	3	2	2	3	1		1	3	2	1	1	2	2	**PO1-3:** Strong engineering and analytical knowledge to implement compression programs. **PO4:** Formulation, implementation, and analysis of experiments. **PO5:** Use of Spyder IDE and modern compression tools. **PO6:** Awareness of applications impacting society (e.g., streaming). **PO8:** Basic ethics in using open-source tools or respecting copyright. **PO9:** Effective team collaboration in project/demo tasks. **PO10:** Communication of results and procedures. **PO11:** Understanding project and financial feasibility of solutions. **PO12:** Updating programming and tool skills regularly. **PSO1-2:** Demonstrating compression via Python IDE reflects tool usage, software skills, and teamwork.

21/03/2025
Signature of the Course Faculty

21/03/2025
Signature of the Reviewer

21/03/25
Signature of the HOD

Prof. & Head
Dept. of Electronics & Communication
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Chickballapur-562101

DELIVERY PLAN WITH DETAILS

MODULE – 1: MULTIMEDIA COMMUNICATIONS							
Lecture #	Topic	Mode of Delivery (PlsTick √)				Date of Delivery	COs Covered
		1	2	3	4		
1	Introduction		√	√		19.02.25	CO1
2	Multimedia information representation	√	√			19.02.25	CO1
3	Multimedia networks: Telephone networks, Data networks		√			20.02.25	CO1
4	Multimedia networks: Broadcast television networks, Integrated services digital networks, Broadband multiservice networks	√	√			20.02.25	CO1
5	Multimedia applications: Speech, Image, Text, Text and Images, Speech and Video		√			03.03.25	CO1
6	Multimedia applications: Multimedia, Interactive applications over the Internet, Entertainment applications		√	√		04.03.25	CO1
7	Application and networking terminology: Media types, Communication modes, Network types, Multipoint conferencing	√	√			05.03.25	CO1
8	Application and networking terminology: Network QoS, Application QoS	√	√			06.03.25	CO1
	THINK PAIR SHARE		√			05.03.25	CO1
Text book: Multimedia Communications- Fred Halsall, Pearson Education, 2001, ISBN -978813170994 (Chapter 1)							
Signatures	**Faculty:** 08/03/2025	**#HOURS**				**Allotted**	**Taken**
	HoD: 08/03/25					08	08
Remarks	Completed as per lesson plan						

MODULE – 2: INFORMATION REPRESENTATION							
Lecture #	Topic	Mode of Delivery (PlsTick √)				Date of Delivery	COs Covered
		1	2	3	4		
1	Introduction		√			10.03.25	CO2
2	Digitization principles	√	√			11.03.25	CO2
3	Text representation	√	√			12.03.25	CO2
4	Text and Image representation	√	√			13.03.25	CO2
5	Image representation: Digitized pictures	√	√			17.03.25	CO2
6	Audio representation		√	√		17.03.25	CO2, CO3
7	Video representation		√			18.03.25	CO2, CO3
8	Video representation: HDTV formats		√			19.03.25	CO2, CO3
	QUIZ		√			27.03.25	CO2

Text book: Multimedia Communications- Fred Halsall, Pearson Education, 2001, ISBN -978813170994 (Chapter 2)				
Signatures	Faculty: 02/04/2025	#HOURS	Allotted	Taken
	HoD: 02/04/25		08	08
Remarks	Completed the Module as per Plan			

MODULE – 3: TEXT AND IMAGE COMPRESSION

Lecture #	Topic	Mode of Delivery (PlsTick √)				Date of Delivery	COs Covered
		1	2	3	4		
1	Introduction		√			27.03.25	CO4
2	Compression principles	√	√			29.03.25	CO4
3	Compression principles: Source Encoding	√	√			29.03.25	CO4
4	Text compression		√	√		01.04.25	CO4
5	Text compression: Dynamic Huffman coding	√		√		02.04.25	CO3, CO4
6	Text compression: Arithmetic coding	√	√			03.04.25	CO3, CO4
7	Image Compression	√		√		03.04.25	CO3, CO4
8	Image Compression: JPEG	√		√		05.04.25	CO4
	TAPPS	√	√			10.04.25	CO3, CO4

Text book: Multimedia Communications- Fred Halsall, Pearson Education, 2001, ISBN -978813170994 (Chapter 3)				
Signatures	Faculty: 12/04/2025	#HOURS	Allotted	Taken
	HoD: 12/04/25		08	09
Remarks	Completed the module as per Plan			

MODULE – 4: AUDIO AND VIDEO COMPRESSION

Lecture #	Topic	Mode of Delivery (PlsTick √)				Date of Delivery	COs Covered
		1	2	3	4		
1	Introduction		√			06.04.25	CO4
2	Audio compression: Differential pulse code modulation, Adaptive differential PCM	√	√			07.04.25	CO4
3	Audio compression: Adaptive predictive coding, Linear predictive coding	√	√			08.04.25	CO4
4	Audio compression: Code-excited LPC, Perceptual Coding: MPEG audio Coders, Dolby audio coders	√	√			09.04.25	CO4

5	Video compression: H.261		√			24.04.25	CO4
6	Video compression: H.263		√	√		25.04.25	CO4
7	Video compression principles		√			26.04.25	CO4
8	Video compression: MPEG	√	√	√		12.05.25	CO3, CO4
	FLIPPED CLASS	√	√			12.05.25	CO4

Text book: Multimedia Communications- Fred Halsall, Pearson Education, 2001, ISBN -978813170994 (Chapter 4)

Signatures	**Faculty:** 13/05/2025	**#HOURS**	**Allotted**	**Taken**
	HoD: 13/05/25		08	08
Remarks	Completed the Module as per plan			

MODULE – 5: MULTIMEDIA INFORMATION NETWORKS

Lecture #	Topic	Mode of Delivery (PlsTick √)				Date of Delivery	COs Covered
		1	2	3	4		
1	Introduction		√			05.05.25	CO1
2	LANs		√			05.05.25	CO1
3	Ethernet	√	√	√		06.05.25	CO1
4	Ethernet Frame format and operational parameters		√	√		13.05.25	CO1
5	Token ring	√	√			12.05.25	CO1
6	Token ring Frame transmission & reception		√			15.05.25	CO1
7	Bridges	√	√			19.05.25	CO1
8	FDDI	√	√			19.05.25	CO1
	ROUND ROBIN DISCUSSION	√	√			22.05.25	CO1

Text book: Multimedia Communications- Fred Halsall, Pearson Education, 2001, ISBN -978813170994 (Chapter 8)

Signatures	**Faculty:** 22/05/2025	**#HOURS**	**Allotted**	**Taken**
	HoD: 22/05/25		08	08
Remarks	Completed 5th Module as per plan			

Text Books

1. Multimedia Communications- Fred Halsall, Pearson Education, 2001, ISBN -978813170994

Reference Books:

1. Multimedia: Computing, Communications and Applications- Raif Steinmetz, Klara Nahrstedt, Pearson Education, 2002, ISBN-978817758
2. Fundamentals of Multimedia – Ze-Nian Li, Mark S Drew, and Jiangchuan Liu.

(Note: Mode of Delivery: 1:Black Board 2:PPT 3:Video 4:Demo/Hands-on)

INTERNAL/ASSIGNMENT/QUIZ SCHEDULE

TEST and QUIZ		COs and Portions Covered		ASSIGNMENT	
Test# and Quiz#	DATE	CO	Modules	Assignment#	DATE
T1 & Q1	25.03.25	1, 2, 3	1, 2 (HALF)	A1	08.03.25
T2 & Q2	22.04.25	2, 3, 4	2 (HALF), 3	A2	29.03.25
T3 & Q3	27.05.25	1, 3, 4	4, 5	A3	12.04.25
				A4	07.05.25
				A5	23.05.25

SUMMARY

Signatures With Date	Faculty: 04/06/2025	Total #HOURS	Allotted	Taken
	HoD: 04/06/25		40	41
Remarks	Completed 100% Syllabus. On time			

ENCLOSURES

1. Syllabus
2. CO Attainment
3. Gap Analysis
4. Special lectures/talks arranged if any

Feedback by PAC
CO2 & CO4 are Not Achieved Conduct suitable activities to Cover CO2 & CO4

Faculty | Course coordinator | PAC | HOD

|| Jai Sri Gurudev ||

SJC Institute of Technology, Chickballapur

Department of Electronics and Communication Engineering

CO-PO and CO-PSO Mapping

Name of the Faculty: Dr. S. Bhargavi, Dr. Bhaskar S, Prof. Anil Kumar R

Course: Multimedia Communication **Course code:** BCE613A

Semester: VI

Course Objectives:

This course will enable students to

- Gain fundamental knowledge in understanding the basics of different multimedia Networks and applications.
- Understand digitization principle techniques required to analyze different media Types.
- Analyze compression techniques required to compress text and image and gain Knowledge of DMS.
- Analyze compression techniques required to compress audio and video.
- Gain fundamental knowledge about multimedia communication across different Networks.

Course Outcomes:

After a successful completion of the course, the student will be able to:

CO1	Interpret the concepts of multimedia communication, networking and its applications.
CO2	Apply digitization techniques to represent different types of media.
CO3	Compute compression ratios, bandwidth requirements and storage capacity for multimedia data.
CO4	Analyze various compression techniques for text, images, audio and video.
CO5	Examine multimedia concepts and demonstrate media compression using Spyder Python IDE.

	CO-PO Mapping												CO-PSO Mapping	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2				1						1	3	
CO2	3	2	1									2	2	
CO3	3	3	2	1			1						2	
CO4	3	3	3	1	2			1	2			2	2	2
CO5	3	3	2	2	3	1		1	3	2	1	1	2	2
AVG	3	2.6	2.0	1.3	2.5	1	1	1	2.5	2	1	1.5	2.2	2.0
1: Slightly 2: Moderately 3: Substantially														

21/03/2025
Signature of the Course Faculty

Vishalak 21/03/25
Signature of the Reviewer

|| Jai Sri Gurudev ||
Sri Adichunchanagiri Shikshana Trust ®

SJC INSTITUTE OF TECHNOLOGY

Estd: 1986

Chickballapur – 562 101

Department of Electronics and Communication Engineering

QUESTION BANK

SUBJECT TITLE	**MULTIMEDIA COMMUNICATION**		
SUBJECT TYPE	**ELECTIVE**		
SUBJECT CODE	**BCE613A**		
ACADEMIC YEAR	**2025 (EVEN SEM)**	**BATCH**	**2022-2026**
SCHEME	**2022**		
SEMESTER	**VI**		
FACULTY NAME and DESIGNATION	**Dr. S.BHARGAVI / Dr. BHASKAR S/ Prof. ANIL KUMAR R** **PROFESSOR / PROFESSOR / ASST. PROFESSOR**		

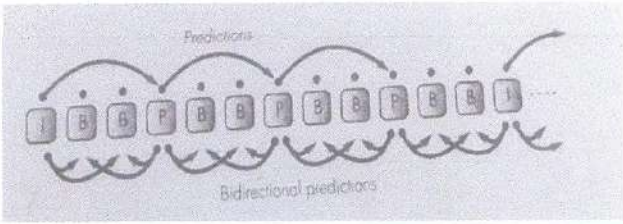
Module -1			
Q. No.	***Questions***	***Bloom's LL***	***COs***
1.	What is multimedia? State the basic form of representation of text, image, audio and video.	L1	CO1
2.	Define the different communication modes used for transformation of multimedia information. Give examples.	L1	CO1
3.	List the five basic of communication networks that are used to provide multimedia services.	L1	CO1
4.	Explain multipoint conferencing modes of operation with a diagram.	L2	CO1
5.	Illustrate multimedia data networks, telephone networks and broadcast television network using cable with relevant diagrams.	L2	CO1
6.	Explain the working principle of circuit-mode and packet-mode of operation of multimedia networks. List out salient features of each type of networks.	L2	CO1

7.	Solve for the propagation delay associated with the following communication channels given velocity of propagation for case i) and ii) as $2*10^8$ m/s and iii)$3*10^8$m/s i) a connection through a private telephone network of 1 km ii) a connection through a PSTN of 200 km iii) a connection over a satellite channel of 50000 km	L3	CO1
8.	A packet – switched network with a worst-case jitter of 10ms is to be used for a number of applications each of which involves a constant bit rate information stream. Apply multimedia network knowledge to find the minimum amount of memory that is required at the destination and a suitable packet size for each of the following bit rates. It can be assumed that the mean packet transfer rate of the network exceeds the equivalent input bit rate in each case.	L3	CO1
9.	With multimedia electronic mail when a message in number of different formats is sent – for example, speech –with –video, speech – only and text- normally the first version in output is text. Analyze the reason.	L4	CO1
10.	Discuss the term "application server classes". Include in your discussion how packets belonging to different classes are treated within the network.	L5	CO1

Module -2			
Q. No.	***Questions***	***Bloom's LL***	***COs***
1.	State the meaning of the following types of text: i) unformatted/plain text ii) formatted/rich text iii) hypertext	L1	CO2
2.	Define the aspect ratio of a display screen. Give two examples for current widely used screen sizes.	L1	CO2
3.	What is the difference between bitonal image and a continuous- tone image?	L1	CO2
4.	Explain audio/sound synthesizer with a neat diagram.	L2	CO2
5.	Illustrate the principle of operation of PCM speech codec with a block diagram. Also explain compressor and expander.	L2	CO2
6.	Summarize the image encoding and decoding methods with diagrams.	L2	CO2
7.	Identify the time taken to transmit the following digitized images at both 64Kbps and 1.5 Mbps: A 640x480x8 VGA compatible image A 1024x768x24 SVGA compatible image	L3	CO3

8.	Assuming the bandwidth of speech signal is from 50Hz to through 10 kHz and that of music signal is from 15 Hz to through 20 kHz. Choose the bit rate that is generated by the digitization procedure in each case assuming the Nyquist sampling rate is used, with 12 bits per sample for speech signal and 16 bits per sample for music signal.	L3	CO3
9.	Conclude why modifications to the received (broadcast) TV signal have to be made if the signal is to be displayed in a window of a computer monitor. Hence assuming the SIF format, derive the spatial resolution required with 525 - line and A 625 – line.	L4	CO3
10.	Show how the 7-bit ASCII character set can be extended to create additional characters and symbols with an example.	L5	CO2

Module -3			
Q. No.	***Questions***	***Bloom's LL***	***COs***
1.	Define the following terms: i) Prefix property ii) Entropy iii) Coding efficiency	L1	CO4
2.	List the compression principles and explain it briefly.	L1	CO4
3.	List the differences between lossy and lossless compression.	L1	CO4
4.	Explain with a neat diagram JPEG encoder.	L2	CO4
5.	Explain the principles of operation of LZW compression algorithm	L2	CO4
6.	Illustrate with an example the static and dynamic Huffman encoding.	L2	CO4
7.	Construct a code word for the string "went." comprising characters with probability of e=0.3, n=0.3, t=0.2, w=0.1, .=0.1 using arithmetic coding.	L3	CO3
8.	A series of messages is to be transmitted between computers over a PSTN. The messages comprise the characters A through H. The probability of each character is as follows: A and B=0.25 C and D=0.14 E, F, G and H=0.055. i) Make use of Shannon's formula to derive the minimum average number of bits/characters ii) Construct Huffman code tree and derive the code word set.	L3	CO3
9.	Conclude why differential encoding is used for the compression of DC coefficients in successive blocks. By means of an example set of coefficients, estimate the savings in bandwidth that are achieved.	L4	CO4
10.	Show how LZW compression algorithm is different from the LZ algorithm	L5	CO4

Module -4			
Q. No.	***Questions***	***Bloom's LL***	***COs***
1.	State the following relating to the CIF and QCIF formats of the H.261encoding standard. i) the horizontal and vertical resolution in pixels ii) the number of macroblocks per frame iii) the number of GOBs per frame and their identity.	L1	CO4
2.	Define DPCM & ADPCM.	L1	CO4
3.	What is the role of DCT and quantization in video compression?	L1	CO4
4.	Explain perceptual coding technique with diagram.	L2	CO4
5.	Summarize MPEG-4 coding principles with the help of a neat diagram.	L2	CO4
6.	Outline with a diagram H.263 error tracking.	L2	CO4
7.	A digitized video is to be compressed using the MPEG-1 standard. Assuming a frame sequence of IBBPBBPBBPBBI…. and average compression ratio of 10:1(I) 20:1(P) and 50:1(B), Solve for the average bit rate that is generated by the encoder for both the NTSC and PAL digitization formats.	L3	CO3
8.	An MPEG -1 system uses the frame sequence shown in figure i) Define the terms M and N and hence determine their values for the sequence shown in the figure. ii) Develop a suitable recorded sequence that ensures firstly, only two frames must be stored in the decoder and secondly, the required I- and/or P-frames are available to decode each P- and B-frame as they are received. 	L3	CO3
9.	Analyze how better sound quality can be obtained by using sub-band DPCM with the help of block diagram of the encoder and decoder.	L4	CO4
10.	Show how ADPCM scheme obtains improved performance over a DPCM.	L5	CO4

Module -5			
Q. No.	***Questions***	***Bloom's LL***	***COs***
1.	What is the meaning of the term "enterprise network"? Describe the factors that determine when such networks are created.	L1	CO1
2.	How a bridge different from a repeater? What are the advantages and disadvantages of each?	L1	CO1
3.	State the reason why classes inter-domain routing (CIDR) was introduced.	L1	CO1
4.	Outline CSMA/CD and principles of operation of token ring.	L2	CO1
5.	Summarize the LAN protocols.	L2	CO1
6.	Infer the operation of token ring network	L2	CO1
7.	Solve for the maximum obtainable throughput and the maximum access delay for the following three ring configurations. Assume a TTRT of 4 ms has been chosen for each configuration. i) 2km ring with 20 stations ii) 20km ring with 200 stations iii)100km ring with 500 stations	L3	CO3
8.	Assuming a signal prorogation delay in the fiber of 5μs per 1km, develop the latency of the following FDDI ring configurations in both time and assuming a usable bit rate of 100Mbps	L3	CO3
9.	Distinguish between a repeater hub and a switching hub.	L4	CO1
10.	Discuss the reasons behind the definition of IP version 6, IPv6/ IPng, including the main new features associated with it.	L5	CO1

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SJC INSTITUTE OF TECHNOLOGY

Estd: 1986

Chickballapur – 562 101

Department of Electronics And Communication

ASSIGNMENT

SUBJECT TITLE	MULTIMEDIA COMMUNICATION		
SUBJECT TYPE	ELECTIVE		
SUBJECT CODE	BCE613A		
ACADEMIC YEAR	2025 (EVEN SEM)	BATCH	2022-26
SCHEME	2022		
SEMESTER	VI		
FACULTY NAME and DESIGNATION	Dr. S.BHARGAVI / Dr. BHASKAR S/ Prof. ANIL KUMAR R PROFESSOR / PROFESSOR / ASST. PROFESSOR		

Module -1			
Q. No.	*Questions*	*Bloom's LL*	*COs*
1	Apply the concept of communication networks by listing five types used in multimedia services and explaining: i) Integrated Services Digital Network (ISDN) ii) Broadband Multi-Service Network, with relevant figures.	L3	CO1
2	Determine the propagation delay associated with the following communication channels i) a connection through a private telephone network of 1 km. ii) a connection through a PSTN of 500 km. iii) a connection over a satellite channel of 25000 km. Assume that the velocity of propagation of a signal is $3x10^8$ ms^{-1}.	L3	CO3
3	Derive the maximum block size that should be used over a channel which has a mean BER probability of 10^{-4} if the probability of a block containing an error and hence being discarded is to be 10^{-1}.	L3	CO3
4	Identify and explain the key parameters associated with Network & Application QoS.	L3	CO1
5	Analyze how a high-speed modem provides multiple services in addition to basic telephony.	L4	CO1
6	Show in the form of a diagram the networks and essential items of equipment that are used to send an email message from a PC user at home to (i) A PC attached to a site/campus LAN, (ii) A PC attached to an enterprise-wide private network/intranet.	L5	CO1

Module - 2			
Q. No.	***Questions***	***Bloom's LL***	***COs***
1	Design signal encoder and decoder and draw the associated waveforms.	L3	CO2
2	Why is the chrominance signal transmitted in the form of two color different signals? Identify the color difference signals associated with the NTSC and PAL system.	L3	CO2
3	Assuming the CD-DA standard is being used. Derive (i) The storage capacity of a CD-ROM to store 60 minutes of multimedia title. (ii) The time to transmit a 30sec portion of the title using a transmission channel of bit rate 64 kbps and 1.5 Mbps.	L3	CO3
4	Analyze the principles of Interlaced of scanning as used in most TV broadcast applications.	L4	CO2
5	Analyze the following digitization formats with the aid of a diagram: (i) 4:2:2 (ii) SIF (ii) CIF	L4	CO2
6	Assess how a digital image produced by a scanner or digital camera is captured and stored within the memory of a computer.	L5	CO2

Module - 3			
Q. No.	***Questions***	***Bloom's LL***	***COs***
1	Identify the five main stages associated with the baseline mode of operation of JPEG with the aid of a diagram and give a brief description of the role of each stage.	L3	CO4
2	Apply LZW algorithm to compress the following string: "ABABBABCABABBA"	L3	CO3
3	Make use of Static Huffman coding to encode the text: AAABBCD.	L3	CO3
4	Analyze the operation of arithmetic coding, consider the transmission of a message comprising a string of characters with probabilities as given below: e=0.3, n=0.3, t=0.2, w=0.1, .=0.1 The word needed to be transmitted is **'went.'**	L4	CO3
5	All the information relating to a compressed image/picture generated by the various stages in the JPEG encoder is encapsulated within a single frame in such a way that the decoder can modify the individual fields that are present. Show the structure of a frame in a diagram and describe the role of the main fields in each of the headers that are used.	L5	CO4

Module - 4			
Q. No.	***Questions***	***Bloom's LL***	***COs***
1	Select and delineate the operation of a DPCM signal encoder and decoder, providing brief explanation with the aid of a Schematic diagram. Include in your explanation the source of errors that can arise.	L3	CO4
2	Identify how higher levels of compression can be obtained by making the predictor coefficients associated with ADPCM adaptive.	L3	CO4
3	Apply perceptual coding to explain sensitivity of the ear, frequency masking and temporal masking.	L3	CO4
4	Analyze the principles on which LPC codes are based, hence with the aid of a schematic diagram of an LPC encoder and decoder.	L4	CO4
5	Assess how the compression algorithm used with MPEG-1 differs from that used in the H.261 standard.	L5	CO4

Module - 5			
Q. No.	***Questions***	***Bloom's LL***	***COs***
1	Identify the network design issues that directly affect the video transmission.	L3	CO1
2	Make use of layered compression to discuss Simulcast coder and layered coder.	L3	CO1
3	Two UTP hubs to which user stations are attached are each connected to a third hub by optical fiber cable in order to gain access to a server that is attached to the third hub. Derive the maximum length of optical fiber cable that can be used.	L3	CO1
4	Construct the flow diagrams to explain the transmission and reception procedures of a frame with a token ring LAN, include token hold timer.	L3	CO1
5	Analyze why 4B/5B encoding is used in FDDI LANs rather than Manchester encoding.	L4	CO1
6	Appraise the intricacies how distortion is measured in terms of quantization parameter in R(D) model by providing a suitable diagram.	L5	CO1

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Continuous Internal Evaluation (CIE) Question Paper- CBCS Scheme

||Jai Sri Gurudev||

SJC Institute of Technology

Department: Electronics And Communication Engineering

CIE: I

Course Name & Code: Multimedia Communication (BEC613A)

Semester: VI **Section:** A, B, C

Date: 25.03.2025 **Time:** 9.30 AM to 11.00 AM **Max Marks:** 50

Instructions: Answer one full question from each part

Q.NO.	Questions	M	CO	PO	RBTL
1	Explain i) Data Network ii) Broad band Multi service network with suitable figures.	10	1	1	L2
	OR				
2	Infer the main components of PSTN with the help of a diagram. Interpret how a high speed modem provides multiple services in addition to basic telephony.	10	1	1	L2
3	Define the term 'multimedia.' Explain the basic form of representation of text, images, audio and video. Discuss how multimedia communication technologies (like social media, video conferencing, and online streaming) impact society. What are the responsibilities of engineers in ensuring these technologies are accessible, safe, and beneficial to all?	10	1	1,6	L2
	OR				
4	Discuss how image-only interpersonal communication impacts engineering practices, addressing its societal implications. Summarize in brief the role of interactive applications over the internet.	10	1	1,6	L2
5	Explain with a neat diagram, the interactive television application for both cable and satellite network.	10	1	1	L2
	OR				
6	List and explain the communication modes available to transfer the information stream.	10	1	1	L2
7 (a)	Outline the working principle of circuit-mode and packet -mode of operation of multimedia networks with a neat diagram.	07	1	1	L2
(b)	Derive the maximum block size that should be used over a channel which has a mean BER probability of 10^{-4} if the probability of a block containing an error and hence being discarded is to be 10^{-1}.	03	3	1	L3
	OR				
8 (a)	Define Network QoS. Infer packet switched network parameters.	07	1	1	L2
(b)	Determine the propagation delay associated with the following communication channels i) a connection through a private telephone network of 1 km. ii) a connection through a PSTN of 200 km. iii) a connection over a satellite channel of 50000 km. Assume that the velocity of propagation of a signal in the case of i) and ii) is $2x10^8$ ms^{-1} and in the case of iii)$3x10^8$ ms^{-1}.	03	3	1	L3
9 (a)	Analyze how a digital image produced by a scanner or digital camera is captured and stored within the memory of a computer.	06	2	2	L4
(b)	Derive the time taken to transmit the following digitized images at both 64Kbps and 1.5 Mbps: i) A 640 x 480 x 8 VGA compatible images ii) A 1024 x7 68 x 24 SVGA compatible images	04	3	3	L3

	OR				
10 (a)	Define Aspect Ratio. Analyze the Raster-scan display architecture with a neat block diagram.	06	2	2	L4
(b)	Design the signal encoder and draw the associated waveform.	04	3	3	L3

MULTIPLE CHOICE QUESTIONS

Q.NO.	Questions	M	CO	PO	RBTL
1	The combination of text, graphics art, sound, animation and video delivered by computer or other electronic devices is called a) Multimedia b) Hyper media c) Visual media d) Digital Media	01	1	1	L1
2	How many basic types of communication network that are used to provide multimedia communication services? a) 3 b) 4 c) 5 d) 7	01	1	1	L1
3	ISDN Stands for a) Integrated Services Digital Network b) Information Sources Digital Network c) Integrated Sources Data Network d) Information Services Digital Network	01	1	1	L1
4	Each document comprises a linked set of pages and the linkages between the pages are known as a) Link pages b) References c) Hyperlinks d) Anchors	01	1	1	L1
5	A Circuit switched network is made up of set of switches connected by physical a) Links b) Media c) Nodes d) Frames	01	1	1	L1
6	This means that information flows in both directions but alternately. a) Simplex b) Half-Duplex c) Duplex d) Multicast	01	1	1	L1
7	The conversion of an analog signal into digital form is carried out using an electrical circuit known as a) Signal Encoder b) Signal Decoder c) Both (a) & (b) d) Signal Generator	01	2	1	L1
8	Nyquist rate is normally represented as a) Hz b) sps c) bps d) Both (a) & (b)	01	2	1	L1
9	Which converts the high-level language into a pixel-image form? a) SRGP b) TIFF c) GIF d) Both (a) & (b)	01	2	1	L1
10	Which is defined as number of bits/pixel? a) Aspect ratio b) Pixel depth c) Frame d) Refresh Rate	01	2	1	L1

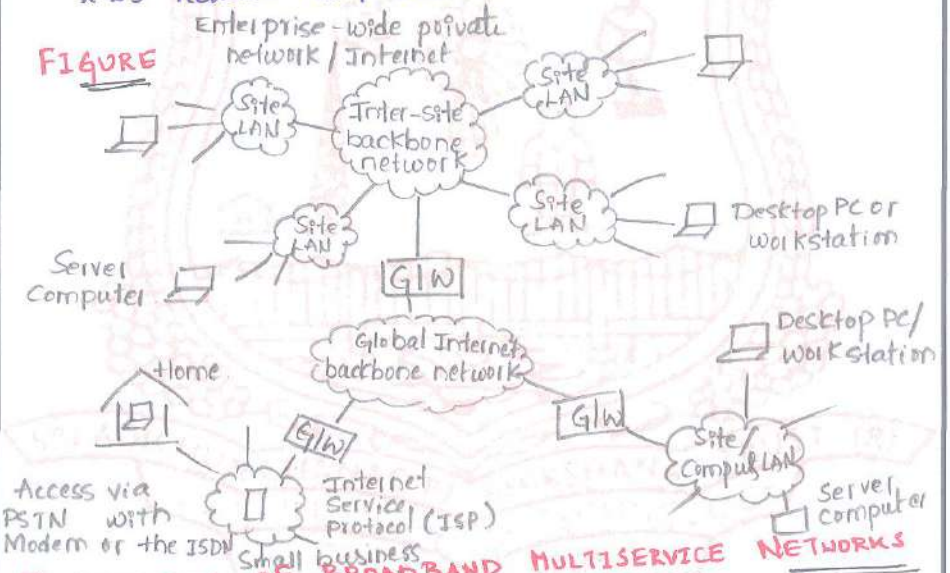
CO1	Interpret the concepts of multimedia communication, networking and its applications.
CO2	Apply digitization techniques to represent different types of media.
CO3	Compute compression ratios, bandwidth requirements and storage capacity for multimedia data.

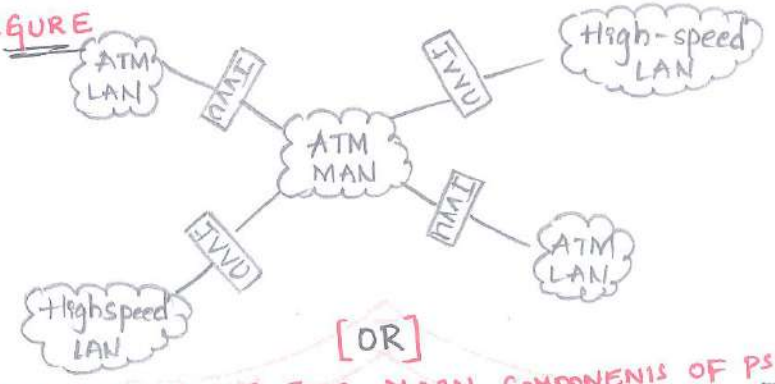
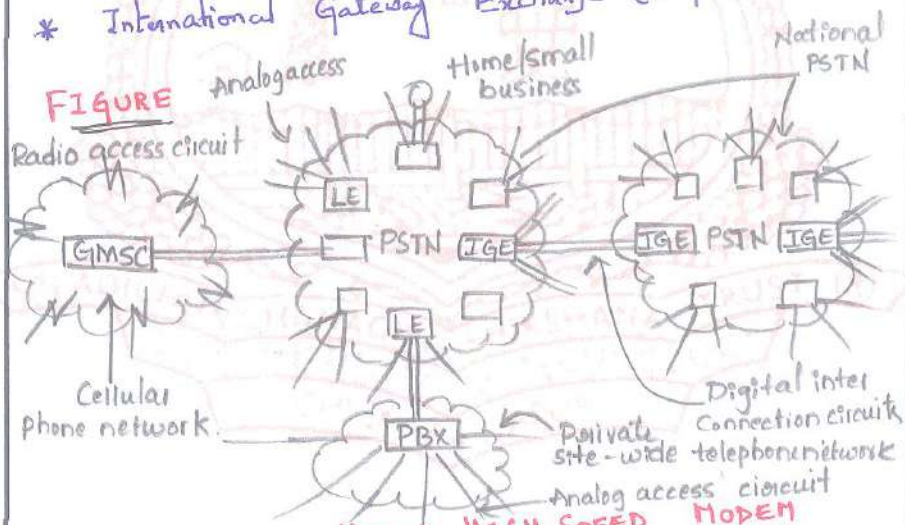
Course Coordinator Signature	Reviewer Signature	HOD Signature
21/03/2025 21/3/25	Vishalde 21/03/25	21/03/25

DEPARTMENT **ELECTRONICS AND COMMUNICATION ENENGINEERING**

Scheme & Solutions

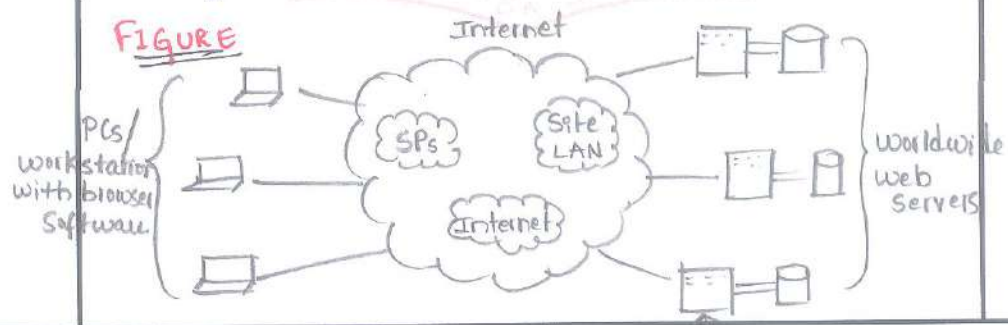
Semester: VI **Subject Title: MULTIMEDIA COMMUNICATION** **Subject Code: BCE613A**

Question Number	Solution	Marks Allocated
1. i)	**EXPLANATION OF DATA NETWORK** * Designed to provide basic data communication services such as email and generated file transfers. * User equipments connected to data networks such as a PC, a workstation or an e-mail/file server. * Two widely deployed types of data networks are X.25 network and Internet.	02
	FIGURE  	03
ii)	**EXPLANATION OF BROADBAND MULTISERVICE NETWORKS** * Designed for use as public switched networks to support a wide range of multimedia comm^n applications. * Number of the basic design features associated with the B-ISDN have been used as the basis.	03

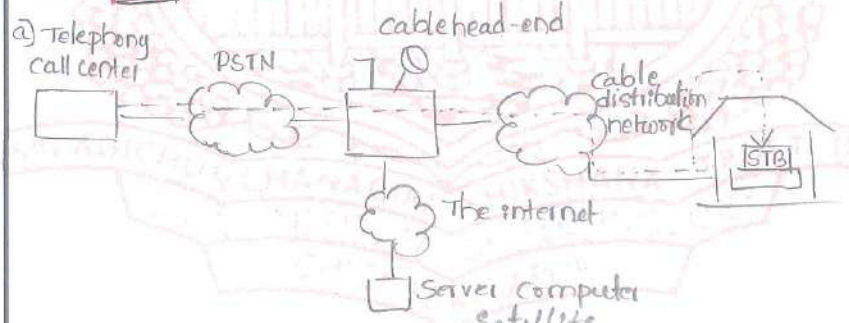
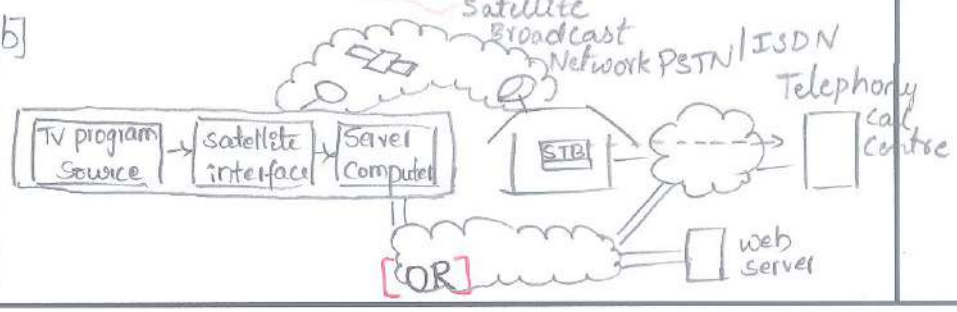
Question Number	Solution	Marks Allocated
	FIGURE 	02
	[OR]	
2.	EXPLANATION OF THE MAIN COMPONENTS OF PSTN * Local Exchange / End office * private Branch Exchange (PBX) * Cellular phone Networks * Mobile switching center (MSC) * International Gateway Exchange (IGE)	05
	FIGURE 	02
	EXPLANATION OF HOW A HIGH SPEED MODEM PROVIDES MULTIPLE SERVICES * Within the PSTN all the switches and the transmission circuits that interconnect them operate in digital mode to carry a stream of binary is and 0's over the analog circuits	03

Subject Title: MULTIMEDIA COMMUNICATION **Subject Code: BCE613A**

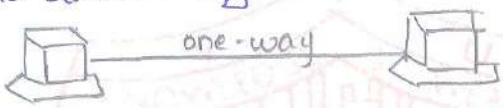
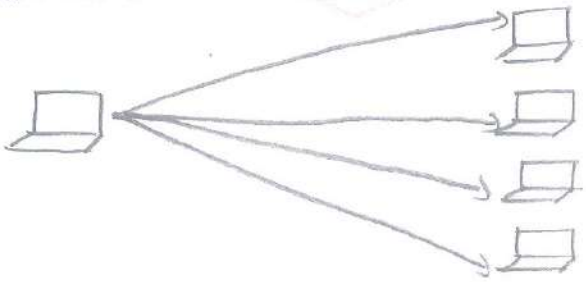
Question Number	Solution	Marks Allocated
3.	DEFINITION OF MULTIMEDIA * The term "Multimedia" is used to indicate that the information / data being transferred over the network may be composed of one or more of the media types i.e text, image, audio and Video.	01
	BASIC FORM OF REPRESENTATION (4×1 = 4M) TEXT : Includes both unformatted and formatted text. IMAGE : Includes computer generated image. AUDIO : Includes both low fidelity & high fidelity speech. VIDEO : Includes short sequence of moving images.	04
	EXPLANATION OF HOW MULTIMEDIA COMMUNICATION TECHNOLOGIES IMPACT SOCIETY * Social media - Enhances global Connectivity * Video conferencing - Remote work and education * Online Streaming - Entertainment and education	03
	RESPONSIBILITIES OF ENGINEERS * Engineers play a critical role in ensuring that multimedia technologies are accessible, safe and beneficial to all users. 1. Accessibility 2. Safety & Security 3. Ethical and Responsible Innovation 4. User Well-Being & Digital Literacy.	02
	[OR]	
4.	EXPLANATION OF IMAGE-ONLY INTERPERSONAL COMMN * Exchange of electronic images of documents is an alternate form of interpersonal communications over PSTN / ISDN known as Facsimile (fax).	03

Question Number	Solution	Marks Allocated
	* Communication involves use of the pair of fax machines one at each network termination point. * It significantly impacts engineering practices, shaping how systems are designed for global comm^n, user experience and social interaction.	02
	SOCIETAL IMPLICATIONS * Enhancing global connectivity * Bridging language gaps * Ethical responsibility.	03
	EXPLANATION OF INTERACTIVE APPLICATIONS OVER - THE INTERNET * Internet is used to support a range of interactive applications along with interpersonal comm^n applications. * Ex: WWW comprises the linked set of multimedia information servers that are geographically distributed around the Internet. * Total information stored on all the servers is equivalent to a vast library of document. * Each document comprises a linked set of pages and linkages between the pages are known as hyperlinks.	02
	FIGURE  Multimedia information servers (some with transaction capabalities) connected to a site LAN on internet, as an ISP network	

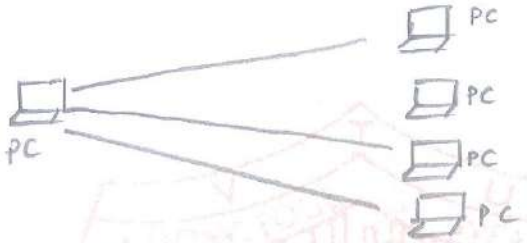
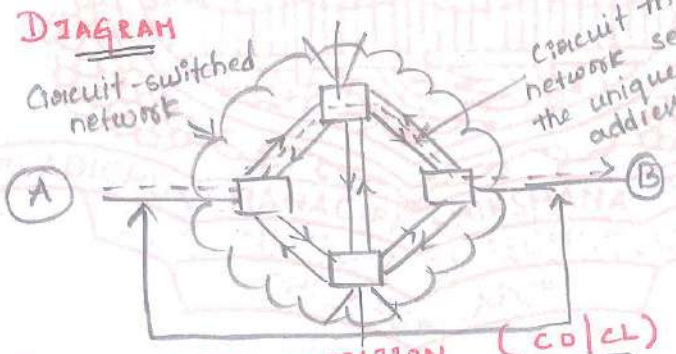
Subject Title: MULTIMEDIA COMMUNICATION **Subject Code: BCE613A**

Question Number	Solution	Marks Allocated
5.	EXPLANATION OF INTERACTIVE TELEVISION APPLICATION FOR BOTH CABLE AND SATELLITE NETWORK * Basic service of this network is diffusion of both analog and digital television programs. * Set-Top Box (STB) associated with these networks has a modem within it. * For cable networks as in figure, STB provides both a low-bit rate connection to the PSTN and a high-bit rate connection to the Internet. * By connecting appropriate TE to the STB a keyboard, telephone and so on subscriber is able to gain access to all the services provided through the PSTN and the Internet.	05
	FIGURES (2+3=5M) a)  b)  	05

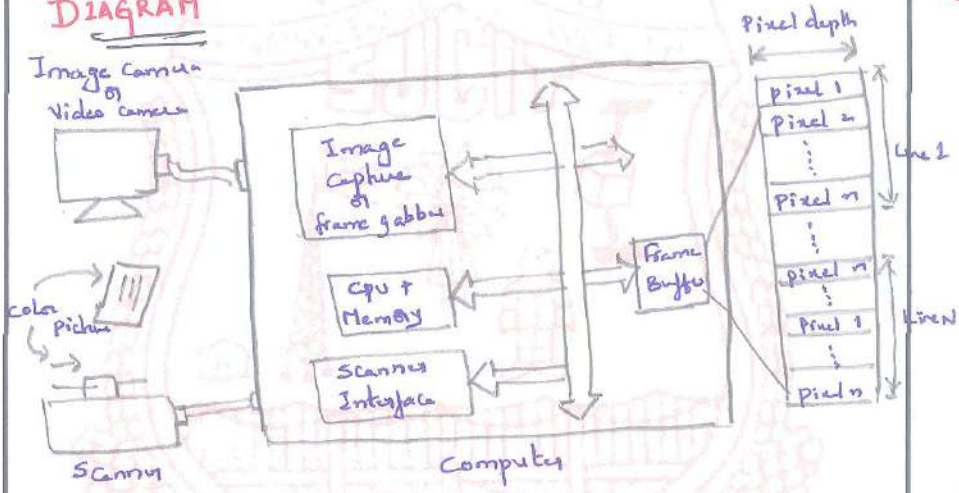
Subject Title: MULTIMEDIA COMMUNICATION **Subject Code: BCE613A**

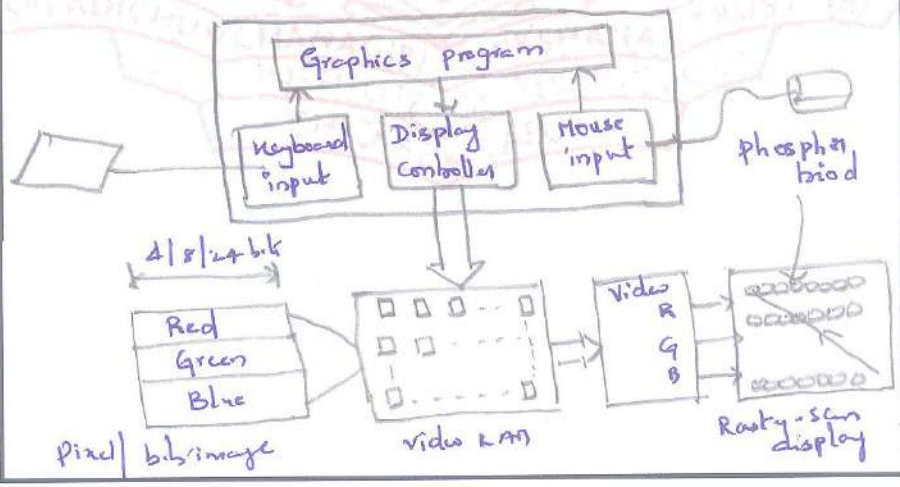
Question Number	Solution	Marks Allocated
6.	TO LIST THE COMMUNICATION MODES 1. Simplex 2. Half-Duplex 3. Duplex 4. Broadcast 5. Multicast	01
	EXPLANATION OF SIMPLEX WITH FIGURE * Information associated with the application flows in one direction only.  	01
	EXPLANATION OF HALF-DUPLEX WITH FIGURE * Information flows in both directions but, alternatively. 	02
	EXPLANATION OF FULL-DUPLEX WITH FIGURE * Information flows in both directions simultaneously. 	02
	EXPLANATION OF BROADCAST WITH FIGURE * Information output by a single source node is received by all the other nodes, computers and others which are connected to the same network. 	02

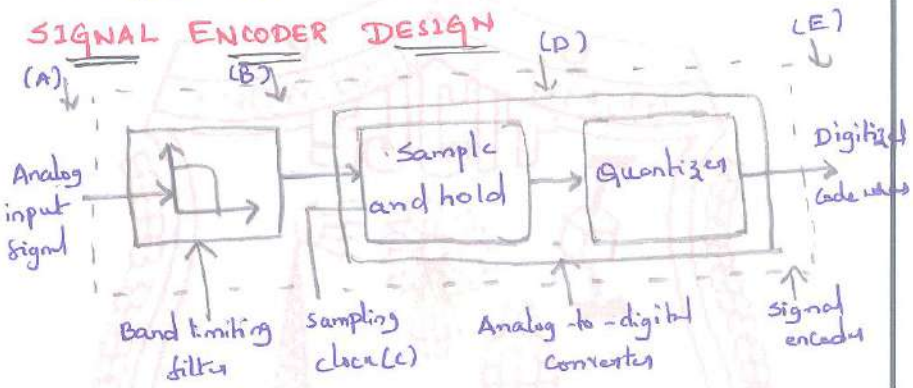
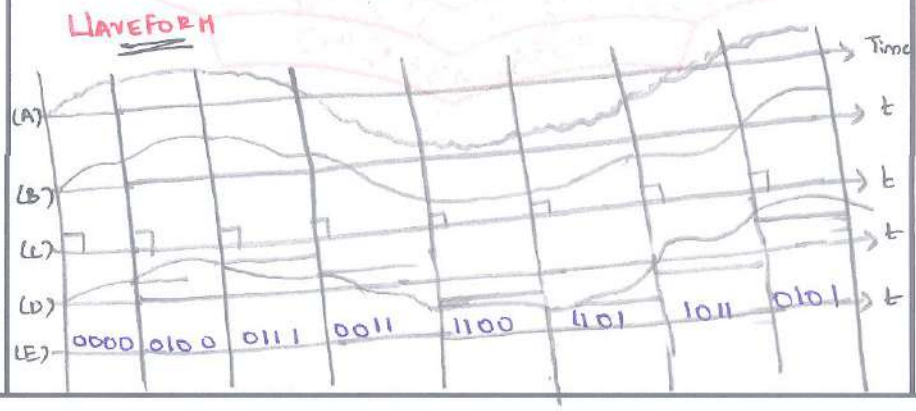
Subject Title: MULTIMEDIA COMMUNICATION **Subject Code: BCE613A**

Question Number	Solution	Marks Allocated
	EXPLANATION OF MULTICAST WITH FIGURE * Information output by the server/source is received by only a specific subset of the nodes that are connected to the network.  	02
7. (a)	CIRCUIT - MODE OF OPERATION * circuit-mode operates in a time-dependent way. also called as synchronous communication channel as it provides a constant bit rate service at a specified rate * It comprise an interconnected set of switching offices/exchanges for which the subscriber terminals are connected.	02
	DIAGRAM  	02
	PACKET - MODE OPERATION (CO/CL) * Comprises an interconnected set of PSES. * Each terminal is connected to the network has a unique network-wide number/address associated with it.	02
	DIAGRAM	01

Question Number	Solution	Marks Allocated
(b)	SOLUTION $P_B = 1-(1-P)^N$ Hence $0.1 = 1-(1-10^{-4})^N$ $N = 950$ bits Alternatively, $P_B = N \times P$ Hence $0.1 = N \times 10^{-4}$ $N = 1000$ bits [OR]	01 01 01
8. (a)	DEFINITION OF NETWORK QOS * operational parameters associated with a communication channel through a network collectively determine the suitability of the channel in relation to its use for a particular application. * QoS parameters associated with a packet-switched network include: (1×6 = 6M) 1. Maximum packet size 2. Mean packet transfer rate 3. Mean packet error rate 4. Mean packet transfer delay 5. Worst-case jitter 6. Transmission delay	01 06
(b)	TO DETERMINE THE PROPAGATION DELAY propagation delay $T_p = \frac{\text{physical separation}}{\text{velocity of propagation}}$	

Question Number	Solution	Marks Allocated
	i) $T_p = \frac{10^3}{2\times10^8} = 5\times10^{-6}\,s$	01
	ii) $T_p = \frac{200\times10^3}{2\times10^8} = 10^{-3}\,s$	01
	iii) $T_p = \frac{5\times10^7}{3\times10^8} = 1.67\times10^{-1}\,s$	01
9.(a)	DIAGRAM 	03
	EXPLANATION * It is assumed captured image is transferred to the computer directly as it is produced or as with digital cameras set of digitized images can be stored within the camera itself then, downloaded into the computer at a later time. * Image capture within the camera/scanner using solid-state device known as Image sensor. It is a 2-D grid of light sensitive cells called photosites.	03

Question Number	Solution	Marks Allocated
(b)	TO DERIVE THE TIME TAKEN TO TRANSMIT IMAGES * The size of each image in bits is : VGA = 640 x 480 x 8 = 2.457600 Mbits SVGA = 1024 x 768 x 24 = 18.874368 Mbits → Time to transmit each image is : At 64 kbps : VGA = $2.4576 \times 10^6 \mid 64 \times 10^3$ = 38.4 sec SVGA = $18.874368 \times 10^6 \mid 64 \times 10^3$ = 294.912 sec At 1.5 Mbps : VGA = $2.4576 \times 10^6 \mid 1.5 \times 10^6$ = 1.6384 sec SVGA = $18.874368 \times 10^6 \mid 1.5 \times 10^6$ = 12.5829 sec	01 01 01 01
	[OR]	01
10. (a)	DEFINITION OF ASPECT RATIO * It is the ratio of screen width to screen height. BLOCK DIAGRAM  	03

Question Number	Solution	Marks Allocated
	EXPLANATION * picture tube used in most television sets operates using raster-scan. * It involves raster a finely focused electron beam. * Graphics program needs to write the pixel images into video RAM.	02
(b)	**SIGNAL ENCODER DESIGN**  	02
	EXPLANATION * Signal encoder is an electronic circuit converts, time-varying analog signals to digital form. * It consists of 2 main circuits: (i) Bandlimiting filter (ii) ADC which has 2 components: Sample & hold cct, Quantizer.	01
	WAVEFORM  	01

Subject Title: MULTIMEDIA COMMUNICATION **Subject Code: BCE613A**

Question Number	Solution	Marks Allocated
	MULTIPLE CHOICE QUESTIONS (EACH QUESTION CARRIES ONE MARK) (10X1=10M)	10
1.	A	
2.	C	
3.	A	
4.	C	
5.	A	
6.	B	
7.	A	
8.	D	
9.	A	
10.	B	
	21/03/2025 (Dr. S. BHARGAVI) 21/03/2025	

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Continuous Internal Evaluation (CIE) Question Paper-CBCS Scheme

||Jai Sri Gurudev||

SJC Institute of Technology

Department: Electronics And Communication Engineering

CIE: II

Course Name & Code: Multimedia Communication (BEC613A)

Section: A,B, C

Semester: VI

MaxMarks:50

Date:22.04.2025

Time: 9.30AM to 11.00 AM

Instructions: Answer one full question from each part

Q.NO.	Questions	M	CO	PO	RBTL
1	Design signal encoder and decoder and draw the associated waveforms.	10	4	2	L3
	OR				
2	Identify the five main stages associated with the baseline mode of operation of JPEG encoder with the aid of a diagram and give a brief description of the role of each stage	10	4	2	L3
3	Analyze the principles of Interlaced of scanning as used in most TV broadcast applications.	10	2	2	L4
	OR				
4	Analyze the following digitization formats with the aid of a diagram: (i) 4:2:2 (ii) SIF (ii) CIF	10	2	2	L4
5	Assuming the CD-DA standard is being used. Derive (i) The storage capacity of a CD-ROM to store 60 minutes of multimedia title. (ii) The time to transmit a 30sec portion of the title using a transmission channel of bit rate 64 kbps and 1.5 Mbps.	10	3	2	L3
	OR				
6	Apply LZW algorithm to compress the following string: "ABABBABCABABBA"	10	3	2	L3
7	Explain the following terms related to compression: i. Source encoders and destination decoders ii. Lossless and lossy compression iii. Source and entropy encoding	10	4	2	L2
	OR				
8	Illustrate the concepts of Run length coding and Statistical encoding	10	4	2	L2
9	Make use of Static Huffman coding to encode the text: AAABBCD.	10	3	3	L3
	OR				
10	A series of messages is to be transferred between two computers over a PSTN. The message comprises just the characters 'A' through 'F'. Analysis has shown that the probability of each character is as follows: A=0.4, B=0.2, C=0.15, D=0.1, E=0.1, F=0.05 Use Huffman coding to derive a codeword set.	10	3	3	L3

MULTIPLECHOICEQUESTIONS

Q.NO.	Questions	M	CO	PO	RBTL
1	Compressed image can be recovered back by A. image enhancement B. image decompression C. image contras D.image equalization	01	4	1	L1
2	Image compression comprised of A. encoder B. decoder C. frames D. Both A and B	01	4	1	L1
3	Compression is done for saving A. storage B. bandwidth C. money D. Both A and B	01	4	1	L1
4	Which of the following would not be suitable for Lossy Compression? A. Speech B. Video C. Text D. Image	01	4	1	L1
5	Which of the following are not in a compressed format? A. MP3 B. Bitmap C. MPEG D. JPEG	01	4	1	L1
6	In which type of Data Compression, the integrity of the data is preserved? A. Lossy Compression B. Lossless Compression C. Both of the above D. None of the above	01	4	1	L1
7	Which of the following are Lossless methods? A. Run- length B. Huffman C. Lempel Ziv D. All of the above	01	4	1	L1
8	Which standard is commonly used for compressing digital video files? A. JPEG B. PNG C. MPEG D. GIF	01	4	1	L1
9	Which of the following is the abbreviation of JPEG A. Joint Photographic Experts Group B. Joint Photographs Expansion Group C. Joint Photographic Expanded Group D. Joint Photographic Expansion Group	01	4	1	L1
10	Which type of compression does GIF use A. Data B. LZW (Lempel – Ziv – Welch) C. Lossy D. Energy	01	4	1	L1

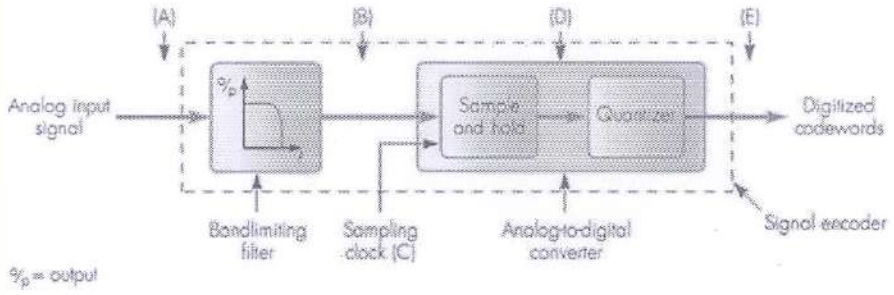
CO2	Apply digitization techniques to represent different types of media.
CO3	Compute compression ratios, bandwidth requirements and storage capacity for multimedia data.
CO4	Analyze various compression techniques for text, images, audio and video.

Course Coordinator Signature	Reviewer Signature	HOD Signature
21/4/25	21/4/25	21/04/25

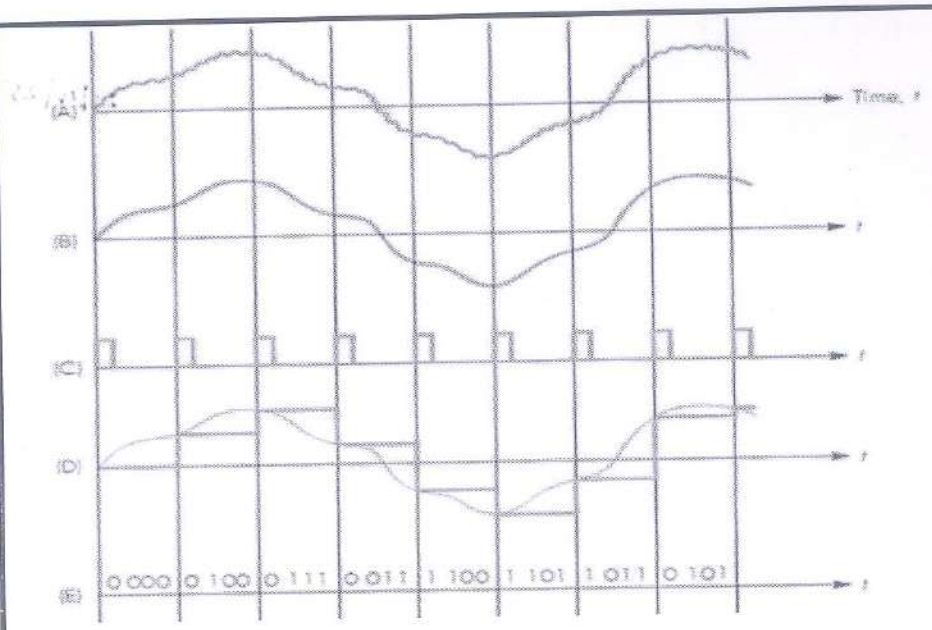
DEPARTMENT: ELECTRONICS & COMMUNICATION ENGG

Scheme & Solutions **Date:** 21/4/25

Semester: VI **Subject Title: Multimedia Communication** **Subject Code: BEC613A**

Question Number	Solution	Marks Allocated
`1	Design signal encoder and decoder and draw the associated waveforms	2M
Ans	Encoder Design  • Signal encoder is a electronic circuit converts, time-varying analog signals to digital form. • Figure above. shows - principles of an encoder consists of 2 main circuits: 1. Bandlimiting filter. 2. ADC (Analog to Digital Converter) which has 2 components: I. Sample-and-hold circuit. II. Quantizer • Figure below. Shows the typical **waveform set** for the signal encoder.	1M

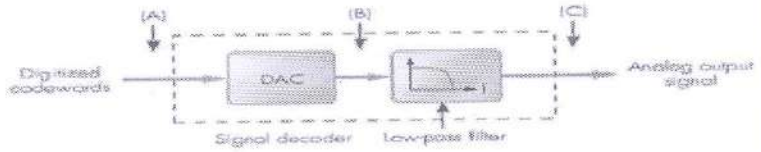
2M



Decoder design:

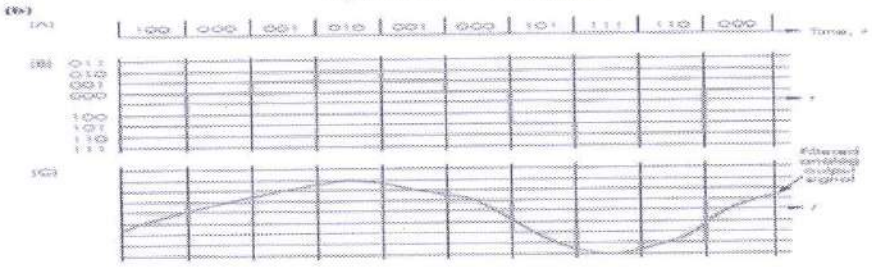
- Analog signals are store, process and transmitted in the digital form, prior to their output, normally analog signals must be converted back again into their analog form.
- Ex.: loudspeakers - are driven by an analog current signal.
- Signal decoder is electronic circuit which performs the conversion of digital to analog form.

(a)



2M

(b)

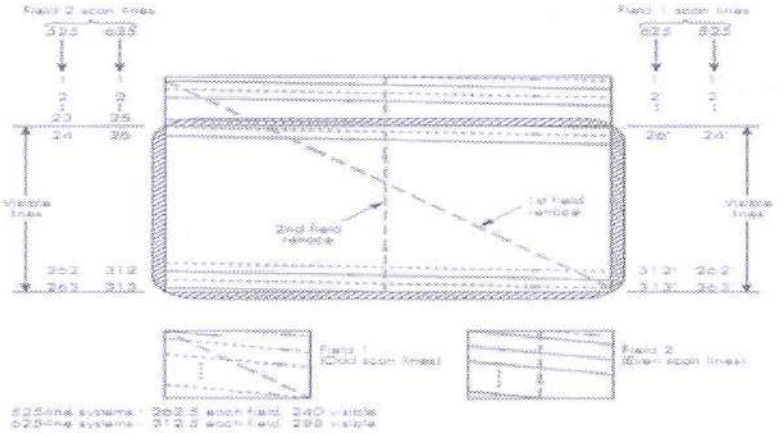


2M

	▯ Digital To Analog Converter(DAC) is a circuit which converts each digital codeword (A) into an equivalent analog sample (B), amplitude of each level being determined by, corresponding codeword. ▯ Fourier analysis: used to show that output of DAC comprises sinusoidal frequency components make up the original (filtered) analog signal + an infinite number of additional higher-frequency components. ▯ For original signal to reproduce DAC output is passed through a LPF, which only passes those frequency components that made up the original filtered signal (C). ▯ Normally, high-frequency cut-off of the LPF is made same as that used in band limiting filter of the encoder so, LPF is known as - recovery (reconstruction filter). ▯ Most multimedia application involving audio and video communications channels is 2-way simultaneous. TEs hence, support both input and output simultaneously. So, audio/video signal encoders and decoders in each TE, are often combined into a single unit audio/video encode-decoder or audio/video codec.	1M
3)	Analyze the principles of Interlaced of scanning as used in most TV broadcast applications.	
	▯ A color picture/image is produced from varying mixtures of the three primary colors red, green and blue. The screen of the picture tube is coated with a set of three different phosphors one for each color, each of which is activated by a separate electron beam. ▯ The three electron beams are scanned in unison across the screen from left to right with a resolution of either 525 lines (NTSC) or 625 lines (PAL/CCIR/SECAM). The total screen contents are then refreshed at a rate of either 60 or 50 frames per second respectively, the rate being determined by the frequency of the mains electricity supply used in the different countries. ▯ The computer monitors uses the same picture tubes as those in broadcast television receivers and hence operate in a similar way. ▯ The three digitized color signals that make up a stored picture/image are read from the computer memory in time-synchronism with the scanning operation of the display tube and, after each complete scan of the display, the procedure repeats so producing a flicker-free color image on the screen. ▯ **Practically Broadcast television operates slightly different than the above logic** in terms of : 1. Scanning sequence used 2. Choice of color signal	2M

Scanning Sequence:

- It is necessary to use a minimum refresh rate of 50 times per second to avoid flicker, but to produce a smooth motion, a refresh rateof 25 times per second is sufficient. **2M**
- In order to minimize the amount of transmission bandwidth that is required to broadcast the television signal, the characteristic of the eye is exploited by transmitting the image/picture associated with each frame in two halves.
- Each is known as a **field**, the first comprising only the odd scan lines and the second the even scan lines.
- The two fields are then integrated together in the television receiver using a technique known as **interlaced scanning**, the principles of which are shown in Figure below
    1. In a 525-line system each field comprises 262.5 lines out of which 240 are visible.
    2. In a 625-line system each field comprises 312.5 lines out of which 288 are visible.



4M

- Each field is refreshed alternately at 60/50 fields per second and hence the resulting frame refresh rate is only 30/25 frames per second.
- In this way, a refresh rate equivalent to 60/50 frames per second is achieved but with only half the transmission bandwidth.

Color signals:

- **To support backward compatibility**, the received signals associated with a color television broadcast had to be such that they could be used by an existing (unmodified) monochrome (black-and-white) television set to produce the same picture in high-quality monochrome also a color television had to be able to produce black-and-white pictures from monochrome broadcasts..
- For above reasons a different set of color signals from R, G, and B were selected for color television broadcasts.

2M

4) Analyze the following digitization formats with the aid of a diagram:
(i) 4:2:2 (ii) SIF (ii) CIF

4:2:2 Format: 3M

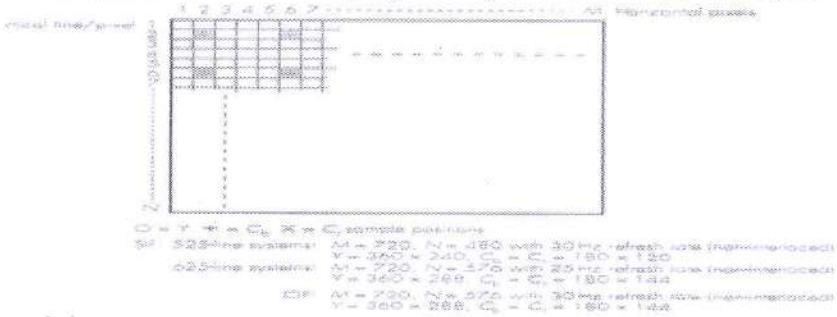
- This is the original digitization format used in **television studios.**
- **Noninterlaced scanning** is used.
- The three component (analog) video signals from a source in the studio ca have bandwidths of up to 6 MHz for the luminance signal and less than ha this for the two chrominance signals.
- To digitize these signals, it is necessary to use band-limiting filters of 6 MHz f the luminance signal and 3 MHz for the two chrominance signals with minimum sampling rate of 12MHz (12 Msps) and 6 MHz respectively.
- In the standard, however, a line sampling rate of **13.5 MHz** for luminance ar **6.75 MHz** for the two chrominance signals was selected, both of which a independent of the particular scanning standard - NTSC, PAL and so on bei used.
- The 13.5MHz rate was chosen since it is the nearest frequency to 12 MI which results in a **whole number of samples per line** for both 525 and 62 line systems.
- The number of samples per line chosen is 702 and can be derived as follows:

525-line system: $Y = 720 \times 480$

$C_b = C_r = 360 \times 240$

625-line system: $Y = 720 \times 576$

$C_b = C_r = 360 \times 288$

	II) SIF SIF format: ❖ Has been found to give a **picture quality** comparable with that obtained with **video cassette recorders** (VCRs). ❖ It uses **half the spatial resolution** in both horizontal and vertical directions as that used in the 4:2:0 format a technique known as **subsampling**. ❖ Uses **half the refresh rate** as that used in the 4:2:0 format known as **temporal resolution**. ❖ Thus **frame refresh rate** is: ❖ For 525-line system: 30Hz ❖ For 625-line system: 25Hz ❖ Thus **total resolution** is: o 525 line system: o 625 line system: ❖ The **worst-case bit rate** in both systems with this format is: ❖ At the receiver, the missing samples are estimated by interpolating between each pair of values that are sent. ❖ This digitization format is known as **4:1:1**. ❖ Intended for storage applications, **progressive (non-interlaced) scanning** is used. ❖ The positions of the three sampling instants per frame are as shown in Figure 	3M

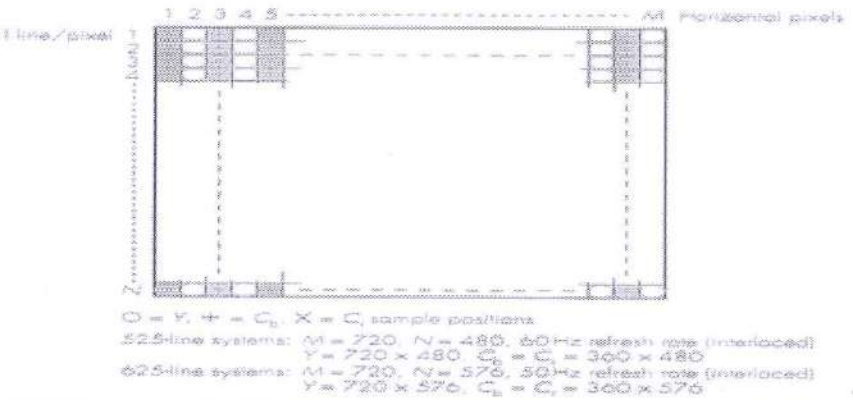
- In both cases, a sampling rate of 13.5MHz yields:
- In practice, the number of **samples per line is increased to 720(for luminance)** by taking a slightly longer active line time which results in a small number of black samples at the beginning and end of each line for reference purposes. The corresponding number of samples for each of the **two chrominance signals** is set at half this value; that is, **360 samples per active line.**
- This result in 4Y samples for every $2C_b$ and $2C_r$, samples which is the origin of the term 4:2:2, the normally indicating the digitization is based on the R, G, B signals.
- The **number of bits per sample** was chosen to be **8** for all three signals which correspond to 256 quantization intervals.
- The **vertical resolution** for all three signals was also chosen to be the same, the number being determined by the scanning system in use;

1. With 525-line system (NTSC): 480 lines (number of active/visible lines).
2. With 625-line system (PAL) : 576 lines (number of active/visible lines).

❖ **Frame refresh rate selected:**

1. With 525-line system: 60Hz
2. With 625-line system: 50Hz

Since each line is sampled at a constant rate (13.5 and 6.75 MHZ) with a fixed number of samples per line (720 and 360), the **samples for each line are in a fixed position which repeats from frame to frame.** The samples are then said to be orthogonal and the sample method **orthogonal sampling.**
the sampling positions for each of the three signals relative to a rectangular grid are as shown in Figure below:

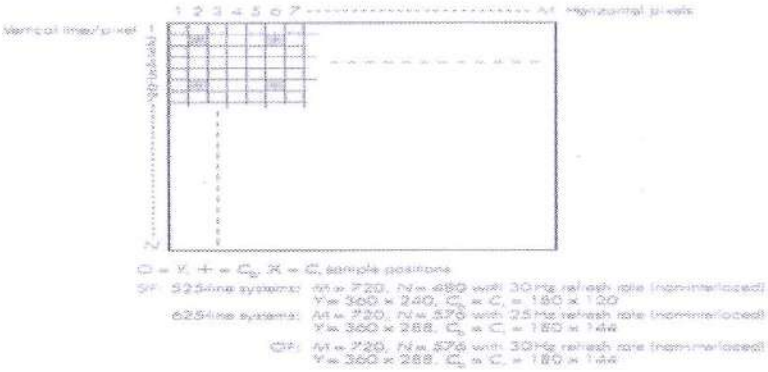


5)	Assuming the CD-DA standard is being used. Derive (i) The storage capacity of a CD-ROM to store 60 minutes of multimedia title. (ii) The time to transmit a 30sec portion of the title using a transmission channel of bit rate 64 kbps and 1.5 Mbps. **Solution:** i. The CD-DA digitization procedure yields a bit rate of 1.411Mbps. Thus, storage capacity for 60 minutes is = $= 1.411 \times 60 \times 60$Mb $= 5079.6$Mbits or 634.95 Mbytes ii. One 30 second portion of the title $= 1.411 \times 30 = 42.33$ Mbits Thus time to transmit this data : **At 64kbps** $= (42.33 \times 10^6 \div 64 \times 10^3)$ $= 661.4$ sec **At 1.5kbps** $= (42.33 \times 10^6 \div 1.5 \times 10^6)$ $= 28.22$ sec	2M 4M 4M
6)	Apply LZW algorithm to compress the following string: "ABABBABCABABBA" Let's start with a very simple dictionary (also referred to as a "string table"), initially containing only 3 characters, with codes as follows: code string **1 A** **2 B** **3 C** • Now if the input string is "ABABBABCABABBA", the LZW compression algorithm works as follows:	3M

CIF:

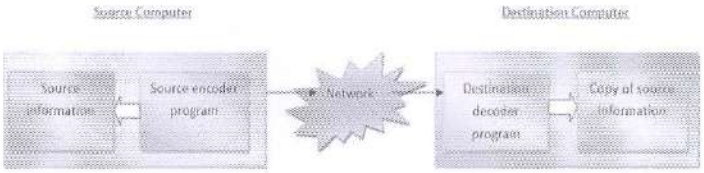
4M

- Common intermediate format (CIF) has been defined for videoconferencing applications.
- It is derived from the SIF.
- Uses a combination of the spatial resolution used for the SIF in the 625-line system the temporal resolution used in the 525-line system.
- Thus spatial resolution is:
- Uses a temporal resolution of 30 Hz.
- Progressive scanning is employed.
- The position of the sampling instants per frame is the same as for SIF is shown below and hence the digitization format is 4:1:1.



- The worst-case bit rate is the same as that of SIF and is given by:
- We can deduce from this, to convert to the CIF, a 525-line needs a line-rate conversion and a 625-line system a frame-rate conversion.
- a number of higher-resolution derivative the CIF have also been defined since there are a number of different types of videoconferencing applications including those that involve a linked set of desktop PCs and those that involve a linked set of videoconferencing studios.
- Most desktop applications use switched circuits, a typical bit rate used is a single 64 kbps ISDN channel. For linking videoconferencing studios, however, dedicated circuits are normally used that comprise multiple 64 kbps channels.
- As the bit rate of these circuits is much higher typically four or sixteen 64 kbps channels then a higher-resolution version of the basic CIF can be used to improve the quality of the video.

	s	c	output	code	string	
				1	A	
				2	B	
				3	C	
	A	B	1	4	AB	5M
	B	A	2	5	BA	
	A	B				
	AB	B	4	6	ABB	
	B	A				
	BA	B	5	7	BAB	
	B	C	2	8	BC	
	C	A	3	9	CA	
	A	B				
	AB	A	4	10	ABA	
	A	B				
	AB	B				
	ABB	A	6	11	ABBA	
	A	EOF	1			
	• The output codes are: 1 2 4 5 2 3 4 6 1. Instead of sending 14 characters, only 9 codes need to be sent (compression ratio = 14/9 = 1.56)					2M
7)	Explain the following terms related to compression: i. Source encoders and destination decoders ii. Lossless and lossy compression iii. Source and entropy encoding					
	i. Source encoders and destination decoders • In applications which involve two computers communicating with each other, the time required to perform the compression and decompression algorithms is not always critical both algorithms are normally implemented in software within the two computers as shown in figure below. • An application which uses this approach is the compression of text and/or image files.					4M



ii. Lossless and lossy compression **3M**

- **The aim is to reduce the amount of source information to be transmitted in such a way that, when the compressed information is decompressed, there is no loss of information. Ex.: transfer of a text file over a network, since no, part of the source information is lost during either the compression or decompression operations.**
- **The aim is normally not to reproduce an exact copy of the source information after decompression but rather a version of its which is perceived by the recipient as a true copy.**
- **With such algorithms the higher level of compression being applied to the source information the more approximate the received version becomes.**
- **Ex.: transfer of digitized images, audio and video streams. In such cases, the sensitivity of the human eye or ear is such that any fine details that may be missing from the original source signal after decompression are not detectable**

iii. Source and entropy encoding **3M**

Entropy encoding

- **It is lossless and independent of the type of information that is being compressed.**
- **Concerned solely with how the information is represented.**

Ex.: Run-length encoding and Statistical encoding

Source encoding

- **Uses a particular property of the source information to produce an alternative form of representation which are:**
  1. Compressed version of the original form
  2. Is more amenable to the application of compression

8)	Illustrate the concepts of Run length coding and Statistical encoding Run-length encoding • Typical applications: When source information comprises long substrings of the same character or binary digit. • Instead of transmitting source string in the form of independent code words or bits source string is transmitted in the form of different set of code words which indicates: Particular character or bit being transmitted and Number of characters/bits in the substring • Providing the destination to know the set of code words being used destination simply, interprets each codeword received and outputs the appropriate number of characters or bits. Ex.: An application involves transmission of long strings of binary bits that comprise limited number of substrings • Each substring can be assigned a separate codeword, total bit string is then transmitted in the form of the string of code words selected from the codeword set. • Ex.: Transmission of the binary strings produced by the scanner in a facsimile machine. • When scanning typed documents in many instances scanner produces long substrings of either binary 0s or 1s. • Instead of transmitting directly, they are sent in the form of a string of code words each indicating both the bit 0 or 1 and the number of strings in the substring • Ex.: if the output of the scanner was 00000001111111110000011... then it can be represented as (0,7) (1,10) (0,5)(1,2)... Since, only the two binary digits 0 and 1 are involved and if, first substring always comprises binary 0s then, the string could be represented as 7, 10, 5, 2... • To send this in the digital form, individual decimal digits would be sent in their binary form. • Assuming the fixed number of bits per codeword number of bits per codeword would be determined by the largest possible substring. Statistical encoding • Applications use a set of code words to transmit the source information. Ex.: Set of ASCII code words are often used for the transmission of strings of characters. • Normally, all the code words in the set comprise a fixed number of binary bits. Ex.: 7 bits in the case of ASCII. • In many applications: Symbols (characters) and hence code words that are present in the source information do not occur with the same frequency of occurrence, that is with equal probability.	3M 7M

- **Ex.: Consider a string of text in which character A may occur more frequently than character P which again, will occur more frequently than character Z, and so on.**

- **Statistical encoding exploits this property by using the set of variable length code words, with the shortest code words used to represent the most frequently occurring symbols.**
- **Use of variable-length code words is not quite as straight-forward.**
- **Destination must know the set of code words being used by the source as in run-length encoding**

9) Make use of Static Huffman coding to encode the text: AAABBCD

Step 1: Calculate Frequencies 2M

Count the frequency of each character:

Character	Frequency
A	3
B	2
C	1
D	1

Step 2: Build Huffman Tree 2M

We now build a binary tree based on these frequencies.

Nodes (frequency, character):

- A: 3
- B: 2
- C: 1
- D: 1

Build Tree:

1. Combine C (1) + D (1) → Node1 (2)
2. Node1 (2) + B (2) → Node2 (4)
3. A (3) + Node2 (4) → Root (7)

Final Answer:

- **Encoded binary string:** `0001010110111` 2M
- **Huffman codes used:**
  - A → 0
  - B → 10
  - C → 110
  - D → 111

10)

A series of messages is to be transferred between two computers over a PSTN. The message comprises just the characters 'A' through 'F'. Analysis has shown that the probability of each character is as follows: A=0.4, B=0.2, C=0.15, D=0.1, E=0.1, F=0.05
Use Huffman coding to derive a codeword set.

Step 1: List Characters with Probabilities **2M**

Character	Probability
A	0.40
B	0.20
C	0.15
D	0.10
E	0.10
F	0.05

Step 2: Build Huffman Tree **2M**

We repeatedly combine the **two lowest-probability** nodes until only one tree remains.

Iteration 1:

- Combine **E (0.10)** and **F (0.05)** → EF = 0.15
  Remaining: A(0.40), B(0.20), C(0.15), D(0.10), EF(0.15)

Iteration 2:

- Combine **D (0.10)** and **C (0.15)** → DC = 0.25
  Remaining: A(0.40), B(0.20), EF(0.15), DC(0.25)

Iteration 3:

The tree structure might look like this:

```
css

          [7]
         /   \
    A(3)    [4]
           /   \
        B(2)  [2]
             / \
          C(1) D(1)
```

Step 3: Assign Binary Codes **2M**

Traverse the tree:

- Left → 0, Right → 1

Character	Code
A	0
B	10
C	110
D	111

Step 4: Encode the Text "AAABBCD" **2M**

Original: **A A A B B C D**

Encoded:

- A → 0
- A → 0
- A → 0
- B → 10
- B → 10
- C → 110
- D → 111

	B 111 Huffman Codeword Set: 2M • A: 0 • B: 111 • C: 101 • D: 100 • E: 1100 • F: 1101 MCQ: 1.B 2.D 3.D 4.C 5.B 6.B 7.D 8.C 9.A 10.B	

- Combine **EF (0.15)** and **B (0.20)** → BEF = 0.35
  Remaining: A(0.40), DC(0.25), BEF(0.35)

Iteration 4:

- Combine **DC (0.25)** and **BEF (0.35)** → DCBEF = 0.60
  Remaining: A(0.40), DCBEF(0.60)

Final Iteration:

- Combine **A (0.40)** and **DCBEF (0.60)** → Root = 1.00

Step 3: Assign Binary Codes 2M

Traverse from root:

- Left edge → `0`
- Right edge → `1`

From tree:

```
css
CopyEdit
          [1.00]
         /      \
     [A]0      [0.60]
              /      \
         [0.25]      [0.35]
         /   \       /   \
      [D]   [C]  [0.15]  [B]
                  /  \
                [E]   [F]
```

Step 4: Read Final Code words 2M

Character	Code
A	0
D	100
C	101
E	1100
F	1101

	B 111 Huffman Codeword Set: 2M • A: 0 • B: 111 • C: 101 • D: 100 • E: 1100 • F: 1101 MCQ: 1.B 2.D 3.D 4.C 5.B 6.B 7.D 8.C 9.A 10.B	

21/4/25

21/04/25

Continuous Internal Evaluation (CIE) Question Paper- CBCS Scheme

||Jai Sri Gurudev||

SJC Institute of Technology

Department: Electronics And Communication Engineering

CIE: III

Course Name & Code: Multimedia Communication (BEC613A)

Semester: VI | **Section:** A, B, C

Date: 27.03.2025 | **Time:** 9.30 AM to 11.00 AM | **Max Marks:** 50

Instructions: Answer one full question from each part

Q.NO.	Questions	M	CO	PO	RBTL
1	Analyze the working of a signal encoder and decoder with the help of a diagram and explain how sub-band coding ADPM improves sound quality at the same bit rate.	10	4	2	L4
	OR				
2	Analyze the concept of motion estimation and motion compensation and explain the different frame types used in video compression.	10	4	2	L4
3	Apply MPEG-4 coding principles to demonstrate how a multimedia scene can be efficiently compressed and transmitted, using appropriate diagrams.	10	3	3	L3
	OR				
4	A digitized video is to be compressed using the MPEG-1 standard. Assuming a frame sequence of IBBPBBPBBPBBI --- and average compression ratio of 10:1(I),20:1(P) and 50:1(B). Derive the average bit rate that is generated by the encoder for both the NTSC and PAL digitization formats.	10	3	3	L3
5	Discuss Error resilience in H.263 standard with relevant figures.	10	4	2	L2
	OR				
6	Describe the H.261 encoding formats in detail.	10	4	2	L2
7	Apply the Ethernet/IEEE 802.3 standard to explain its frame format and operational parameters.	10	1	2	L3
	OR				
8	Apply the concepts of Token Ring MAC operation to describe frame handling during transmission and reception.	10	1	2	L3
9	Outline FDDI networking components with a neat diagram.	10	1	2	L2
	OR				
10	Explain the architecture of a transparent bridge with the help of a neat diagram.	10	1	2	L2

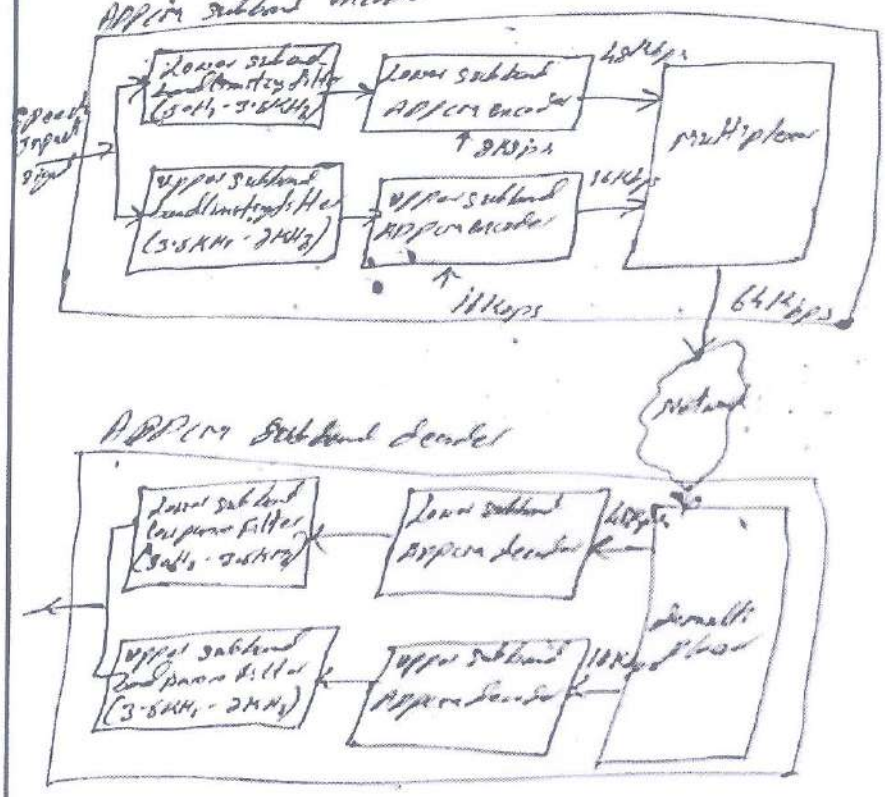
CO1	Interpret the concepts of multimedia communication, networking and its applications.
CO3	Compute compression ratios, bandwidth requirements and storage capacity for multimedia data.
CO4	Analyze various compression techniques for text, images, audio, and video.

Course Coordinator Signature	Reviewer Signature	HOD Signature
24/5/25	V. Khalade 24/5/25	24/05/25

DEPARTMENT : Electronics & Communication Engineering

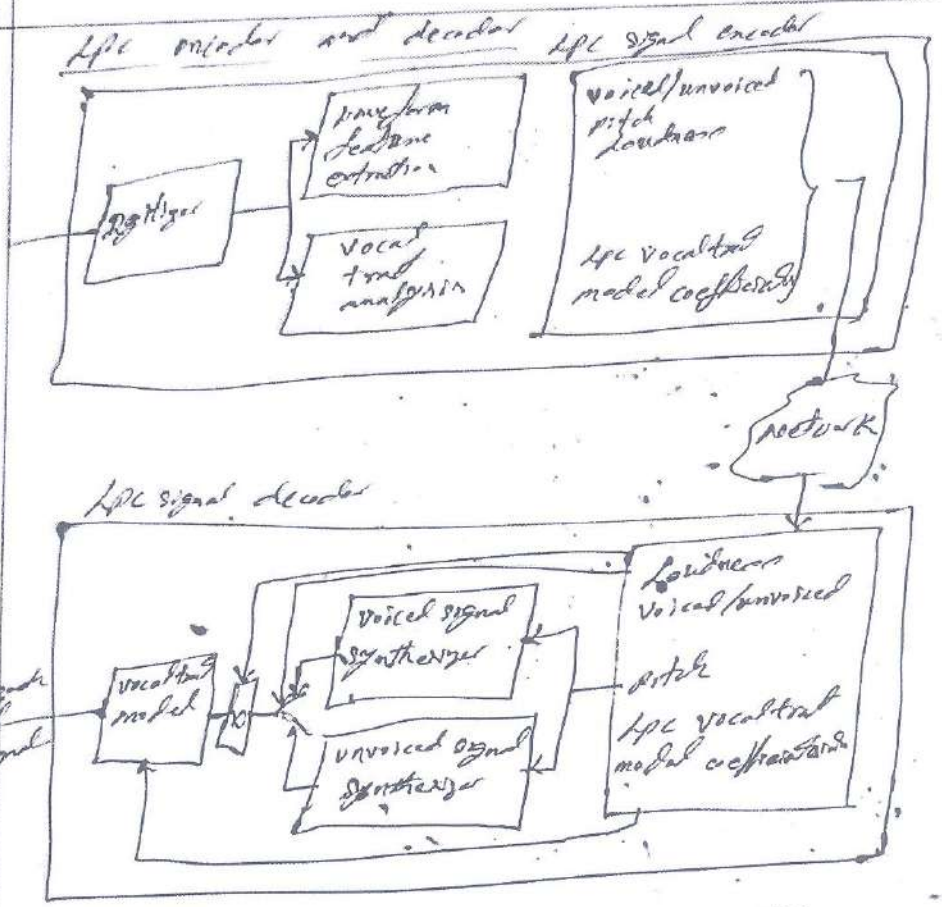
Scheme & Solutions: CIE-III

Semester: VI **Subject Title: Multimedia Communication** **Code: BEC613A**

Q. No	Solution	Marks Allocate
1.	ADPCM encoder and decoder ADPCM subband encoder  Diagram - 5M Explanation of each block : 5M	10M.
2.		

Q. No	Solution	Marks Allocated

LPC encoder and decoder



10M

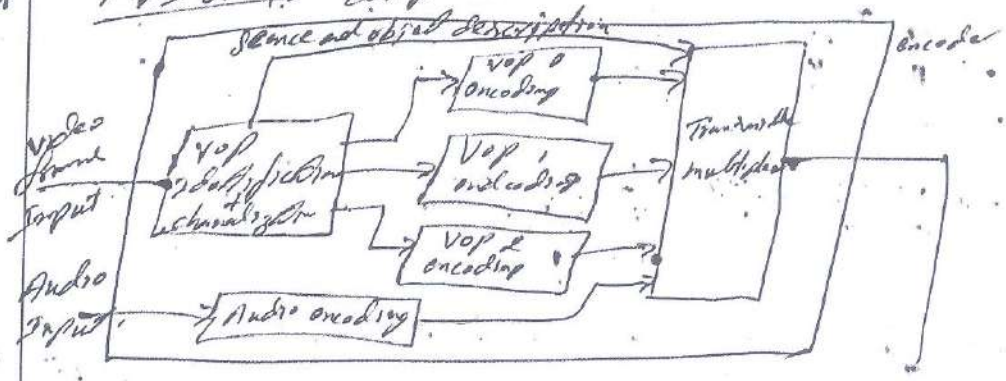
Diagram - 8M
Explanation of each block - 2M

4a. The frame sequence = IBBPBBPBBPBBI.

Hence: 1/12 of frames are I-frames
3/12 of are P-frames 8/12 are B-frames

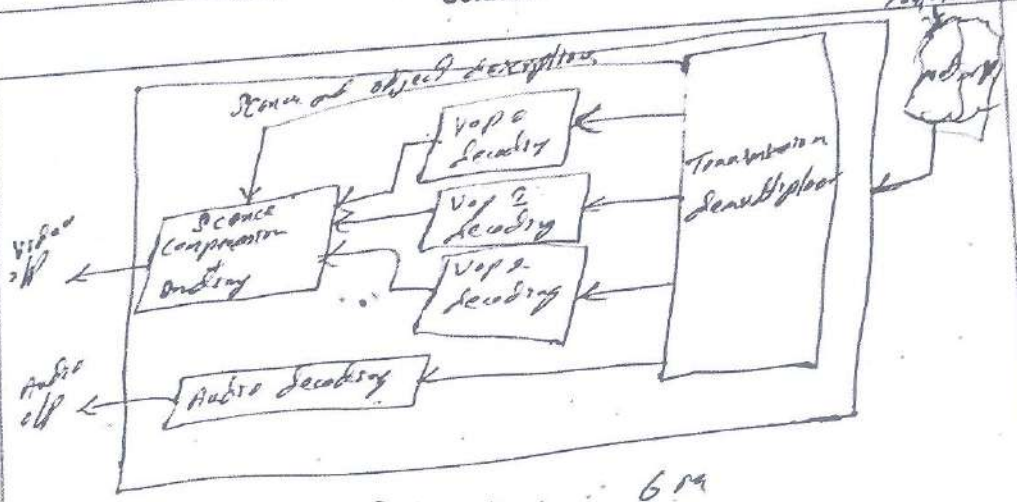
and Average compression ratio = $(1\times0.1 + 3\times0.05 + 8\times0.02)/12$
$= 0.03$ or $29.24:1$ } 8M

NTSC Frame size

Q. No	Solution	Marks Allocated
	without compression = 352×240×8 + 2(176×120×8) = 1.013760 mbits per frame with compression = 1.013760×1/29.24 = 34.670 Kbits/Frame Hence bit rate generated at 30fps = 1.040 Mbps. PAL Frame size. without compression = 352×288×8 + 2(176×144×8) = 1.216512 mbits per frame with compression = 1.216512×1/29.24 = 41.604 Kb/Frame Hence bit rate generated at 25 fps = 1.040 Mbps. Normally allowing for packetization and multiplexing overheads a bandwidth of 1.2 Mbps is allocated for the video. Assuming a maximum bit rate of 1.0 Mbps. this leaves 300 Kbps for the compressed audio stream.	1M 1M 2
3a.	MPEG-4 compressed and transmitted  	10M.

SJCIT

Q. No	Solution	Marks Allocated



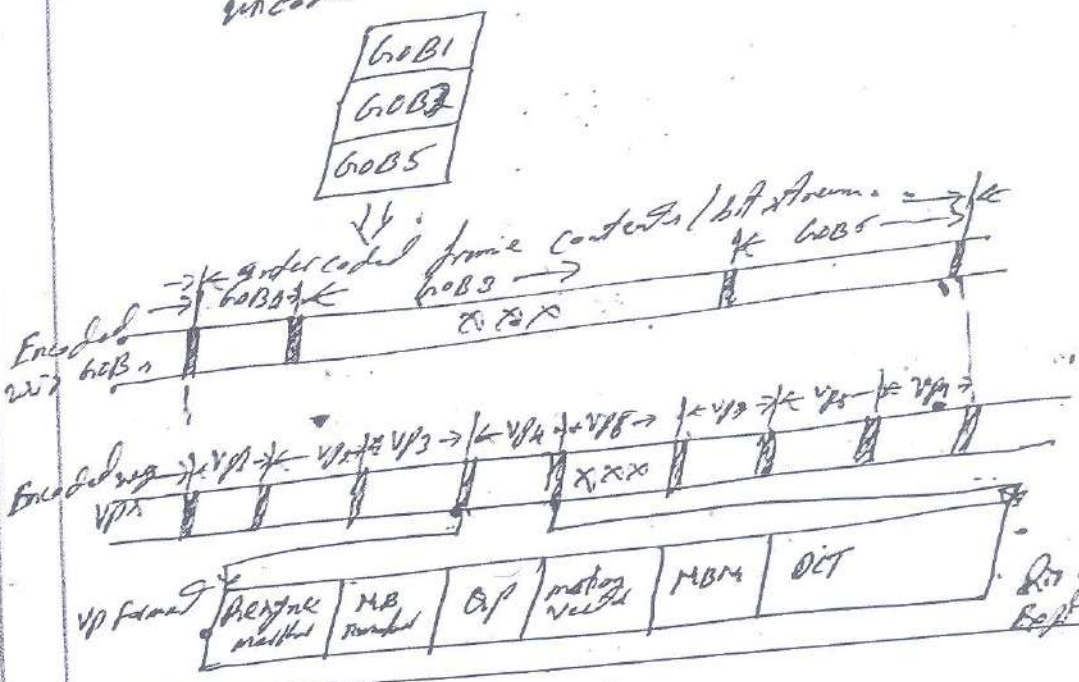
10M

Diagram : 6M
Explanation : 2M

6. H.263 Error resilience Techniques.

Using fixed length video packets & non variable-length coding (VLC) scheme based on reversible VLCs.

Encoded Frame contents (QCIF)



10M

Diagram : 4M
Expl : 6M

Q. No	Solution	Marks Allocated
2	H.261 encoding hierarchy a) Macroblock format. b. Frame/picture format. c) GOB structure	10M

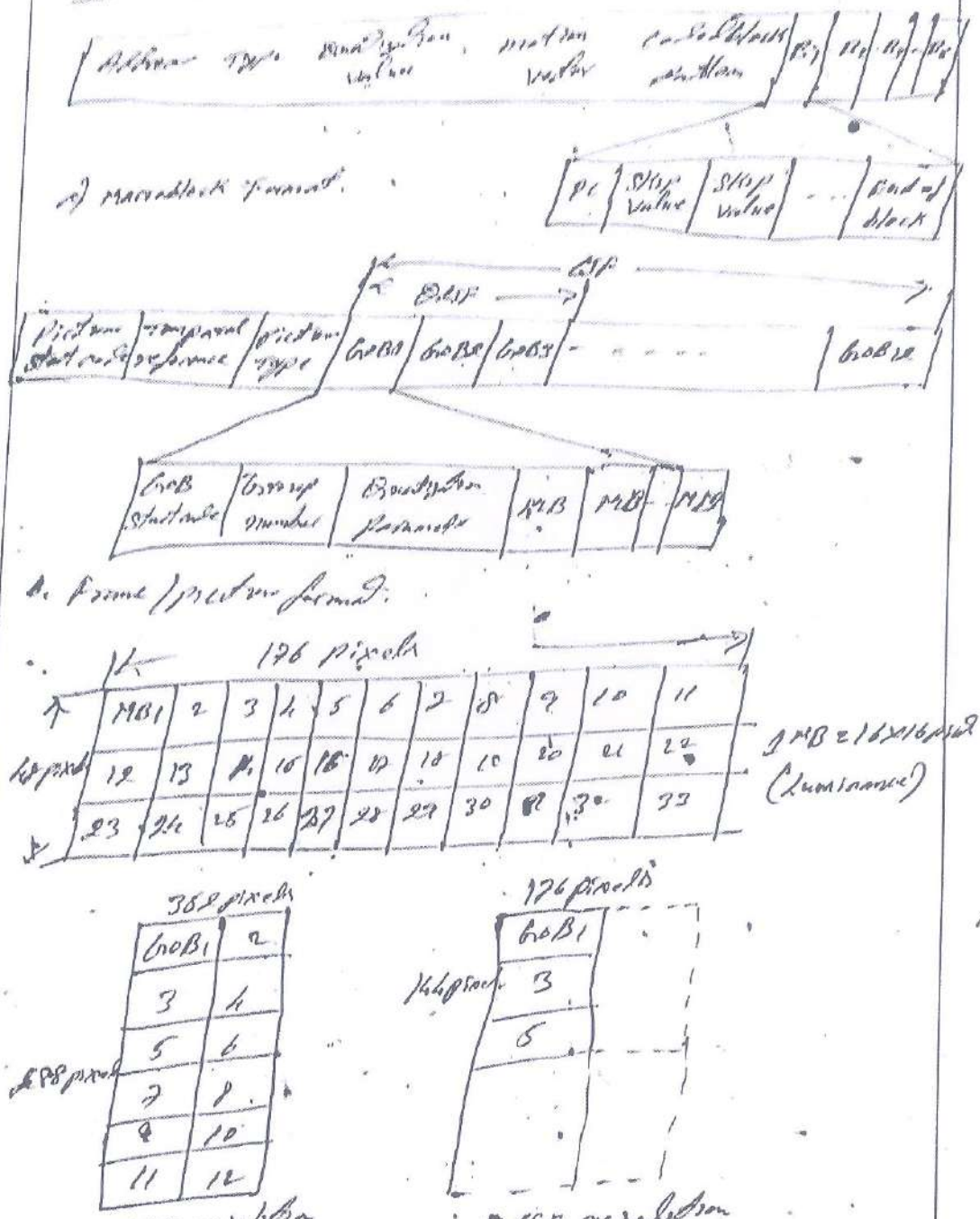
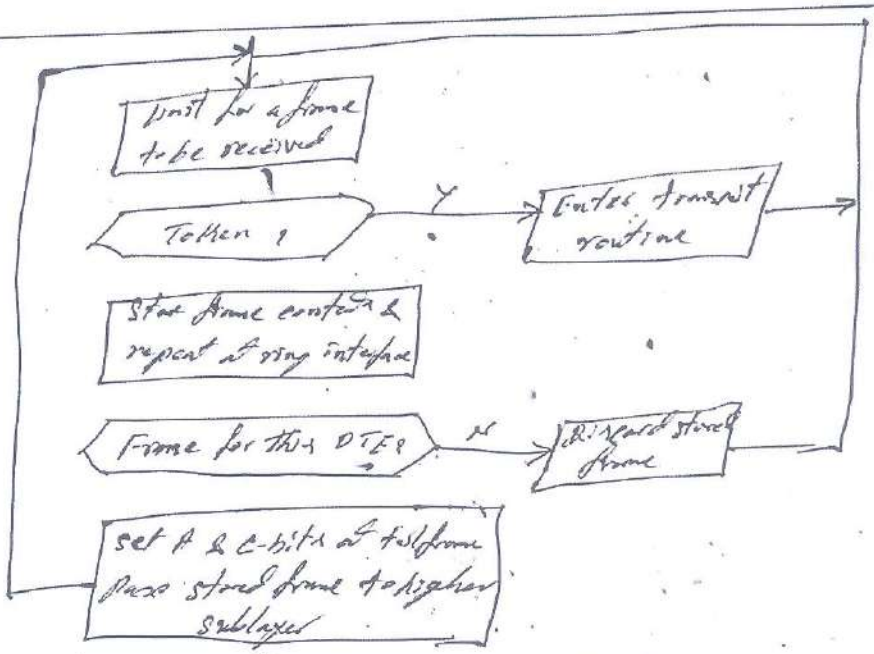
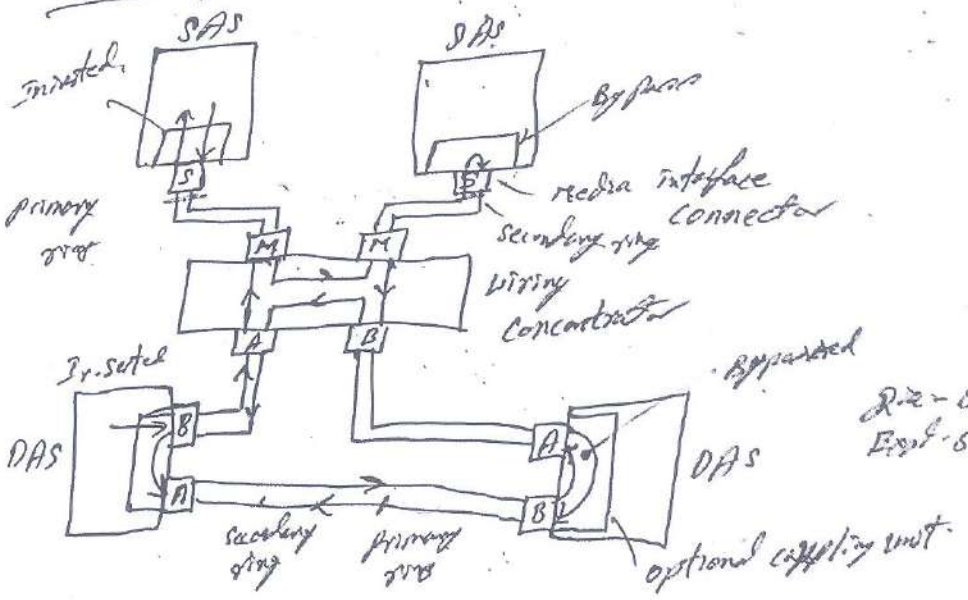
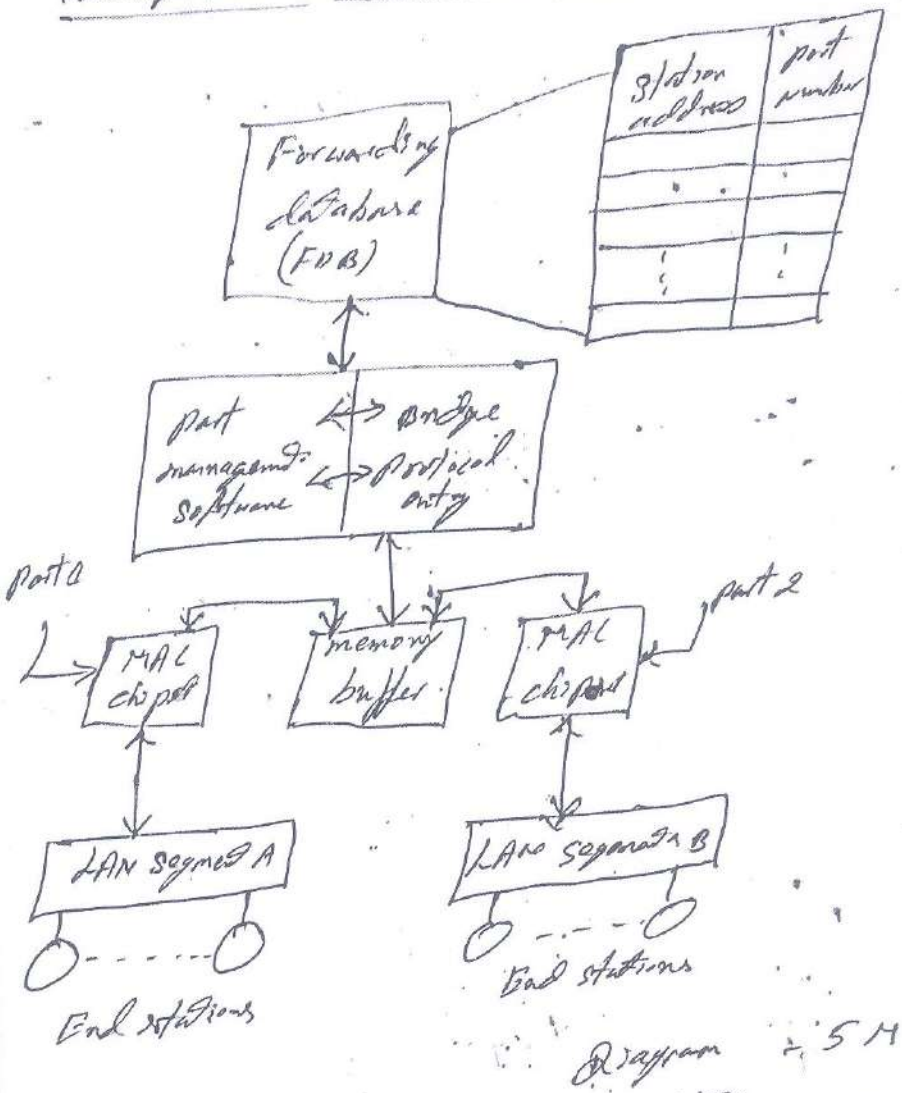


Diagram 8M
Expln. 4M.

Q. No	Solution	Marks Allocated
7	Ethernet/IEEE 802.3 frame format. Bits → 1 1 14/46 S/D	10M
	Diagram — 2M Explanation of bit wise. S/D frame group address — 8M	
8	Token Ring sublayer MAC operation Wait for token to be received Frame waiting to be transmitted — N → Forwarded token with correct priority Y → Token priority Frame priority ? — N → R-bit < Frame priority — N → Set R-bit to Frame priority Y → Transmit waiting frame Remove frame after circulating the ring. Reset R- and C-bits Token hold timer expired — Y → Forward token with correct priority N a. Transmit MAC layer operation	

Q. No	Solution	Marks Allocated
	b. 	10M
	MAC layer Receiver	for both diagram 6M Explanation of Transmitter & Receiver - 4M
9.	FDDI Networking Components 	10M R.Z - 5M Expl - 5M

Q. No	Solution	Marks Allocated
10.	Transparent bridge Architecture.  Diagram - 5 M Explanation 5 M	10 M.

CBCS SCHEME

USN 1 S J 2 2 E C 0 6 2

BEC/BTE613A

Sixth Semester B.E./B.Tech. Degree Examination, June/July 2025

Multimedia Communication

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Explain broadcast television network and ISDN.	10	L2	CO1
	b.	Explain Interactive television application for both cable and satellite network.	10	L2	CO1
		OR			
Q.2	a.	With a neat diagram, explain the modes of communication.	10	L2	CO1
	b.	Determine the propogation delay associated with the following communication channel: i) Connection through private telephone network of 1km. ii) Connection through a PSTN of 200 km iii) Connection over a satellite channel 5000km. Assume velocity of propogation of a signal in case of : (i) and (ii) 2×10^8 m/Sec (iii) 3×10^8m/sec.	10	L3	CO1
		Module – 2			
Q.3	a.	With an example, explain different types of text representation in multimedia.	10	L2	CO2
	b.	Explain Raster Scan principle with neat schematic diagram for both television and computer.	10	L3	CO2
		OR			
Q.4	a.	Derive the time to transmit the following digitized image at both 64 kbps and 1.5 Mbps: i) $640 \times 480 \times 8$ – VGA compatible image ii) $1024 \times 768 \times 24$ – SVGA compatible image.	10	L2	CO2
	b.	Explain the detailed block diagram of Digital Camera and Scanner.	10	L2	CO2
		Module – 3			
Q.5	a.	How the Coding Operation takes place in arithmetic Coding? Consider the transmission of a message comprising string of characters with probabilities. e = 0.3, n = 0.3, t = 0.2, w = 0.1, • = 0.1 the word needed to be transmitted is Went.	10	L2	CO3
	b.	Explain JPEG encoding technique.	10	L2	CO3
		OR			
Q.6	a.	Explain the concept of run-length coding and statistical coding.	10	L2	CO3
	b.	Explain GIF and TIFF format.	10	L2	CO3

		Module – 4			
Q.7	a.	Explain the working principle of DPCM.	10	L2	CO4
	b.	With example frame sequences. Explain the meaning of the following type compressed frame and the reasons for their use: i) I – frame ii) P – frame iii) B – frame	10	L2	CO4
		OR			
Q.8	a.	With a neat diagram, explain H.261 video encoder principle.	10	L2	CO4
	b.	Explain the coding principles of MPEG – 4.	10	L2	CO4
		Module – 5			
Q.9	a.	Explain the principles of Hub Configuration.	10	L2	CO5
	b.	Explain the frame format and operation parameters of Ethernet/ IEEE 802.3.	10	L2	CO5
		OR			
Q.10	a.	Explain token Ring principle.	10	L2	CO5
	b.	Write a short note on FDDI network components.	10	L2	CO5

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CBCS SCHEME

USN 1 S J 2 1 E C 0 0 3

21EC745

Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Multimedia Communication

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Describe with the aid of a diagram, how a PSTN can support range of Multimedia Common Applications. (10 Marks)

b. Classify five types of Communication network that are used to provide multimedia services. (10 Marks)

OR

2 a. Discuss the term interactive television with the help of a neat diagram. (10 Marks)

b. Outline the communication modes available to transfer the information stream. (10 Marks)

Module-2

3 a. Describe the function of signal encoder with the associated waveform. (10 Marks)

b. Assuming the bandwidth of a speech signal is from 50 Hz through to 10 KHz and that of a music signal is from 15 Hz through to 20 KHz , compute the bit rate that is generated by the digitization procedure in each case assuming the Nyquist sampling rate is used with 12 bits per sample for the speech signal and 16 bits per sample for the music signal. Derive the memory required to store a 10 min passage of stereophonic music. (10 Marks)

OR

4 a. Outline Raster – Scan operation associated waveform. (10 Marks)

b. Calculate the time to transmit the following digitized images at both 64 Kbps and 1.5 Mbps :

i) A 640 × 480 × 8 VGA – Compatible image.

ii) A 1024 × 768 × 24 SVGA – Compatible image. (10 Marks)

Module-3

5 a. A series of messages is to be transferred between Two Computers over a PSTN. The messages comprises just the characters A through H. Analysis has shown that the probability (relative frequency of occurrence) of each character is as follows :

A and B = 0.25 , C and D = 0.14 , E, F, G and H = 0.055.

i) Use Shannon's formula to calculate the minimum average number of bits per character.

ii) Use Huffmann coding to compute a code work set and show that this is the minimum set by constructing the corresponding Huffmann code tree. (10 Marks)

b. Describe JPEG Encoder with the aid of diagrams. (10 Marks)

OR

6 a. Derive the code for the string "went". Comprising characters with probability of e = 0.3 , n = 0.3 , t = 0.2 , w = 0.1 , • = 0.1, using Arithmetic coding. (10 Marks)

b. Discuss GIF and TIFF format. (10 Marks)

Module-4

7 a. Describe DPCM encoder and decoder with a neat diagram. (10 Marks)

b. A digitized video is to be compressed using the MPEG – I standard. Assuming a frame sequence of I B B P B B P B B P B B I..... and average compression ratio of 10:1(I) , 20 : 1(P) and 50:1(B), calculate the average bit rate that is generated by encoder for both the NTSC and PAL digitization formats. (10 Marks)

OR

8 a. Describe linear predictive coding encoder and decoder with neat schematic. (10 Marks)

b. Illustrate H-261 Video encoder principles with a necessary diagram. (10 Marks)

Module-5

9 a. Discuss the frame format and operational parameters of Ethernet / IEEE 802.3. (10 Marks)

b. Describe the physical and MAC sub – layer of LAN protocol. (10 Marks)

OR

10 a. Compare the LAN protocols and Protocol framework. (10 Marks)

b. Describe in detail with diagrams the token ring configuration , frame formats , frame transmission and reception with priority operation. (10 Marks)

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CBCS SCHEME

USN

18EC743

Seventh Semester B.E. Degree Examination, Jan./Feb. 2023
Multimedia Communication

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Explain broadcast television network and ISDN. (10 Marks)
b. Explain the concept of speech only in Interpersonal Communication. (10 Marks)

OR

2 a. Explain the interactive applications over the internet. (10 Marks)
b. With neat diagram, explain the modes of communication. (10 Marks)

Module-2

3 a. An analog signal has a dynamic range of 40 dB. Determine the magnitude of quantization noise relative to minimum signal amplitude if quantizer uses (i) 6-bits (ii) 10-bits. (10 Marks)
b. With an example, explain formatted text and hyper text. (10 Marks)

OR

4 a. Derive the time to transmit the following digitized image at both 64 kbps and 1.5 Mbps:
(i) $640 \times 480 \times 8$ – VGA compatible image
(ii) $1024 \times 768 \times 24$ – SVGA compatible image (10 Marks)
b. Explain in brief the concept of PCM speech. (10 Marks)

Module-3

5 a. Explain the concept of run-length coding and statistical encoding. (10 Marks)
b. Explain GIF and TIFF format. (10 Marks)

OR

6 a. Explain IP multicast and RSVP protocol. (10 Marks)
b. With neat diagram, explain JPEG encoder. (10 Marks)

Module-4

7 a. With relevant figure, explain DPCM. (10 Marks)
b. Wrote short note on:
(i) Sensitivity of ear (ii) Frequency masking (iii) Temperol masking (10 Marks)

OR

8 a. Explain H.261 video encoder with a neat diagram. (10 Marks)
b. Explain the coding principles of MPEG-4. (10 Marks)

Module-5

9 a. Explain the frame-format and operational parameters of Ethernet/IEEE 802.3. (10 Marks)
b. Explain the physical and MAC sub-layer of LAN protocol. (10 Marks)

OR

10 a. Write short note on ARP and RARP. (10 Marks)
b. With neat diagram, explain the principles of resource reservation protocol. (10 Marks)

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CBCS SCHEME

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

18EC743

Seventh Semester B.E. Degree Examination, July/August 2022
Multimedia Communication

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Explain with a neat diagram, the Interactive television application for both cable and satellite network. **(10 Marks)**

b. With the help of a diagram, describe the main components of PSTN and show how a high speed modem provides multiple services in addition to basic telephony. **(10 Marks)**

OR

2 a. Define Network Quality of Service parameters. Explain Packet Switched Network parameters. **(08 Marks)**

b. Determine the propagation delay associated with the following communication channel :
i) Connection through private telephone network of 1km.
ii) Connection through a PSTN of 200km.
iii) Connection over a satellite channel 50000km. Assume velocity of propagation of a signal in case of (i) and (ii) 2×10^8 m/sec iii) 3×10^8 m/sec. **(12 Marks)**

Module-2

3 a. With the help of a diagram, explain how a digital image produced by a scanner or digital camera is captured and stored within the memory of a computer. **(10 Marks)**

b. Explain the principle of operation of a PCM speech codec, with a block diagram also explain the compressor and expander. **(10 Marks)**

OR

4 a. With the help of a diagram, explain the principles of Interlaced of scanning as used in most TV broadcast applications. **(10 Marks)**

b. Assuming the CD – DA standard is being used. Derive
i) The storage capacity of a CD – ROM to store 60 minutes of multimedia title.
ii) The time to transmit a 30sec portion of the title using a transmission channel of bit rate 64 kbps and 1.5 Mbps. **(10 Marks)**

Module-3

5 a. Explain the meaning of the following terms relating to text compression algorithms :
i) Static coding ii) Dynamic / Adaptive coding. **(08 Marks)**

b. How the coding operation takes place in arithmetic coding? Consider the transmission of a message comprising a string of characters with probabilities.
e = 0.3 , n = 0.3 , t = 0.2 , w = 0.1 , . = 0.1. The word needed to be transmitted is went. **(12 Marks)**

OR

6 a. Discuss Multimedia Operating System with respect to CPU Management, Memory Management , I/O Management and File System Management. **(08 Marks)**

b. Compress the following string using LZW algorithm. "ABABBABCABABBA". **(12 Marks)**

Module-4

7 a. Explain with the help of diagram for the signal encoder and decoder and explain how better sound quality for the same bit rate can be obtained using a sub – band coding ADPCM. (10 Marks)

b. With the help of example frame sequences. Explain the meaning of the following types of compressed frame and the reasons for their use :
i) I – frame ii) P – frame iii) B – frame. (10 Marks)

OR

8 a. Explain with diagram H.261, explain the role and operation of the quantization control block. (10 Marks)

b. Solve a digitized video to be compressed using the MPEG – 1 standard assuming a frame sequence of IBBPBBPBBPBBI… and average compression ratio of
10 : 1 → I frame , 20 : 1 → P frame , 50 : 1 → B frame.
Derive the average bit rate that is generated by the encoder for both the NTSC and PAL digitization formats. (10 Marks)

Module-5

9 a. Explain the LAN protocols and Protocol frame work. (10 Marks)

b. Explain in detail with diagrams , the token ring configuration , frame formats , frame transmission and reception with priority operation. (10 Marks)

OR

10 a. Describe the operation of ARP and RARP. (10 Marks)

b. Explain Fragmentation and Reassembly in the internet in detail. (10 Marks)

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USN | | | | | | | | | | 06EC81

Eighth Semester B.E. Degree Examination, December 2010
Multimedia Communication

Time: 3 hrs. Max. Marks:100

Note: *Answer any FIVE full questions, selecting at least two questions from each part.*

PART – A

1 a. Define the term multimedia communication. State the basic form of representing different media types. (04 Marks)

b. Explain why most data networks operate in a packet mode. Hence, explain why services involving audio and video are supported. (04 Marks)

c. Identify and explain the meaning of the key QOS parameters associated with.
i) Circuit switching
ii) Packet switching (08 Marks)

d. A web page of 10 Mbytes is being retrieved from a web server. Neglecting server and trunk delays, calculate the time to transfer the page over a
i) PSTN modem operating at 28.8 kbps
ii) Primary rate ISDN access line of [illegible] Mbps
iii) Cable modem operating at 27 Mbps. (04 Marks)

2 a. Define three types of texts. Discuss the format that enables integrated set of documents. (08 Marks)

b. Derive the memory required to store a 10 minute passage of stereophonic music. Assume bandwidth of music as 15 Hz through 20 kHz and Nyquist sampling rate as 16 bits per sample. (04 Marks)

c. Describe 4 : 2 : 2 and 4 : 2 : 0 digitization formats. (08 Marks)

3 a. Explain the meaning of the following terms, relating to compression:
i) Lossless and lossy compression.
ii) Source and entropy encoding. (04 Marks)

b. Code the given string "ABACADABACADABACABAB" using Huffman coding. Derive Huffman code tree. Determine the savings in transmission bandwidth over normal ASCII and fixed length. (06 Marks)

c. With the aid of a diagram, identify the five main stages of operation of JPEG and explain each stage briefly. (10 Marks)

4 a. With the help of a neat diagram, explain LPC encoder and decoder. (06 Marks)

b. Explain the meaning of motion estimation and compensation, with respect to video compression. (04 Marks)

c. Explain MPEG-4 coding principles with the help of a neat diagram. (10 Marks)

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PART – B

5 a. Explain CSMA/CD MAC method, used in IEEE 802.3 standard. (08 Marks)

b. The FDDI ring configuration has 2 km ring with 20 stations.
i) Derive the ring latency in both time and bits, assuming a usable bit rate of 100 Mbps.
ii) Maximum obtainable throughput.
iii) Maximum access delay.
Assume, station latency = 1 ms and TTRT = 4 ms. (04 Marks)

c. Discuss the framework used for defining various LAN standards. Explain each briefly. (10 Marks)

6 a. Write a protocol stack of various infinet protocols, that is used by [illegible] (08 Marks)

b. Explain IP address classes, with the help of a neat diagram. Identify a particular application for each class. (03 Marks)

c. Describe the operation of ARP and RARP. (10 Marks)

7 a. Write the cell format of ATM. With the help of cell switching schematic, explain how cells are routes through ATM switch. (12 Marks)

b. Explain classical IP over ATM LAN (IPOA). (08 Marks)

8 a. Explain TCP socket interface. How the socket primitives are used to carry out active open and passive open connections, with the help of diagram. (10 Marks)

b. Give the packet format of RTP and describe its use. (10 Marks)

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18EC743

Seventh Semester B.E. Degree Examination, July/August 2022
Multimedia Communication

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Explain with a neat diagram, the Interactive television application for both cable and satellite network. **(10 Marks)**

b. With the help of a diagram, describe the main components of PSTN and show how a high speed modem provides multiple services in addition to basic telephony. **(10 Marks)**

OR

2 a. Define Network Quality of Service parameters. Explain Packet Switched Network parameters. **(08 Marks)**

b. Determine the propagation delay associated with the following communication channel :
i) Connection through private telephone network of 1km.
ii) Connection through a PSTN of 200km.
iii) Connection over a satellite channel 50000km. Assume velocity of propagation of a signal in case of (i) and (ii) 2×10^8 m/sec iii) 3×10^8 m/sec. **(12 Marks)**

Module-2

3 a. With the help of a diagram, explain how a digital image produced by a scanner or digital camera is captured and stored within the memory of a computer. **(10 Marks)**

b. Explain the principle of operation of a PCM speech codec, with a block diagram also explain the compressor and expander. **(10 Marks)**

OR

4 a. With the help of a diagram, explain the principles of Interlaced of scanning as used in most TV broadcast applications. **(10 Marks)**

b. Assuming the CD – DA standard is being used. Derive
i) The storage capacity of a CD – ROM to store 60 minutes of multimedia title.
ii) The time to transmit a 30sec portion of the title using a transmission channel of bit rate 64 kbps and 1.5 Mbps. **(10 Marks)**

Module-3

5 a. Explain the meaning of the following terms relating to text compression algorithms :
i) Static coding ii) Dynamic / Adaptive coding. **(08 Marks)**

b. How the coding operation takes place in arithmetic coding? Consider the transmission of a message comprising a string of characters with probabilities.
e = 0.3 , n = 0.3 , t = 0.2 , w = 0.1 , - = 0.1. The word needed to be transmitted is went. **(12 Marks)**

OR

6 a. Discuss Multimedia Operating System with respect to CPU Management, Memory Management , I/O Management and File System Management. **(08 Marks)**

b. Compress the following string using LZW algorithm. "ABABBABCABABBA". **(12 Marks)**

Module-4

7 a. Explain with the help of diagram for the signal encoder and decoder and explain how better sound quality for the same bit rate can be obtained using a sub – band coding ADPCM. **(10 Marks)**

b. With the help of example frame sequences. Explain the meaning of the following types of compressed frame and the reasons for their use :
i) I – frame ii) P – frame iii) B – frame. **(10 Marks)**

OR

8 a. Explain with diagram H.261, explain the role and operation of the quantization control block. **(10 Marks)**

b. Solve a digitized video to be compressed using the MPEG – 1 standard assuming a frame sequence of IBBPBBPBBPBBI... and average compression ratio of
$10:1 \rightarrow$ I frame , $20:1 \rightarrow$ P frame , $50:1 \rightarrow$ B frame.
Derive the average bit rate that is generated by the encoder for both the NTSC and PAL digitization formats. **(10 Marks)**

Module-5

9 a. Explain the LAN protocols and Protocol frame work. **(10 Marks)**

b. Explain in detail with diagrams , the token ring configuration , frame formats , frame transmission and reception with priority operation. **(10 Marks)**

OR

10 a. Describe the operation of ARP and RARP. **(10 Marks)**

b. Explain Fragmentation and Reassembly in the internet in detail. **(10 Marks)**

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CBCS SCHEME

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18EC743

Seventh Semester B.E. Degree Examination, July/August 2022
Multimedia Communication

Time: 3 hrs. Max. Marks: 100

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Module-1

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OR

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Module-2

3 a. With the help of a diagram, explain how a digital image produced by a scanner or digital camera is captured and stored within the memory of a computer. (10 Marks)

b. Explain the principle of operation of a PCM speech codec, with a block diagram also explain the compressor and expander. (10 Marks)

OR

4 a. With the help of a diagram, explain the principles of Interlaced of scanning as used in most TV broadcast applications. (10 Marks)

b. Assuming the CD – DA standard is being used. Derive
i) The storage capacity of a CD – ROM to store 60 minutes of multimedia title.
ii) The time to transmit a 30sec portion of the title using a transmission channel of bit rate 64 kbps and 1.5 Mbps. (10 Marks)

Module-3

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i) Static coding ii) Dynamic / Adaptive coding. (08 Marks)

b. How the coding operation takes place in arithmetic coding? Consider the transmission of a message comprising a string of characters with probabilities.
$e = 0.3$, $n = 0.3$, $t = 0.2$, $w = 0.1$, $\cdot = 0.1$. The word needed to be transmitted is went. (12 Marks)

OR

6 a. Discuss Multimedia Operating System with respect to CPU Management, Memory Management , I/O Management and File System Management. (08 Marks)

b. Compress the following string using LZW algorithm. "ABABBABCABABBA". (12 Marks)

Module-4

7 a. Explain with the help of diagram for the signal encoder and decoder and explain how better sound quality for the same bit rate can be obtained using a sub – band coding ADPCM. (10 Marks)

b. With the help of example frame sequences. Explain the meaning of the following types of compressed frame and the reasons for their use :
i) I – frame ii) P – frame iii) B – frame. (10 Marks)

OR

8 a. Explain with diagram H.261, explain the role and operation of the quantization control block. (10 Marks)

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Derive the average bit rate that is generated by the encoder for both the NTSC and PAL digitization formats. (10 Marks)

Module-5

9 a. Explain the LAN protocols and Protocol frame work. (10 Marks)

b. Explain in detail with diagrams , the token ring configuration , frame formats , frame transmission and reception with priority operation. (10 Marks)

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10 a. Describe the operation of ARP and RARP. (10 Marks)

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CBCS SCHEME

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18EC743

Seventh Semester B.E. Degree Examination, Feb./Mar.2022
Multimedia Communication

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Explain the communication modes available to transfer the information stream. (10 Marks)

b. Explain (i) Data network (ii) Broadband multiservice network in detail with suitable figures. (10 Marks)

OR

2 a. Explain with the aid of the diagram, how a PSTN can support range of multimedia common applications. (10 Marks)

b. Explain in brief interactive applications over internet. (10 Marks)

Module-2

3 a. Illustrate the different types of text data representation. (10 Marks)

b. Describe the function of signal encoder with the associated waveform. (10 Marks)

OR

4 a. Explain Raster-scan operation associated waveform. (10 Marks)

b. Derive the bit rate and the memory requirements to store each frame that result from digitization of both 525 and 625-line system assuring a 4 : 2 : 2 format. Also find the total memory required to store a 1 : 5 hour movie/video. (10 Marks)

Module-3

5 a. Give a brief description of the 5 main stages associated with the baseline mode of operation of JPEG. (10 Marks)

b. Explain CPU management and memory management in multimedia operating systems. (10 Marks)

OR

6 a. A series of messages is to be transferred between two computers over a PSTN. The messages comprise just the characters A through H. Analysis has shown that the probability (relative frequency of occurrence) of each character is as follows:

A and B = 0.25 and D = 0.14, E, F, G and H = 0.0555

(i) Use a Shannon's formula to derive the minimum average number of bits per character.

(ii) Use Huffman coding to derive a codeword set and prove this is the minimum set by constructing the corresponding Huffman code tree. (10 Marks)

b. Define distributed multimedia system with neat block schematic and also highlight its features. (10 Marks)

Module-4

7 a. Discuss the principles of differential pulse code modulation with block diagram. (10 Marks)

b. Explain principle of linear predictive coding with block schematic. (10 Marks)

OR

8 a. What are the video compression principles, explain with example frame sequence (i) I and P frames (ii) I – P – B frames (iii) PB frames. (10 Marks)

b. Using Block diagram, explain H-261 video encoder principles. (10 Marks)

Module-5

9 a. What is a LAN? Explain LAN topologies and LAN media access methods. (10 Marks)

b. Explain the devices commonly used in LAN. (10 Marks)

OR

10 a. Explain Address Resolution protocol. Briefly describe ARP functionality. (10 Marks)

b. Explain IPV$_4$ addressing and IP datagram format. (10 Marks)

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18EC743

Seventh Semester B.E. Degree Examination, Feb./Mar.2022
Multimedia Communication

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4 a. Explain Raster-scan operation associated waveform. (10 Marks)

b. Derive the bit rate and the memory requirements to store each frame that result from digitization of both 525 and 625-line system assuring a 4 : 2 : 2 format. Also find the total memory required to store a 1 : 5 hour movie/video. (10 Marks)

Module-3

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8 a. What are the video compression principles, explain with example frame sequence (i) I and P frames (ii) I – P – B frames (iii) PB frames. (10 Marks)

b. Using Block diagram, explain H-261 video encoder principles. (10 Marks)

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17EC741

Seventh Semester B.E. Degree Examination, July/August 2022
Multimedia Communication

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. With the help of a diagram, describe the main components of PSTN and show how a high speed modem provides multiple services in addition to basic telephony. (10 Marks)

b. Explain with a neat diagram, the interactive television application for both cable and satellite network. (10 Marks)

OR

2 a. Explain the working of CO packet switched network including routing table. (10 Marks)

b. Determine the propagation delay associated with the following communication channels:
i) A connection through a private telephone network of 1km.
ii) A connection through PSTN of 200km
iii) A communication over a satellite channel of 50,000km.
Assume that the velocity of propagation of a signal in the case of
i) 2×10^8m/s ii) 2×10^8m/s iii) 3×10^8m/s. (10 Marks)

Module-2

3 a. Explain the principle of operation of a PCM speech codec, with a block diagram also explain the compressor and expander. (08 Marks)

b. State the types of text that are used to produce pages of documents. Explain. (12 Marks)

OR

4 a. Derive the time to transmit the following digitized images at both 64Kbps and 1.5Mbps
i) $640 \times 480 \times 8$ VGA compatible image
ii) $1024 \times 768 \times 24$ SVGA compatible image (10 Marks)

b. What do you understand by the terms
i) Color gamut
ii) Additive color mixing
iii) Subtractive color mixing
Give application of both color mixing. (10 Marks)

Module-3

5 a. How the coding operation takes place in arithmetic coding, consider the transmission of a message comprising a string of charaters with probabilities e = 0.3, n = 0.3, t = 0.2, w = 0.1, • = 0.1. The word needed to be transmitted is Went. (10 Marks)

b. With the help of a block diagram, identify the stages associated JPEG encoder and explain. (10 Marks)

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6 a. Compress the following string using LZW algorithm. "ABABBABCABABBA". (10 Marks)

b. Discuss multimedia operating system with respect to CPU management, memory management, I/O management and file system management. (10 Marks)

Module-4

7 a. With the help of a schematic diagram, explain the operation of a basic DPCM signal encoder and decoder. (10 Marks)

b. Explain the principles on which LPC codes are based, hence with the aid of a schematic diagram of an LPC encoder and decoder. (10 Marks)

OR

8 a. Explain with neat diagram of video compression principle. (08 Marks)

b. Solve a digitized video to be compressed using the MPEG-1 standard assuming a frame sequence of: IBBPBBPBBPBBI... and average compression ratio of 10:1 → I frame, 20:1 → P frame 50:1 → B frame. Derive the average bit rate that is generated by the encoder for both the NTSC and PAL digitization formats. (12 Marks)

Module-5

9 a. Explain error resilient video coding. (07 Marks)

b. Explain packet video in detail. (07 Marks)

c. Explain video transport across generic network. (06 Marks)

OR

10 a. Explain packet audio and video in the network environment. (07 Marks)

b. Write a short note on analytic mode based approach. (07 Marks)

c. Write a short note on error losses ATM. (06 Marks)

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17EC741

Seventh Semester B.E. Degree Examination, July/August 2022
Multimedia Communication

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i) 2×10^8 m/s ii) 2×10^8 m/s iii) 3×10^8 m/s. (10 Marks)

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OR

4 a. Derive the time to transmit the following digitized images at both 64Kbps and 1.5Mbps
i) $640 \times 480 \times 8$ VGA compatible image
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ii) Additive color mixing
iii) Subtractive color mixing
Give application of both color mixing. (10 Marks)

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b. With the help of a block diagram, identify the stages associated JPEG encoder and explain. (10 Marks)

OR

6 a. Compress the following string using LZW algorithm. "ABABBABCABABBA". (10 Marks)

b. Discuss multimedia operating system with respect to CPU management, memory management, I/O management and file system management. (10 Marks)

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7 a. With the help of a schematic diagram, explain the operation of a basic DPCM signal encoder and decoder. (10 Marks)

b. Explain the principles on which LPC codes are based, hence with the aid of a schematic diagram of an LPC encoder and decoder. (10 Marks)

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b. Solve a digitized video to be compressed using the MPEG-1 standard assuming a frame sequence of: IBBPBBPBBPBBI... and average compression ratio of 10:1 → I frame, 20:1 → P frame 50:1 → B frame. Derive the average bit rate that is generated by the encoder for both the NTSC and PAL digitization formats. (12 Marks)

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17EC741

Seventh Semester B.E. Degree Examination, Feb./Mar. 2022
Multimedia Communication

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. List the five basic types of communication network that are used to provide multimedia services. Explain with a neat diagram:
(i) Data Networks
(ii) Integrated Services Digital Network (10 Marks)

b. Explain the principle of operation of packet switched network with neat diagrams. (07 Marks)

c. Derive the maximum block size that should be used over a channel which has BER probability of 10^{-4} if the probability of a block containing an error and hence being discarded is to be 10^{-1}. (03 Marks)

OR

2 a. Explain with neat diagrams, Movie on Demand and Near Movie on Demand (MOD/N-MOD) application. (08 Marks)

b. Explain the operational modes of multipoint conferencing with neat diagrams. (06 Marks)

c. Determine the propagation delay associated with the following communication channels:
(i) A connection through a private telephone network of 1 km
(ii) A connection through a PSTN of 200 km
(iii) A connection over a satellite channel of 50,000 km
Assume velocity of propagation of a signal in the case of (i) and (ii) is 2×10^8 m/sec and in the case of (iii) is 3×10^8 m/sec. (06 Marks)

Module-2

3 a. Explain the principle of operation of PCM speech CODEC with a block diagram. Also explain compressor and expander. (08 Marks)

b. Explain Interlaced Scanning principle with a diagram. (06 Marks)

c. Derive the bit rate and the memory requirements to store each frame that result from the digitization of a 525 line system assuming a 4:2:2 format. Also find the total memory required to store a 1.5 hour movie/video. (06 Marks)

OR

4 a. With the aid of diagram, explain the following:
(i) Aspect ratio of display screen
(ii) Raster scan
(iii) 4:2:2 (08 Marks)

b. Explain different types of text in detail. (06 Marks)

c. Assuming the bandwidth of a speech signal is from 50 Hz through to 10 kHz and that of a music signal is from 15 Hz through to 20 kHz, derive the bitrate that is generated by the digitization procedure in each case assuming the Nyquist sampling rate is used with 12 bits per sample for the speech signal and 16 bits per sample for the music signal. Derive the memory required to store a 10 minute passage of stereophonic music. (06 Marks)

Module-3

5 a. A message comprising of a string of characters with probabilities e = 0.3, n = 0.3, t = 0.2, w = 0.1, · = 0.1 is to be encoded. The message is "went." Compute the arithmetic code word. (08 Marks)

b. With the aid of diagrams, explain JPEG encoder. (08 Marks)

c. Explain CPU management in multimedia operating system. (04 Marks)

OR

6 a. A message and its probability of occurrence of each character is as follows:
A and B = 0.25, C and D = 0.14, E, F, G and H = 0.055.
(i) Use Shannon's formula to derive the minimum average number of bits per character.
(ii) Construct the Huffman code tree and derive a suitable set of code word. (08 Marks)

b. Explain the principle of LZW compression. (06 Marks)

c. Explain the main features of distributed multimedia system. (06 Marks)

Module-4

7 a. Explain Linear Predictive coding encoder and decoder with neat schematic. (08 Marks)

b. A digitized video is to be compressed using the MPEG-1 Standard. Assuming a frame sequence of I BBP BBP BBP BBI... and average compression ratios of 10:1 (I), 20:1 (P) and 50:1 (B), derive the average bit rate that is generated by the encoder for both NJSC and PAL formats. (08 Marks)

c. Explain different frame types. (04 Marks)

OR

8 a. Explain DPCM encoder and decoder with a neat diagram. (10 Marks)

b. What do you understand by the terms:
(i) Group of pictures (ii) Prediction span (iii) Motion compensation
(iv) Motion estimation (v) Temporal masking (10 Marks)

Module-5

9 a. Explain scalable rate control with a neat block diagram. (10 Marks)

b. Explain video streaming architecture with a neat diagram. (10 Marks)

OR

10 a. Discuss briefly about Integrated Packet Networks. (10 Marks)

b. Explain briefly about errors and losses in ATM. (10 Marks)

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15EC741

Seventh Semester B.E. Degree Examination, July/August 2022
Multimedia Communication

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. Explain multipoint conferencing with neat block diagram. (06 Marks)
b. Define QoS. Explain QoS parameters associated with a packet switched network. (06 Marks)
c. Explain communication modes in brief. (04 Marks)

OR

2 a. Explain telephone network, integrated services Digital Network, and Bread band multiservice network with neat block diagram. (08 Marks)
b. Explain packet switched network and circuit switched network with neat block diagram. (08 Marks)

Module-2

3 a. Explain digitization principles using neat block diagram of encoder and decoder and waveforms. (10 Marks)
b. Explain raster scan display architecture with neat block diagram. (06 Marks)

OR

4 a. Calculate the time to transmit the following digitized images at both 64kbps and 1.5Mbps :
i) a 640 × 480 × 8 VGA – compatible image
ii) a 1024 × 768 × 24 SVGA – compatible image (06 Marks)
b. Explain PCM speech with neat block diagram. (06 Marks)
c. Assuming the CD – DA standard is being used, estimate storage capacity of a CD – ROM to store a 60 minute multimedia title. (04 Marks)

Module-3

5 a. Encode the text: went • using arithmetic coding if following are probabilities of each character. e = 0.3, n = 0.3, t = 0.2, w = 0.1 and • = 0.1. (10 Marks)
b. Encode the text : AAAABBCD using static Huffman coding. (06 Marks)

OR

6 a. Explain working of JPEG neat block diagram of encoder and decoder. (12 Marks)
b. Explain LZ technique. (04 Marks)

Module-4

7 a. Explain DPCM with neat block diagram of encoder and decoder. (12 Marks)
b. Explain code – excited LPC in brief. (04 Marks)

OR

8 a. Explain MPEG – 4 with neat diagram of encoder and decoder. (10 Marks)
b. Explain main features of a DMS. (06 Marks)

Module-5

9 a. Explain error resilient technique for video. (06 Marks)
b. Explain streaming video across internet with neat diagram. (10 Marks)

OR

10 a. Explain video delay causes in ATM network. (08 Marks)
b. Explain MPEG video error concealment with block diagram. (08 Marks)

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CBCS SCHEME

USN

15EC741

Seventh Semester B.E. Degree Examination, Feb./Mar. 2022
Multimedia Communication

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. List the five basic types of communication network that are used to provide multimedia services. Explain with a neat diagram i) Telephone network ii) Integrated services digital network. (10 Marks)

b. Explain the operational modes of multi point conferencing with neat diagrams. (06 Marks)

OR

2 a. Explain the working principle of circuit-mode and packet-mode of operation of multimedia networks with a neat diagram. List out salient features of each type of network. (08 Marks)

b. Derive the maximum block size that should be used over a channel which has BER probability of 10^{-4} if the probability of a block containing an error and being discarded is to be 10^{-1}. (02 Marks)

c. Explain with neat diagrams, the interactive television application for both cable and satellite network. (06 Marks)

Module-2

3 a. Explain the principle of operation of PCM speech CODEC with a block diagram. Also explain compression and expander. (10 Marks)

b. Derive the bit rate and memory requirements to store each frame that result from the digitization of a 525-line system assuming a 4:2:2 format. Also find the total memory required to store a 1.5 hour movie/video. (03 Marks)

c. Define aspect ratio of display screen. (03 Marks)

OR

4 a. Explain different types of text in detail. (06 Marks)

b. Explain interlaced scanning principle with a diagram. (06 Marks)

c. Assuming the bandwidth of a speech signal is from 50Hz through to 10kHz and that of a music signal is from 15Hz through to 20KHZ, derive the bit rate that is generated by the digitization procedure in each case assuming the Nyquist sampling rate is used with 12 bits per sample for the speech signal and 16 bits per sample for the music signal. Derive the memory required to store a 10 minute passage of stereophonic music. (04 Marks)

Module-3

5 a. A message comprising of a string of characters with probabilities e = 0.3, n = 0.3, t = 0.2, w = 0.1, • = 0.1 is to be encoded. The message is "went •". Compute the arithmetic code word. (08 Marks)

b. Explain CPU management and memory management in multimedia operating systems. (08 Marks)

OR

6 a. Messages comprising seven different characters A through G, are to be transferred over a data link. Analysis has shown that the relative frequency of occurrence of each character is: A = 0.10, B = 0.25, C = 0.05, D = 0.32, E = 0.01, F = 0.07, G = 0.2
   i) Derive the entropy of the messages.
   ii) Use static Huffman coding to derive a set of suitable codewords and construct the corresponding Huffman code tree.
   iii) Derive the average number of bits per codeword for your codeword set. (06 Marks)

   b. Explain the principle of LZW compression. (04 Marks)

   c. Explain the main features of distributed multimedia system. (06 Marks)

Module-4

7 a. Explain linear predictive coding encoder and decoder with neat schematic. (08 Marks)

   b. A digitized video is to be compressed using the MPEG-1 standard. Assuming a frame sequence of IBBPBBPBBPBBI.... And average compression ratios of 10:1 (I), 20:1 (P) and 50:1(B), derive the average bit rate that is generated by the encoder for both the NTSC and PAL digitization formats. (08 Marks)

OR

8 a. Explain DPCM encoder and decoder with a neat diagram. (10 Marks)

   b. Define group of pictures and prediction span. Explain different frame types. (06 Marks)

Module-5

9 a. Explain scalable rate control with a neat block diagram. (10 Marks)

   b. Explain briefly about layered vide coding. (06 Marks)

OR

10 a. Discuss briefly about integrated packet networks. (08 Marks)

   b. Explain briefly about errors and losses in ATM. (08 Marks)

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CBCS SCHEME

15EC741

Seventh Semester B.E. Degree Examination, July/August 2021
Multimedia Communication

Time: 3 hrs. Max. Marks: 80

Note: *Answer any FIVE full questions.*

1 a. With a neat diagram, explain the following multimedia networks in detail.
i) Telephone network
ii) Data network. (08 Marks)

b. Discuss the QoS parameters used in both circuit switched and packet switched networks. (08 Marks)

2 a. Explain the term 'multimedia'. Discuss the basic form of representation of text an image, audio and video. (04 Marks)

b. Derive the maximum block size that should be used over a channel which has mean BER probability of 10^{-4}, if the probability of a block containing an error and hence being discarded is to be 10^{-1}. (04 Marks)

c. Explain the operation of circuit switched and packet switched networks. (08 Marks)

3 a. Explain the following :
i) Hyper text
ii) Raster scanning. (06 Marks)

b. With the help of diagram, explain the working of digital cameras. (06 Marks)

c. Derive the bit rate and the memory requirements to store each frame that result from the digitization of both 525 – line and a 625 –line system, assuming a 4 : 2 : 2 format. Also find the total memory required to store a 1.5 hour movie/video. (04 Marks)

4 a. With a neat sketch, explain the principle of operation of interlaced scanning. (06 Marks)

b. Derive the time to transmit the following digitized images at both 64kbps and 1.5Mbps
A $640 \times 480 \times 8$ VGA compatible image
A $1024 \times 768 \times 24$ SVGA compatible image. (04 Marks)

c. Explain the following digital video formats :
i) 4 : 2 : 2 ii) 4 : 2 : 0. (06 Marks)

5 a. With the help of block diagram, explain JPEG encoder. (08 Marks)

b. Encode the string 'went•', comprising characters with probabilities of e = 0.3, n = 0.3, t = 0.2, w = 0.1, • = 0.1 using arithmetic coding. (04 Marks)

c. What are the main features of DMS? (04 Marks)

6 a. A series of messages is to be transferred between two computers over a PSTN. The messages comprise just the characters A through H. Analysis has shown that the probability (relative frequency of occurrence) of each character is as follows :
A and B = 0.25, C and D = 0.14, E, F, G and H = 0.055. Use Huffman coding to derive a codeword set and prove this is the minimum set by constructing the corresponding Huffman code tree. (06 Marks)

b. Write short notes on Lempel – Ziv coding. (04 Marks)

c. With the help of diagram, explain the integrated management architecture for IP – based networks. (06 Marks)

7 a. Discuss about the ADPCM subband encoder and decoder. (08 Marks)

b. With necessary schematic, explain MPEG – 4 coding principles. (08 Marks)

8 a. With the help of diagram, explain the working of LPC signal encoder and decoder. (08 Marks)

b. Explain H-261 video compression standard with the help of macro block format frame format and GOB structure. (08 Marks)

9 a. Discuss about the NTI and CTI reconstruction schemes used in packet voice transmission. (08 Marks)

b. Explain the multiplexing techniques used in ATM networks. (08 Marks)

10 a. With the help of necessary diagram, explain the video streaming across the internet. (08 Marks)

b. Discuss about the different Error-Resilient video coding techniques. (08 Marks)

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CBCS SCHEME

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15EC741

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021

Multimedia Communication

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. List out the different types of multimedia networks used to provide Multimedia services. (03 Marks)

b. With a neat diagram, explain Telephone Network and Broadcast Television Network. (08 Marks)

c. Determine the propagation delay associated with the following communication channels. Assume that the velocity of propagation of a signal in the case of i) 4 ii) is $2 \times 10^8 ms^{-1}$ and iii) is $3 \times 10^8 ms^{-1}$.

1. A connection through a private network of 1km
2. A connection through a PSTN of 200km
3. A connection over a satellite channel of 50,000km. (05 Marks)

OR

2 a. Find the maximum block size that should be used over a channel which has mean BER probability of 10^{-4}. If the probability of a block containing an error and hence discarded to be 10^{-1}. (03 Marks)

b. Describe the additional service provided by public and private networks other than telephony. (08 Marks)

c. With a neat diagram, explain the Image only Interpersonal communication. (05 Marks)

Module-2

3 a. With a neat diagram, explain the signal encoding and decoding using PCM principles. (09 Marks)

b. Assuming the bandwidth of a speech signal is from 50Hz through to 10KHz and that of a music signal is from 15Hz through to 20KHz, determine procedure in each case assuming Nyquist sampling rate is used with 12bits per sample for the speech signal and 16bits per sample for music signal. Derive the memory required to store a 10 minute passage of a stereophonic music. (07 Marks)

OR

4 a. Explain 4:2:2 and 4:2:0 digitization formats. (08 Marks)

b. Describe with a neat schematic color image capture using Digital Camera and Scanner. (08 Marks)

Module-3

5 a. Describe GIF (Graphic Interchange Format) with relevant diagrams and also describe the modes. (08 Marks)

b. Derive the code for string "went." Comprising characters with probability of e = 0.3, n = 0.3, t = 0.2, w = 0.1, • = 0.1 using Arithmetic coding. (08 Marks)

OR

6 a. With a net Schematic, explain JPEG Encoder. (09 Marks)

b. Derive the output code using LZW compression algorithm. The input string is ABABBABCABABBA for the initial dictionary containing only three characters with code as follows :

Code	String
1	A
2	B
3	C

(07 Marks)

Module-4

7 a. Explain with a neat diagram, ADPCM sub band encoder and decoder. (08 Marks)

b. Explain with relevant diagrams, sensitivity of the ear, frequency and temporal masking used in perceptual coding. (08 Marks)

OR

8 a. Illustrate with a neat diagram, Dolby AC -2 and hybrid backward/forward adaptive bit allocation. (08 Marks)

b. Explain the principles of video compression and also different frame types used. (08 Marks)

Module-5

9 a. Explain the NTI and CTI reconstruction schemes. (08 Marks)

b. Discuss the network design issues that directly affect video transmission. (08 Marks)

OR

10 a. Discuss Simulcast coder and layered coder in layered compression. (08 Marks)

b. Explain with block diagram, the video streaming architecture. (08 Marks)

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CBCS SCHEME

USN

17EC741

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021
Multimedia Communication

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Explain five types of communication network that are used to provide multimedia services. (10 Marks)

b. Explain web page, home page, hyperlink, URL, HTML. (10 Marks)

OR

2 a. Explain the working principle of circuit mode and packet mode of operation of multimedia network. (10 Marks)

b. Determine the propagation delay associated with the following communication channels
i) A connection through a private telephone network of 1 km
ii) A connection through a PSTN of 200 km
iii) A connection over a satellites channel of 50,000km
Assume that the velocity of propagation of a signal in the case of : i) and ii) is $2 \times 10^8 ms^{-1}$ and in the case of iii) $3 \times 10^{-8} ms^{-1}$. (10 Marks)

Module-2

3 a. State and explain the basic form of representation of : Text, Image, Audio, Video, Fax Machine. (10 Marks)

b. Assuming the bandwidth of a speech signal is from 50Hz through to 10KHz and that of a music signal is from 15Hz to 20KHz, derive the bit rate that is generated by the digitization procedure in each assuming the Nyquist sampling rate is used with 12 bits per sample for the speech signal and 16 bits per sample for the music signal. Derive the memory required to store a 10 minute passage of stereophonic music. (10 Marks)

OR

4 a. With the aid of block diagram explain PCM signal encoding and decoding principle. (10 Marks)

b. Derive the time to transmit the following digitized images at both 64 Kbps and 1.5 Mbps.
i) A 640 × 480 × 8 VGA compatible image
ii) A 1024 × 768 × 24 SVGA – compatible image. (10 Marks)

Module-3

5 a. Explain compression principles. (08 Marks)

b. Explain static Huffman coding. (06 Marks)

c. Explain JPEG coding principles. (06 Marks)

OR

6 a. Discuss multimedia operating system with respect CPU management, memory management, I/O management and file system management. (08 Marks)

b. What is multimedia operating system? (06 Marks)

c. Explain main features of a DMS. (06 Marks)

Module-4

7 a. With a neat diagram, explain video compassion principles. (08 Marks)
b. Explain MPEG – 4 coding principles. (06 Marks)
c. Explain linear predictive coding. (06 Marks)

OR

8 a. Explain H.261 encoding formats. (08 Marks)
b. Explain how better sound quality can be obtained by using subband DPCM with the help of block diagram of encoder and decoder. (06 Marks)
c. Write a note on audio compression. (06 Marks)

Module-5

9 a. Explain packet audio and video in the network environment. (08 Marks)
b. Explain video transport across generic network. (06 Marks)
c. Write a short note on multimedia transport across ATM networks. (06 Marks)

OR

10 a. Explain multiplexing in ATM networks. (08 Marks)
b. Explain video delay in ATM networks. (06 Marks)
c. Write a short note on errors and losses in ATM. (06 Marks)

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CBCS SCHEME

SRI SAIRAM COLLEGE OF ENGINEERING

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15EC741

Seventh Semester B.E. Degree Examination, Dec.2019/Jan.2020
Multimedia Communication

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. Discuss the different types of communication network that are used to provide multimedia communication service. (08 Marks)

b. Explain the communication modes available to transfer the information stream. (08 Marks)

OR

2 a. Determine the propagation delay associated with the following communication channels.
i) A connection through a private telephone network of 1km
ii) A connection through a PSTN of 200km
iii) A connection over a satellite channel of 50,000km
assume that the velocity of propagation of a signal in case of i) and ii) is $2\times10^{5}ms^{-1}$ and in case iii) $3\times10^{8}ms^{-1}$. (06 Marks)

b. Explain the QoS parameter associated with a packet-switched network. (06 Marks)

c. Discuss any one entertainment application of multimedia. (04 Marks)

Module-2

3 a. Illustrate the different types of text data representation. (06 Marks)

b. Calculate the time to transmit the following digitizied images at both 64kbps and 1.5mbps.
i) A 640 × 480 × 8 VGA – compatible image
ii) A 1024 × 768 × 24 SVGA – compatible image. (06 Marks)

c. The band width of speech signal is from 50Hz through to 10KHz and that of a music signal is from 15Hz through to 20KHz. Compute the bit rate that is generated by the digitization procedure by assuming the Nyquist sampling rate of 12 bits per sample for speech signal and 16 bits per sample for the music signal. (04 Marks)

OR

4 a. Assuming the CD-DA standard is being used, compute the time to transmit a 30 second portion of the title using a transmission channel of bit rate : i) 64 kbps ii) 1.5 Mbps. (04 Marks)

b. With the aid of block diagram explain PCM signal encoding and decoding principle. (08 Marks)

c. Why is the chrominance signal transmitted in the form of two color different signals? Identify the color difference signals associated with the NTSC and PAL systems. (04 Marks)

Module-3

5 a. A message and its probability of occurrence of each character is of follows :
A and B = 0.25, C and D = 0.14, E, F, G and H = 0.055.
i) Find the minimum average number of bits per character using Shannon's formula.
ii) Construct Huffman code tree and derive a code word set. (08 Marks)

b. Define distributed multimedia system with neat block schematic and also highlight its features. (08 Marks)

OR

6 a. Discuss multimedia operating system with respect to CPU management, memory management, I/O management and file system management. (08 Marks)

b. With the aid of neat block diagram explain JPEG encoder. (08 Marks)

Module-4

7 a. Discuss the principles of differential pulse code modulation with neat block diagram. (08 Marks)

b. Using block diagram explain h-261 video encoder principles. (08 Marks)

OR

8 a. Explain principle of linear predictive coding with neat block schematic. (08 Marks)

b. A digitized video is to be compressed using the MPEG – 1 standard. Assuming a frame sequence of : IBBPBBPBBPBBI

And average compression ration of 10 : 1(I), 20 : 1(P) and 50 : 1(B), derive the average bit rate that is generated by the encoder for both NTSC and PAL digitization formats. (08 Marks)

Module-5

9 a. Explain video streaming architecture with neat block diagram. (08 Marks)

b. Discuss the protocol stacks for media strumming using block diagram. (08 Marks)

OR

10 a. Using neat block diagram how distortion is measured in terms of quantization parameter in R(D) model. (08 Marks)

b. Explain the different instances that may cause the end-to-end delays in ATM network. (08 Marks)

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SRI SAIRAM COLLEGE OF ENGINEERING

CBCS SCHEME

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

15EC741

Seventh Semester B.E. Degree Examination, June/July 2019
Multimedia Communication

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. Define multimedia. Explain: i) Telephone network ii) Integrated Service Digital Network (ISDN) in detail with figures. (06 Marks)

b. Explain with neat diagram multipoint conferencing modes and type of conferencing. (06 Marks)

c. Determine the propagation delay associated with the following communication channels:
i) A connection through a private telephone network of 1km.
ii) A connection through PSTN of 200km
iii) A connection over a satellite channel of 50,000km. (04 Marks)

OR

2 a. Explain the working principle of circuit mode and packet mode of operation of multimedia network. (06 Marks)

b. Explain multimedia applications. (06 Marks)

c. Define the following: i) Text ii) Image iii) Audio iv) Video (04 Marks)

Module-2

3 a. Explain clearly different types of text data representation. (06 Marks)

b. Derive the time to transmit the following digitized images at both 64Kbps and 1.5Mbps
* a 640 × 480 × 8 VGA compatible image
* a 1024 × 768 × 245 VGA compatible image. (04 Marks)

c. Describe Raster scan operation associated with TV/computer monitor. (06 Marks)

OR

4 a. Explain the principle of operation of PCM speech code with block diagram. (06 Marks)

b. Assuming the bandwidth of a speech signal is from 50Hz through to 10kHz and that of a music signal is from 15Hz through to 20kHz, drive the bit rate that is generated by the digitization procedure in each case assuming the Nyquist sampling rate is used with 12 bits per sample for the speech signal and 16 bit per sample for the Music signal. Derive the memory required to store a 10 minute passage of stereophonic music (06 Marks)

c. Explain: i) Quantization Interval ii) Aspect ratio. (04 Marks)

Module-3

5 a. Explain the meaning of the term relating to compression i) Losses and lossy compression. (06 Marks)

b. A series of messages is to be transmitted between computers over a PSTN. The messages comprise the characters A through H. The probability of each character is as follows. A and B = 0.25 C and D = 0.14 E, F, G and H = 0.055
i) Using Shanon's formula to derive the minimum average number of bits/character.
ii) Use Huffman coding to derive the codeword and prove that this is the minimum set by constructing the corresponding Huffman code tree (06 Marks)

c. Explain the main features of distributed multimedia system (04 Marks)

SJCIT/NBA/ CO-PO-PSO REPT/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering						
Course Title	MULTIMEDIA COMMUNICATION					Course Code	C313
Subject Code	BEC613A	Semester	6	Section	A	Emp.ID	1090
Faculty Name	Dr. S BHARGAVI					No.students	67

Summary of CO attainments of Sub: BEC613A Based on TYPE-1 Academic Year:2024-25

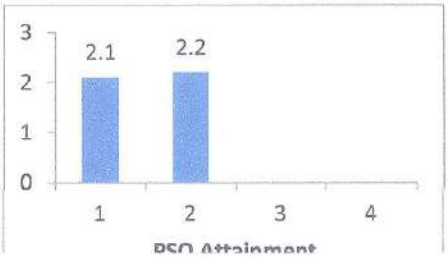
CO	CID_CO	CIE			SEE			CES			TOT_Attainment		
		S_AT	T_ST	ATN	S_AT	T_ST	ATN	S_AT	T_ST	ATN	ATN	%	Status
CO1	C313.1	49	65	2.3	41	67	1.8	40	41	3	2.1	71	YES
CO2	C313.2	27	58	1.4	41	67	1.8	39	41	2.9	1.8	59	NO
CO3	C313.3	57	67	2.6	41	67	1.8	40	41	3	2.2	75	YES
CO4	C313.4	47	67	2.1	41	67	1.8	38	41	2.8	2	68	NO
CO5	C313.5	67	67	3	41	67	1.8	40	41	3	2.4	80	YES

Summary of PO attainments of Sub: BEC613A Based on TYPE-1 Academic Year:2024-25

PO Number	1	2	3	4	5	6	7	8	9	10	11	12
Direct ATNT(D)	2.01	2.04	2.05	2.19	2.17	2.18	2.16	2.13	2.17	2.33	2.33	1.91
Indirect ATNT(ID)	2.94	2.94	2.91	2.95	2.92	3	3	2.9	2.92	3	3	2.9
Total-ATNT	2.1	2.12	2.13	2.25	2.24	2.25	2.2	2.2	2.24	2.4	2.4	2.02
Total-ATNT (%)	70	71	71	75	75	75	73	73	75	80	80	67
Rel. to Mapping	10.5	9.2	5.7	3	3.7	1.5	0.7	1.5	3.7	1.6	0.8	4

Summary of PSO attainments in Year:2024-25

PSO Number	1	2	3	4
Direct ATNT(D)	2.02	2.13		
Indirect ATNT(ID)	2.95	2.9		
Total-ATNT	2.1	2.2		



SJCIT/NBA/ CO-PO-PSO REPT/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering							
Course Title	MULTIMEDIA COMMUNICATION						**Course Code**	C313
Subject Code	BEC613A		**Semester**	6	**Section**	A	**Emp.ID**	1090
Faculty Name	Dr. S BHARGAVI						**No.students**	67
Total-ATNT (%)	70	73			PSO Attainment			
Rel. to Mapping	7.7	2.9						

SJCIT/NBA/ COURSE/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering

Course Information							
Programme Name:	Electronics and Communication Engineering						
Academic Year:	2024-25	Semester:	6	Section:	ABC	Subject Type:	Theory
Course Title:	MULTIMEDIA COMMUNICATION						
Course Instructor Name:	Dr.S BHARGAVI					Class Strength:	
Subject Code:	BEC613A	Course No:	3	Course ID:	C313	67	

Scheme of Teaching & Marks					
Contact Hr/Week:	3	Lecture Hours (Hr.):	3	Tutorials (Hr.):	0
Max.CIE Marks:	50	Max. SEE Marks:	50	Total Max.Marks:	100
Min.CIE Marks:	19	Min.SEE Marks:	21	Total Min.Marks:	40
Final CIE (IA) Marks:	50	Assignment Marks:	25	Test Marks:	25

Threshold Values for Attainment Calculation							Final CO Attainment			
Attainment level	3	%	2	%	1	%	(Percentage Contribution, %)			
Internal Assessment	>=	70	>=	60	>=	50	CIE	40	SEE	50
SE Examination	>=	60	>=	50	>=	40	-		CES	10

Statements of Course Outcomes		No.of CO's	5	Target(%)	BL
C313.1	Interpret the concepts of multimedia communication, networking and its applications			70	L2
C313.2	Apply digitization techniques to represent different types of media			70	L2
C313.3	Compute compression ratios,bandwidth requirements and storage capacity for multimedia data			70	L2
C313.4	Analyze various compression techniques for text,images,audio and video			70	L3
C313.5	Examine multimedia concepts and demonstrate media compression using spyder python IDE			70	L5

Semester End Exam. (SEE) Target(%)	60	Course End Survey(CES) Target (%):	70

CO-PO Mapping Table (In the scale of 3)

CO/PO	1	2	3	4	5	6	7	8	9	10	11	12
C313.1	3	2				1						1
C313.2	3	2	1									2
C313.3	3	3	2	1			1					
C313.4	3	3	3	1	2			1	2			2
C313.5	3	3	2	2	3	1		1	3	2	1	1
Total	15	13	8	4	5	2	1	2	5	2	1	6

CO-PSO Mapping Table

CO/PSO	1	2	3	4
C313.1	3			
C313.2	2			
C313.3	2			
C313.4	2	2		
C313.5	2	2		
Total	11	4		

SJCIT/NBA/ STD-LIST/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering						
Course Title:	MULTIMEDIA COMMUNICATION					Course Code:	C3
Subject Code:	BEC613A	Semester	6	Section	A	Emp.ID.	10
Faculty Name:	Dr. S BHARGAVI					No.students	6

Academic Year : 2024-25

List of Students enrolled to the Course of Code : BEC613A

Sl.	USN	Student Name	Contact Nu
1	1SJ22EC001	ABHI S V	
2	1SJ22EC002	ABHIJITH J V	
3	1SJ22EC003	ABHISHEK H KANKATKAR	
4	1SJ22EC004	ADARSHA R	
5	1SJ22EC005	AJAY KUMAR A V	
6	1SJ22EC006	AKHIL M	
7	1SJ22EC007	AKSHAYA K S	
8	1SJ22EC008	AKSHITHA M	
9	1SJ22EC009	AMARESH H	
10	1SJ22EC010	AMBIKA P	
11	1SJ22EC011	AMULYA M	
12	1SJ22EC012	ANANYA A M	
13	1SJ22EC013	ANBAR SABAHATH	
14	1SJ22EC014	ANIL KUMAR K A	
15	1SJ22EC015	ANUSHREE K R	
16	1SJ22EC017	AYESHA M	
17	1SJ22EC018	AYUSH M	
18	1SJ22EC019	B V BRAMHANANDA REDDY	
19	1SJ22EC020	BHARATH H S	
20	1SJ22EC021	BHARATHI M	

SJCIT/NBA/ STD-LIST/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering						
Course Title:	MULTIMEDIA COMMUNICATION					Course Code:	C3
Subject Code:	BEC613A	Semester	6	Section	A	Emp.ID.	10
Faculty Name:	Dr. S BHARGAVI					No.students	6

Academic Year : 2024-25

List of Students enrolled to the Course of Code : BEC613A

Sl.	USN	Student Name	Contact Nur
21	1SJ22EC022	BHAVANA B M	
22	1SJ22EC023	BHAVYA S A	
23	1SJ22EC024	BHOOMIKA G	
24	1SJ22EC025	BHUGANIPALLI SREE VIDYA	
25	1SJ22EC026	BHUMIKA	
26	1SJ22EC027	BHUVAN Y A	
27	1SJ22EC028	CHAITHRA N S	
28	1SJ22EC029	CHANDAN A	
29	1SJ22EC030	CHANDAN G	
30	1SJ22EC031	CHANDANA H S	
31	1SJ22EC032	CHANDANA R	
32	1SJ22EC033	CHANDANA V R	
33	1SJ22EC034	CHANDINI T D	
34	1SJ22EC035	CHANDU SHREE Y C	
35	1SJ22EC036	CHETHAN S N	
36	1SJ22EC037	CHIRAG H	
37	1SJ22EC038	D NISARGA	
38	1SJ22EC039	DARSHANNAYKA	
39	1SJ22EC040	DEEKSHA REDDY M	
40	1SJ22EC041	DEEKSHITH PATEL C	
41	1SJ22EC042	DEEPIKA M	
42	1SJ22EC043	DEVARAJU C V	
43	1SJ22EC044	DHANUSH A AGNI	
44	1SJ22EC045	DHANUSH M	
45	1SJ22EC046	DRUTHI G A	
46	1SJ22EC047	DUDDU SIDDARTH	
47	1SJ22EC048	G AKANKSHA	

SJCIT/NBA/ STD-LIST/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering						
Course Title:	MULTIMEDIA COMMUNICATION					Course Code:	C3
Subject Code:	BEC613A	Semester	6	Section	A	Emp.ID.	10
Faculty Name:	Dr. S BHARGAVI					No.students	6

Academic Year : 2024-25

List of Students enrolled to the Course of Code : BEC613A

Sl.	USN	Student Name	Contact Nu
48	1SJ22EC049	GANAVIKA N	
49	1SJ22EC050	GOKUL KUMAR B S	
50	1SJ22EC051	GOVARDHAN V K	
51	1SJ22EC052	GOWTHAM R	
52	1SJ22EC053	GUNASHREE D S	
53	1SJ22EC054	HAFSA KHANAM	
54	1SJ22EC055	HAMSA K S	
55	1SJ22EC056	HARSHITH GOWDA N	
56	1SJ22EC057	HARSHITH K R	
57	1SJ22EC058	HARSHITH KUMAR A	
58	1SJ22EC059	HARSHITHA J V	
59	1SJ22EC060	HARSHITHA N	
60	1SJ22EC061	HARSHITHA P S	
61	1SJ22EC062	HEMANTH KUMAR M P	
62	1SJ22EC063	HITHA D	
63	1SJ22EC064	JAYANTH B S	
64	1SJ23EC400	ACHHUTHAREDDY C P	
65	1SJ23EC401	CHANDRA SHEKARA M	
66	1SJ23EC402	CHARAN KUMAR	
67	1SJ23EC403	DARSHAN H R	

SJCIT/NBA/ CIE-MARKS/ 2024-25		S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering									
Course Title:		MULTIMEDIA COMMUNICATION									
Subject Code:		BEC613A		Semester & Section				6 - A	No.Students		67
Course Intructor Name:		Dr. S BHARGAVI					Course ID:		C313		
		Test No:1									
Ref-Question Number:		1	2	3	4	5	6	7	8	9	10
		CIE Marks Entry Format For the Academic Year - 2024-25									
Questions		1,2	3,4	5,6	7,8	7,8	9,10	9,10			
Main Question No.		1	2	3	4	5	6	7			
Mapped CO-No.		1	1	1	1	3	2	3			
Sl.	USN/Q-Marks	10	10	10	7	3	6	4			
1	1SJ22EC001	5	7	10	7	3	4	3			
2	1SJ22EC002	6	7	10	7	3		4			
3	1SJ22EC003	3	10	10	5	3	3	1			
4	1SJ22EC004	6	10	10	1	3	6	2			
5	1SJ22EC005	1	8	10	6	3	4	4			
6	1SJ22EC006	6	10	10	7	2	3	4			
7	1SJ22EC007	3	10	10	7	3		4			
8	1SJ22EC008	7	10	10	7	3	4	4			
9	1SJ22EC009	6	10	10	7	3	4	4			
10	1SJ22EC010	10	10	10	0	3	5	4			
11	1SJ22EC011	4	6				0	3			
12	1SJ22EC012	10	10	10	1	3	2	4			
13	1SJ22EC013	10	10	10	6	3	1	4			
14	1SJ22EC014	7	8	10		3		4			
15	1SJ22EC015	1	10	10		3		4			
16	1SJ22EC017	7	5	10		3		4			
17	1SJ22EC018	2	10	10	7	3	3	3			
18	1SJ22EC019	3	6	10	5		6	4			
19	1SJ22EC020	5	9	10		3		4			
20	1SJ22EC021	8	9	10	7	3		4			
21	1SJ22EC022	10	10	10	7	3	5	4			
22	1SJ22EC023	4	8	10	7	3	5	4			
23	1SJ22EC024	8	7	10	7	3	6	4			
24	1SJ22EC025	7	8	10	7	3	4	4			
25	1SJ22EC026	8	8	10	3	2		4			
26	1SJ22EC027	10	3	10	6	3	3	4			
27	1SJ22EC028	7	10	8	1	3	5	2			
28	1SJ22EC029	10	10	10	5	3	3	4			
29	1SJ22EC030	10	8	10	7	3	6	4			
30	1SJ22EC031	10	8	10	7	3	3	4			
31	1SJ22EC032	8	8	8	6	3	3	4			
32	1SJ22EC033		10	10		3	4	4			
33	1SJ22EC034	3	7	10		3	0	4			
34	1SJ22EC035	7	10			3		4			
35	1SJ22EC036	1				3					
36	1SJ22EC037	2	9	10	6	3	5	4			

SJCIT/NBA/ CIE-MARKS/ 2024-25		S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering									
Course Title:		MULTIMEDIA COMMUNICATION									
Subject Code:		BEC613A		Semester & Section				6 - A	No.Students		67
Course Intructor Name:		Dr. S BHARGAVI					Course ID:		C313		
		Test No:1									
Ref-Question Number:		1	2	3	4	5	6	7	8	9	10
		CIE Marks Entry Format For the Academic Year - 2024-25									
Questions		1,2	3,4	5,6	7,8	7,8	9,10	9,10			
Main Question No.		1	2	3	4	5	6	7			
Mapped CO-No.		1	1	1	1	3	2	3			
Sl.	USN/Q-Marks	10	10	10	7	3	6	4			
37	1SJ22EC038	4	10	9	7	3		4			
38	1SJ22EC039		7	0	0	2	2	1			
39	1SJ22EC040	6	10	9	7	3	6	4			
40	1SJ22EC041	10	5	10	7	3	6	4			
41	1SJ22EC042		5	10	7	3		4			
42	1SJ22EC043	9	5	9	2	3		3			
43	1SJ22EC044										
44	1SJ22EC045	8		10							
45	1SJ22EC046		4	1	7			2			
46	1SJ22EC047	6	10	2	2						
47	1SJ22EC048	10	9	10	4	3	6	4			
48	1SJ22EC049	3	3	10	7	3	1	4			
49	1SJ22EC050										
50	1SJ22EC051	6	10	10		3		4			
51	1SJ22EC052	10	10	10	7	3	4	4			
52	1SJ22EC053	10	7	10	7	3	2	4			
53	1SJ22EC054	9	9	10	7	3	5	4			
54	1SJ22EC055	8	10	10	7	3	6	4			
55	1SJ22EC056	8		10							
56	1SJ22EC057	5	10	10		3	2	2			
57	1SJ22EC058	3	5	10	5	3	1	4			
58	1SJ22EC059	5	10	10	7	3		4			
59	1SJ22EC060	9	7	9	6	3	2	4			
60	1SJ22EC061	7	10	10			2	1			
61	1SJ22EC062	3	7	10	7	3	6	4			
62	1SJ22EC063	2	9	10	4			4			
63	1SJ22EC064	4	10	8	5	2	4	3			
64	1SJ23EC400		8	5	6	3					
65	1SJ23EC401			1	2						
66	1SJ23EC402		2	1	6						
67	1SJ23EC403										

SJCIT/NBA/ CIE-MARKS/ 2024-25		S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering									
Course Title:		MULTIMEDIA COMMUNICATION									
Subject Code:		BEC613A		Semester & Section			6 - A		No.Students		67
Course Intructor Name:		Dr. S BHARGAVI					Course ID:		C313		
		Test No:2									
Ref-Question Number:		11	12	13	14	15	16	17	18	19	20
		CIE Marks Entry Format For the Academic Year - 2024-25									
Questions		1,2	3,4	5,6	7,8	9,10					
Main Question No.		1	2	3	4	5					
Mapped CO-No.		4	2	3	4	3					
Sl.	USN/Q-Marks	10	10	10	10	10					
1	1SJ22EC001	10	8	10	10	8					
2	1SJ22EC002	10	5	10	10	8					
3	1SJ22EC003										
4	1SJ22EC004	10		8	6	6					
5	1SJ22EC005	8	7	10		8					
6	1SJ22EC006	10	6	10		5					
7	1SJ22EC007	10	7	10	10	10					
8	1SJ22EC008	10	10	10	10	10					
9	1SJ22EC009	10	10	10	10	10					
10	1SJ22EC010	10	7	10	10	10					
11	1SJ22EC011	1	2	10	1	8					
12	1SJ22EC012	10	10	10	10	9					
13	1SJ22EC013	10	10	10	10	6					
14	1SJ22EC014										
15	1SJ22EC015										
16	1SJ22EC017	9	7	10	3	8					
17	1SJ22EC018	10	10	10	10	6					
18	1SJ22EC019	8	9	10	8	7					
19	1SJ22EC020	9		8		9					
20	1SJ22EC021	9	7	10	10	8					
21	1SJ22EC022	10	10	10	10	8					
22	1SJ22EC023	10	7	10	10	6					
23	1SJ22EC024	10	10	10	10	8					
24	1SJ22EC025	10	9	9	8	9					
25	1SJ22EC026	9	5	10	1	6					
26	1SJ22EC027	10		10	10	7					
27	1SJ22EC028		10	10	5	5					
28	1SJ22EC029	10	8	10	10	10					
29	1SJ22EC030	10	3	8	10	10					
30	1SJ22EC031	10	8	10	10	9					
31	1SJ22EC032	10	10	10	10	10					
32	1SJ22EC033	10	7	10	6	6					
33	1SJ22EC034	10	10	9	10	10					
34	1SJ22EC035	10	9	7	10	10					
35	1SJ22EC036	9		10	5	3					
36	1SJ22EC037	10	10	10	9	6					

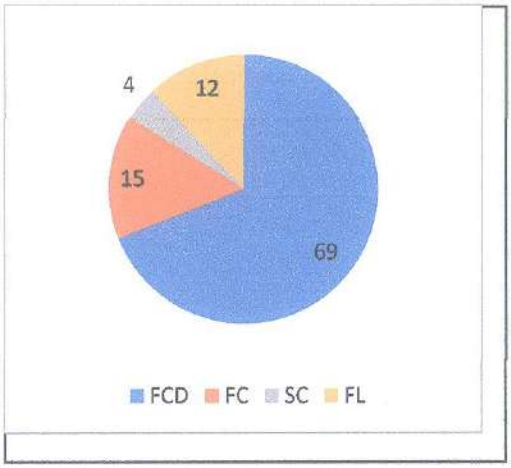
SJCIT/NBA/ CIE-MARKS/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering									
Course Title:	MULTIMEDIA COMMUNICATION									
Subject Code:	BEC613A		Semester & Section				6 - A	No.Students		67
Course Intructor Name:	Dr. S BHARGAVI					Course ID:		C313		
	Test No:2									
Ref-Question Number:	11	12	13	14	15	16	17	18	19	20
	CIE Marks Entry Format For the Academic Year - 2024-25									
Questions	1,2	3,4	5,6	7,8	9,10					
Main Question No.	1	2	3	4	5					
Mapped CO-No.	4	2	3	4	3					
Sl. USN/Q-Marks	10	10	10	10	10					
37 1SJ22EC038	10	5	10	9	9					
38 1SJ22EC039	9	10	10		10					
39 1SJ22EC040	8	10	10	10	8					
40 1SJ22EC041	10	6	10	8	10					
41 1SJ22EC042										
42 1SJ22EC043	10	6	8	8	10					
43 1SJ22EC044	9		10		9					
44 1SJ22EC045										
45 1SJ22EC046	10		10	10	7					
46 1SJ22EC047		6	10	6	6					
47 1SJ22EC048			9	3	9					
48 1SJ22EC049	5		10	9	5					
49 1SJ22EC050		3	10		5					
50 1SJ22EC051	10	3	10	9	6					
51 1SJ22EC052										
52 1SJ22EC053	10	10	10	10	10					
53 1SJ22EC054	9	5	10	10	10					
54 1SJ22EC055	10	7	9	9	7					
55 1SJ22EC056										
56 1SJ22EC057	8	3	10	5	6					
57 1SJ22EC058	4	1	10	6	8					
58 1SJ22EC059	10	7	10	10	9					
59 1SJ22EC060	10	9	10	10	8					
60 1SJ22EC061	10	3	10	3	7					
61 1SJ22EC062	7	4	10	10	10					
62 1SJ22EC063	10	9	10	10	6					
63 1SJ22EC064	10	7	10	9	9					
64 1SJ23EC400	8	3	10	5	10					
65 1SJ23EC401	7	4	10		9					
66 1SJ23EC402	4	6	10	8	8					
67 1SJ23EC403	8	2	8	4	7					

SJCIT/NBA/ CIE-MARKS/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering									
Course Title:	MULTIMEDIA COMMUNICATION									
Subject Code:	BEC613A	Semester & Section				6 - A	No.Students		67	
Course Intructor Name:	Dr. S BHARGAVI				Course ID:		C313			
	Test No:3									
Ref-Question Number:	21	22	23	24	25	26	27	28	29	30
	CIE Marks Entry Format For the Academic Year - 2024-25									
Questions	1,2	3,4	5,6	7,8	9,10	ASSIGN				
Main Question No.	1	2	3	4	5	6				
Mapped CO-No.	4	3	4	1	1	5				
Sl. USN/Q-Marks	10	10	10	10	10	25				
1 1SJ22EC001	10	4	10	10	10	25				
2 1SJ22EC002		3			2	25				
3 1SJ22EC003	4	3	8	5		23				
4 1SJ22EC004	4	3			8	22				
5 1SJ22EC005	4	1			5	23				
6 1SJ22EC006	10					24				
7 1SJ22EC007	10	7	4	10	10	25				
8 1SJ22EC008	10	10	3	10	9	25				
9 1SJ22EC009	10				2	25				
10 1SJ22EC010	10	10	10	8	10	25				
11 1SJ22EC011						19				
12 1SJ22EC012	10	3				25				
13 1SJ22EC013						24				
14 1SJ22EC014	4	3				21				
15 1SJ22EC015	10	10			4	23				
16 1SJ22EC017	9	10			4	23				
17 1SJ22EC018	4	3				23				
18 1SJ22EC019						24				
19 1SJ22EC020						23				
20 1SJ22EC021	9					24				
21 1SJ22EC022	6	3			10	25				
22 1SJ22EC023	10	8			4	25				
23 1SJ22EC024	10	10	10	10	10	25				
24 1SJ22EC025	5	9	4		10	25				
25 1SJ22EC026	4	6		10		25				
26 1SJ22EC027		3		6	10	25				
27 1SJ22EC028	8	5				25				
28 1SJ22EC029		2			10	25				
29 1SJ22EC030						25				
30 1SJ22EC031						25				
31 1SJ22EC032	6	10		4		25				
32 1SJ22EC033	8	10		4	5	25				
33 1SJ22EC034		10		4	10	24				
34 1SJ22EC035	5	10			10	25				
35 1SJ22EC036	6				10	19				
36 1SJ22EC037	10	2				24				

SJCIT/NBA/ CIE-MARKS/ 2024-25		S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering									
Course Title:		MULTIMEDIA COMMUNICATION									
Subject Code:		BEC613A		Semester & Section				6 - A	No.Students		67
Course Intructor Name:		Dr. S BHARGAVI					Course ID:		C313		
		Test No:3									
Ref-Question Number:		21	22	23	24	25	26	27	28	29	30
		CIE Marks Entry Format For the Academic Year - 2024-25									
Questions		1,2	3,4	5,6	7,8	9,10	ASSIGN				
Main Question No.		1	2	3	4	5	6				
Mapped CO-No.		4	3	4	1	1	5				
Sl.	USN/Q-Marks	10	10	10	10	10	25				
37	1SJ22EC038						25				
38	1SJ22EC039	10	10			10	24				
39	1SJ22EC040	10	9			10	25				
40	1SJ22EC041	7	2				24				
41	1SJ22EC042	10	9			6	23				
42	1SJ22EC043	4	1				22				
43	1SJ22EC044	10	9				21				
44	1SJ22EC045	10	10				20				
45	1SJ22EC046		8	9		10	24				
46	1SJ22EC047						23				
47	1SJ22EC048	7	10			10	25				
48	1SJ22EC049	6	7				25				
49	1SJ22EC050	10	10				20				
50	1SJ22EC051	10	3			10	25				
51	1SJ22EC052	6	3			10	24				
52	1SJ22EC053	4	9	10	4	10	25				
53	1SJ22EC054						21				
54	1SJ22EC055	10	9	8	6		25				
55	1SJ22EC056	10	10				20				
56	1SJ22EC057	2	2			6	24				
57	1SJ22EC058	8	2			10	24				
58	1SJ22EC059						25				
59	1SJ22EC060	7		8			25				
60	1SJ22EC061	5	9			9	22				
61	1SJ22EC062						25				
62	1SJ22EC063	6					24				
63	1SJ22EC064						23				
64	1SJ23EC400						23				
65	1SJ23EC401	2	7	8	4		24				
66	1SJ23EC402	4	7	3	6	2	21				
67	1SJ23EC403	4	7	6	8		21				

SJCIT/NBA/ SEE-REPT/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering						
Course Title	MULTIMEDIA COMMUNICATION					Course Code	C313
Subject Code	BEC613A	Semester	6	Section	A	Emp.ID	1090
Faculty Name	Dr. S BHARGAVI					No.students	67

Result Analysis of Subject Code -BEC613A - for the Academic year 2024-25



Result Analysis of Section: 6 - A				
No. Students	Pass	%	Fail	%
67	59	88	8	12

Class Analysis of Section: 6 - A			
No. Students	67	%	Grade Point
FCD	46	69	10,9,8
FC	10	15	7
SC	3	4	6,4
FL	8	12	0

Max. and Avg. Marks					
CIE	AVG	SEE	AVG	TOT	AVG
50	42	50	31	100	74

CO Attainment in SEE	
Sum_AT	157
T_students	67
Avg.ATNT	2.4
Sum_AT(=3)	41
AT(=3)%	61
Attainment	YES

ANALYSIS OF GRADE POINT AND GRADE LETTER							
Grade Letter	S	A	B	C	D	E	F
Grade Point	10	9	8	7	6	4	0
No.of Students	5	22	19	10	3		1
% of Students	7	33	28	15	4		2

CIE and SEE correlation Coefficient	0.6

Course Coordinator Remarks on Semester End Results for the Academic Year2024-25

SEE Results are good. more focus to be given on module-2 and module-3.

Signature of Course Coordinator

P. Sudha

Signature HOD/DAC

SJCIT/NBA/ SEE-REPT/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering						
Course Title	MULTIMEDIA COMMUNICATION					Course Code	C313
Subject Code	BEC613A	Semester	6	Section	A	Emp.ID	1090
Faculty Name	Dr. S BHARGAVI					No.students	67

		Format for Entry of Semester End Examination Marks						50	50	100
Sl.	USN	NAME	CIE	SEE	TOT	Result	Class	ATNT	Grade	Rank
1	1SJ22EC001	ABHI S V	48	32	80	PASS	FCD	3	9	12
2	1SJ22EC002	ABHIJITH J V	46	30	76	PASS	FCD	3	8	15
3	1SJ22EC003	ABHISHEK H KANKATKAR	37	23	60	PASS	FC	1	7	29
4	1SJ22EC004	ADARSHA R	39	29	68	PASS	FC	2	7	21
5	1SJ22EC005	AJAY KUMAR A V	41	35	76	PASS	FCD	3	8	15
6	1SJ22EC006	AKHIL M	43	38	81	PASS	FCD	3	9	11
7	1SJ22EC007	AKSHAYA K S	48	34	82	PASS	FCD	3	9	10
8	1SJ22EC008	AKSHITHA M	49	39	88	PASS	FCD	3	9	5
9	1SJ22EC009	AMARESH H	49	30	79	PASS	FCD	3	8	13
10	1SJ22EC010	AMBIKA P	49	43	92	PASS	FCD	3	10	2
11	1SJ22EC011	AMULYA M	28	20	48	FAIL		1		35
12	1SJ22EC012	ANANYA A M	48	37	85	PASS	FCD	3	9	7
13	1SJ22EC013	ANBAR SABAHATH	47	32	79	PASS	FCD	3	8	13
14	1SJ22EC014	ANIL KUMAR K A	31	32	63	PASS	FC	3	7	26
15	1SJ22EC015	ANUSHREE K R	36	23	59	PASS	SC	1	6	30
16	1SJ22EC017	AYESHA M	40	31	71	PASS	FCD	3	8	20
17	1SJ22EC018	AYUSH M	44	39	83	PASS	FCD	3	9	9
18	1SJ22EC019	B V BRAMHANANDA REDDY	43	39	82	PASS	FCD	3	9	10
19	1SJ22EC020	BHARATH H S	38	28	66	PASS	FC	2	7	23
20	1SJ22EC021	BHARATHI M	46	34	80	PASS	FCD	3	9	12
21	1SJ22EC022	BHAVANA B M	50	31	81	PASS	FCD	3	9	11
22	1SJ22EC023	BHAVYA S A	47	41	88	PASS	FCD	3	9	5
23	1SJ22EC024	BHOOMIKA G	50	44	94	PASS	FCD	3	10	1
24	1SJ22EC025	BHUGANIPALLI SREE VIDYA	48	25	73	PASS	FCD	2	8	18
25	1SJ22EC026	BHUMIKA	42	32	74	PASS	FCD	3	8	17
26	1SJ22EC027	BHUVAN Y A	45	40	85	PASS	FCD	3	9	7
27	1SJ22EC028	CHAITHRA N S	42	33	75	PASS	FCD	3	8	16
28	1SJ22EC029	CHANDAN A	49	33	82	PASS	FCD	3	9	10
29	1SJ22EC030	CHANDAN G	48	31	79	PASS	FCD	3	8	13
30	1SJ22EC031	CHANDANA H S	49	36	85	PASS	FCD	3	9	7
31	1SJ22EC032	CHANDANA R	48	36	84	PASS	FCD	3	9	8
32	1SJ22EC033	CHANDANA V R	43	28	71	PASS	FCD	2	8	20
33	1SJ22EC034	CHANDINI T D	44	33	77	PASS	FCD	3	8	14
34	1SJ22EC035	CHANDU SHREE Y C	43	43	86	PASS	FCD	3	9	6
35	1SJ22EC036	CHETHAN S N	30	25	55	PASS	SC	2	6	32
36	1SJ22EC037	CHIRAG H	46	38	84	PASS	FCD	3	9	8
37	1SJ22EC038	D NISARGA	46	26	72	PASS	FCD	2	8	19
38	1SJ22EC039	DARSHANNAYKA	42	38	80	PASS	FCD	3	9	12

SJCIT/NBA/ SEE-REPT/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering									
Course Title	MULTIMEDIA COMMUNICATION							Course Code	C313	
Subject Code	BEC613A	Semester	6	Section	A			Emp.ID	1090	
Faculty Name	Dr. S BHARGAVI							No.students	67	
39	1SJ22EC040	DEEKSHA REDDY M	48	46	94	PASS	FCD	3	10	1
40	1SJ22EC041	DEEKSHITH PATEL C	47	42	89	PASS	FCD	3	9	4
41	1SJ22EC042	DEEPIKA M	37	44	81	PASS	FCD	3	9	11
42	1SJ22EC043	DEVARAJU C V	41	36	77	PASS	FCD	3	8	14
43	1SJ22EC044	DHANUSH A AGNI	33	19	52	FAIL				33
44	1SJ22EC045	DHANUSH M	30	7	37	FAIL			0	36
45	1SJ22EC046	DRUTHI G A	41	26	67	PASS	FC	2	7	22
46	1SJ22EC047	DUDDU SIDDARTH	35	14	49	FAIL				34
47	1SJ22EC048	G AKANKSHA	44	40	84	PASS	FCD	3	9	8
48	1SJ22EC049	GANAVIKA N	41	21	62	PASS	FC	1	7	27
49	1SJ22EC050	GOKUL KUMAR B S	30	18	48	FAIL				35
50	1SJ22EC051	GOVARDHAN V K	43	28	71	PASS	FCD	2	8	20
51	1SJ22EC052	GOWTHAM R	41	20	61	FAIL		1		28
52	1SJ22EC053	GUNASHREE D S	49	45	94	PASS	FCD	3	10	1
53	1SJ22EC054	HAFSA KHANAM	44	29	73	PASS	FCD	2	8	18
54	1SJ22EC055	HAMSA K S	48	42	90	PASS	FCD	3	10	3
55	1SJ22EC056	HARSHITH GOWDA N	30	28	58	PASS	SC	2	6	31
56	1SJ22EC057	HARSHITH K R	40	31	71	PASS	FCD	3	8	20
57	1SJ22EC058	HARSHITH KUMAR A	40	25	65	PASS	FC	2	7	24
58	1SJ22EC059	HARSHITHA J V	47	33	80	PASS	FCD	3	9	12
59	1SJ22EC060	HARSHITHA N	47	24	71	PASS	FCD	1	8	20
60	1SJ22EC061	HARSHITHA P S	38	34	72	PASS	FCD	3	8	19
61	1SJ22EC062	HEMANTH KUMAR M P	46	38	84	PASS	FCD	3	9	8
62	1SJ22EC063	HITHA D	43	19	62	FAIL				27
63	1SJ22EC064	JAYANTH B S	44	30	74	PASS	FCD	3	8	17
64	1SJ23EC400	ACHHUTHAREDDY C P	38	26	64	PASS	FC	2	7	25
65	1SJ23EC401	CHANDRA SHEKARA M	37	18	55	FAIL				32
66	1SJ23EC402	CHARAN KUMAR	33	29	62	PASS	FC	2	7	27
67	1SJ23EC403	DARSHAN H R	35	26	61	PASS	FC	2	7	28

..... *** END *** .....

SJCIT/NBA/ CES-REPT/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering

Course.Title:	MULTIMEDIA COMMUNICATION					Course.ID:	C313
Course.Code:	BEC613A	Semester:	6	Section:	A	Emp.ID::	1090
Faculty Name:	Dr. S BHARGAVI					No.Stds	67

COURSE END SURVEY

Rating By the student in the scale of 0 to 3
Strongly Agree=3, Agree=2, Some Extent Agree =1

CO Mapping		1	2	3	4	5							
Sl.	Response No	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
1		3	3	3	3	3							
2		3	3	3	3	3							
3		3	3	3	3	3							
4		3	3	3	3	3							
5		3	3	3	3	3							
6		3	3	3	3	3							
7		3	3	3	3	3							
8		3	3	3	3	3							
9		3	3	3	3	3							
10		3	3	3	3	3							
11		3	3	3	3	3							
12		3	3	3	3	3							
13		3	3	3	3	3							
14		3	3	3	3	3							
15		3	3	3	3	3							
16		3	3	3	3	3							
17		3	3	3	3	3							
18		3	3	3	3	3							
19		3	3	3	2	3							
20		3	3	3	3	3							
21		3	3	3	3	3							
22		3	3	3	3	3							
23		3	3	3	3	3							
24		3	3	3	3	3							
25		3	3	3	3	3							
26		1	2	2	2	2							
27		3	3	3	3	3							
28		3	3	3	3	3							
29		3	3	3	3	3							
30		3	3	3	3	3							
31		3	3	3	3	3							
32		3	3	3	3	3							
33		3	3	3	3	3							
34		3	3	3	3	3							

CO Mapping		1	2	3	4	5							
Sl.	Response No	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
35		3	3	3	3	3							
36		3	3	3	3	3							
37		3	3	3	3	3							
38		3	3	3	3	3							
39		3	2	3	2	3							
40		3	3	3	3	3							
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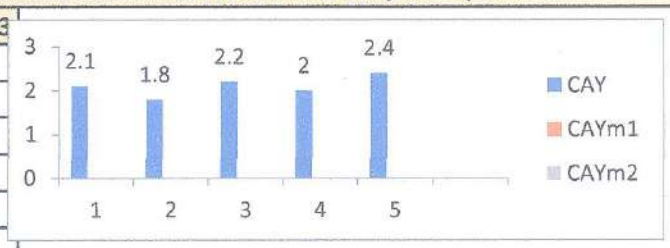
67													

End of Course End Survey Responses

SJCIT/NBA/ S&F-REPT/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering						
Course Title	MULTIMEDIA COMMUNICATION					Course Code	C313
Subject Code	BEC613A	Semester	6	Section	A	Emp.ID	1090
Faculty Name	Dr. S BHARGAVI					No.students	67

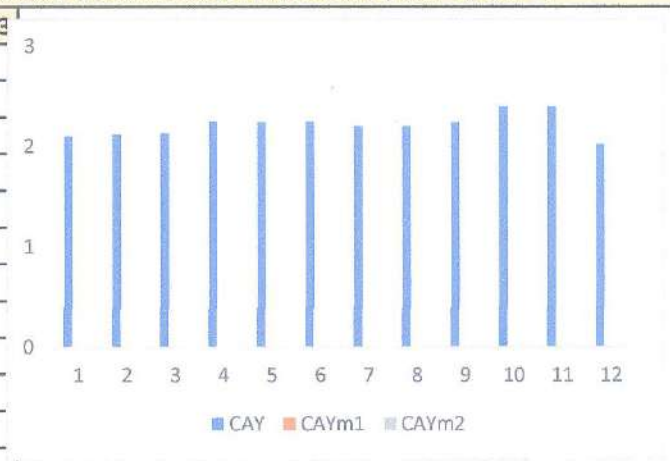
CO-ATTAINMENT COMPARISON FOR THE CAY, CAY-1, CAY-2

Sl.	CO_ID	2024-25	2023-24	2022-23
1	C313.1	2.1		
2	C313.2	1.8		
3	C313.3	2.2		
4	C313.4	2		
5	C313.5	2.4		



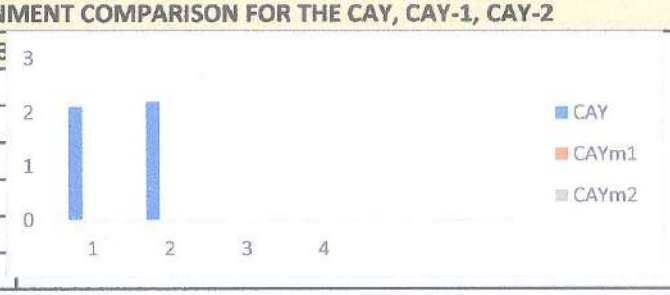
PO-ATTAINMENT COMPARISON FOR THE CAY, CAY-1, CAY-2

Sl.	PO-No.	2024-25	2023-24	2022-23
1	PO-1	2.1		
2	PO-2	2.12		
3	PO-3	2.13		
4	PO-4	2.25		
5	PO-5	2.24		
6	PO-6	2.25		
7	PO-7	2.2		
8	PO-8	2.2		
9	PO-9	2.24		
10	PO-10	2.4		
11	PO-11	2.4		
12	PO-12	2.02		



PSO-ATTAINMENT COMPARISON FOR THE CAY, CAY-1, CAY-2

Sl.	PSO-No.	2024-25	2023-24	2022-23
1	PSO-1	2.1		
2	PSO-2	2.2		
3	PSO-3			
4	PSO-4			



Academic Year	Course Intructor Name
2024-25	Dr. S BHARGAVI
2023-24	
2022-23	

Signature of Course Intructor

Signature of HOD/PAC

SJCIT/NBA/ CER/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering

A. Course Details

Course Title	MULTIMEDIA COMMUNICATION					Course Code	C313
Subject Code	BEC613A	Semester	6	Section	A	Programme	UG
Course	Theory	Course Type		ELECTIVE		No.of students	67
Date of commencement		10.02.2025		Date of Closure			31.05.2025

B. Course Intructor Details

Course Intructor Name	Dr. S BHARGAVI	Emp.ID	1090
Total Teaching Experience	24	No.of times taught this course	01

C. Course Delivery

1	Course Plan was circulated among students before the start of course				YES	
2	Total No of Modules/Chapters the course consists	05	Covered	05	%	100
3	Total No of Classes Planned for the course	40	Classes Held	41	%	100
4	Any reasons for non-coverage of 100 % syllabus (if not covered)			—		

D. Course Outcome(s) & University Examination Results

University Examination Results						67
1	Appeared	67	Pass	59	%Pass	88
2	Lost eligibility due to shortage of attendance			—	%	#VALUE!
3	No. of students obtained minimum CIE marks			0	%	0

Grades obtained by the students (No. of students)

Grade Letter	S	A	B	C	D	E	E
Grade Point	10	9	8	7	6	4	0
No.of Students	5	22	19	10	3		1
% Students)	7	33	28	15	4		2

Marks	Max.	Avg.
CIE	50	42
SEE	50	31
Total	100	74

SJCIT/NBA/ CER/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering

Summary of Course Outcomes

	Attainment				Blooms Levels	
Weight, %	40	50	10		Level's	No.
CO-Number	CIE	SEE	CES	Total		
C313.1	2.3	1.8	3	2.1		L2
C313.2	1.4	1.8	2.9	1.8		L2
C313.3	2.6	1.8	3	2.2		L2
C313.4	2.1	1.8	2.8	2		L3
C313.5	3	1.8	3	2.4		L5

E. Students Feedback

Over all feedback value	3

F. Remarks on CIE, attainment and suggestion(s) to improve course delivery by course instructor

Few more innovative teaching methods will be adopted to improve course delivery.

G. Innovative/Best methods used for course delivery by the course instructor

Think pair share, Quiz, Peer Teaching, TAPPS, Flipped class, Round Robin Discussion, Mini-project

H. Remarks of the Module Coordinator

More Focus will be given on explaining the concepts of digitization techniques and compression techniques.

Signature
Name

Module Coordinator

Dr. S BHARGAVI
Course Instructor

SJCIT/NBA/ CER/ 2024-25	**S J C INSTITUTE OF TECHNOLOGY** **Chickballapur - 562 101** **Department of Electronics and Communication Engineering**
	Signature of the HOD

||Jai Sri Gurudev||

SJC INSTITUTE OF TECHNOLOGY, CHICKBALLAPUR

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Analysis on Gaps and Action Plan

Name of the staff: Dr. S.Bhargavi/Dr. Bhaskar S/Prof. Anil Kumar R

Subject: Multimedia Communication

Sub code: BCE613A

Semester: 6th

Course Outcomes of 2024-25

CO1	Interpret the concepts of multimedia communication, networking and its applications.
CO2	Apply digitization techniques to represent different types of media.
CO3	Compute compression ratios, bandwidth requirements and storage capacity for multimedia data.
CO4	Analyze various compression techniques for text, images, audio and video.
CO5	Examine multimedia concepts and demonstrate media compression using Spyder Python IDE.

Action Plan

- To do a mini-project on multimedia compression techniques using Python programming to address PO5 by improving students' skills in using modern engineering tools.
- The student mini-project demonstration and presentation is planned to address the following Program Outcomes (POs):

  PO1: Apply basic engineering and programming knowledge to develop the project.

  PO2: Analyze multimedia data to choose suitable compression methods.

  PO3: Design and build a solution using appropriate tools and techniques.

  PO4: Investigate and compare different compression approaches.

  PO5: Use Python and modern libraries for implementation and testing.

  PO6: Understand the impact of multimedia compression on society and the environment.

PO8: Follow ethical practices, ensure originality, and cite sources properly.

PO9: Complete the project individually, showing responsibility and time management.

PO10: Communicate project outcomes clearly through presentation and report.

PO11: Plan and execute the project efficiently within given time and resources.

PO12: Learn new tools independently and continue upgrading technical skills.

- To incorporate videos in lectures to enhance visual learning and deepen students' understanding of key concepts in multimedia communication.
- To facilitate collaborative activities during the course, promoting teamwork, peer learning, and problem-solving.

21/03/2025
Course Faculty

21/03/2025
Reviewer

21/03/25
HOD

Prof. & Head
Dept. of Electronics & Communication
S.J.C. Institute of Techonology
Chickballapur-562101.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Course: Multimedia Communication (BEC613A)

Semester & Section: 6th Semester A Section

CIE +SEE Marks

SL. NO.	USN	NAME OF THE STUDENT	CIE MARKS (50)	SEE MARKS (50)	TOTAL MARKS (100)
1	1SJ20EC070	KIRAN RAJ BASAYYA HIREMATH	36	22	58
2	1SJ21EC056	HEMANTH KUMAR A	39	18	57
3	1SJ22EC001	ABHI S V	48	32	80
4	1SJ22EC002	ABHIJITH J V	46	30	76
5	1SJ22EC003	ABHISHEK H KANKATKAR	37	23	60
6	1SJ22EC004	ADARSHA R	39	29	68
7	1SJ22EC005	AJAY KUMAR A V	41	35	76
8	1SJ22EC006	AKHIL M	43	38	81
9	1SJ22EC007	AKSHAYA K S	48	34	82
10	1SJ22EC008	AKSHITHA M	49	39	88
11	1SJ22EC009	AMARESH H	49	30	79
12	1SJ22EC010	AMBIKA P	49	43	92
13	1SJ22EC011	AMULYA M	28	20	48
14	1SJ22EC012	ANANYA A M	48	37	85
15	1SJ22EC013	ANBAR SABAHATH	47	32	79
16	1SJ22EC014	ANIL KUMAR K A	31	32	63
17	1SJ22EC015	ANUSHREE K R	36	23	59
18	1SJ22EC017	AYESHA M	40	31	71
19	1SJ22EC018	AYUSH M	44	39	83
20	1SJ22EC019	B V BRAMHANANDA REDDY	43	39	82
21	1SJ22EC020	BHARATH H S	38	28	66
22	1SJ22EC021	BHARATHI M	46	34	80
23	1SJ22EC022	BHAVANA B M	50	31	81
24	1SJ22EC023	BHAVYA S A	47	41	88
25	1SJ22EC024	BHOOMIKA G	50	44	94
26	1SJ22EC025	BHUGANIPALLI SREE VIDYA	48	25	73
27	1SJ22EC026	BHUMIKA	42	32	74
28	1SJ22EC027	BHUVAN Y A	45	40	85
29	1SJ22EC028	CHAITHRA N S	42	33	75

30	1SJ22EC029	CHANDAN A	49	33	82
31	1SJ22EC030	CHANDAN G	48	31	79
32	1SJ22EC031	CHANDANA H S	49	36	85
33	1SJ22EC032	CHANDANA R	48	36	84
34	1SJ22EC033	CHANDANA V R	43	28	71
35	1SJ22EC034	CHANDINI T D	44	33	77
36	1SJ22EC035	CHANDU SHREE Y C	43	43	86
37	1SJ22EC036	CHETHAN S N	30	25	55
38	1SJ22EC037	CHIRAG H	46	38	84
39	1SJ22EC038	D NISARGA	46	26	72
40	1SJ22EC039	DARSHANNAYKA	42	38	80
41	1SJ22EC040	DEEKSHA REDDY M	48	46	94
42	1SJ22EC041	DEEKSHITH PATEL C	47	42	89
43	1SJ22EC042	DEEPIKA M	37	44	81
44	1SJ22EC043	DEVARAJU C V	41	36	77
45	1SJ22EC044	DHANUSH A AGNI	33	19	52
46	1SJ22EC045	DHANUSH M	30	07	37
47	1SJ22EC046	DRUTHI G A	41	26	67
48	1SJ22EC047	DUDDU SIDDARTH	35	14	49
49	1SJ22EC048	G AKANKSHA	44	40	84
50	1SJ22EC049	GANAVIKA N	41	21	62
51	1SJ22EC050	GOKUL KUMAR B S	30	18	48
52	1SJ22EC051	GOVARDHAN V K	43	28	71
53	1SJ22EC052	GOWTHAM R	41	20	61
54	1SJ22EC053	GUNASHREE D S	49	45	94
55	1SJ22EC054	HAFSA KHANAM	44	29	73
56	1SJ22EC055	HAMSA K S	48	42	90
57	1SJ22EC056	HARSHITH GOWDA N	30	28	58
58	1SJ22EC057	HARSHITH K R	40	31	71
59	1SJ22EC058	HARSHITH KUMAR A	40	25	65
60	1SJ22EC059	HARSHITHA J V	47	33	80
61	1SJ22EC060	HARSHITHA N	47	24	71
62	1SJ22EC061	HARSHITHA P S	38	34	72
63	1SJ22EC062	HEMANTH KUMAR M P	46	38	84
64	1SJ22EC063	HITHA D	43	19	62
65	1SJ22EC064	JAYANTH B S	44	30	74
66	1SJ23EC400	ACHHUTHAREDDY C P	38	26	64
67	1SJ23EC401	CHANDRA SHEKARA M	37	18	55
68	1SJ23EC402	CHARAN KUMAR	33	29	62
69	1SJ23EC403	DARSHAN H R	35	26	61

22/07/2025

Signature of the Course Faculty

S.J.C. INSTITUTE OF TECHNOLOGY CHICKBALLAPUR

Branch : EC Semester : 6

Sl NO.	USN	BEC613A
1	1SJ20EC070	36
2	1SJ21EC056	39
3	1SJ22EC001	48
4	1SJ22EC002	46
5	1SJ22EC003	37
6	1SJ22EC004	39
7	1SJ22EC005	41
8	1SJ22EC006	43
9	1SJ22EC007	48
10	1SJ22EC008	49
11	1SJ22EC009	49
12	1SJ22EC010	49
13	1SJ22EC011	28
14	1SJ22EC012	48
15	1SJ22EC013	47
16	1SJ22EC014	31
17	1SJ22EC015	36
18	1SJ22EC017	40
19	1SJ22EC018	44
20	1SJ22EC019	43
21	1SJ22EC020	38
22	1SJ22EC021	46
23	1SJ22EC022	50
24	1SJ22EC023	47
25	1SJ22EC024	50
26	1SJ22EC025	48
27	1SJ22EC026	42
28	1SJ22EC027	45
29	1SJ22EC028	42
30	1SJ22EC029	49
31	1SJ22EC030	48
32	1SJ22EC031	49
33	1SJ22EC032	48
34	1SJ22EC033	43
35	1SJ22EC034	44
36	1SJ22EC035	43

Sl NO.	USN	BEC613A
37	1SJ22EC036	30
38	1SJ22EC037	46
39	1SJ22EC038	46
40	1SJ22EC039	42
41	1SJ22EC040	48
42	1SJ22EC041	47
43	1SJ22EC042	37
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45	1SJ22EC044	33
46	1SJ22EC045	30
47	1SJ22EC046	41
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62	1SJ22EC061	38
63	1SJ22EC062	46
64	1SJ22EC063	43
65	1SJ22EC064	44
66	1SJ22EC065	43
67	1SJ22EC066	45
68	1SJ22EC067	47
69	1SJ22EC068	41
70	1SJ22EC069	47
71	1SJ22EC070	37
72	1SJ22EC071	39
73	1SJ22EC072	44
74	1SJ22EC074	49
75	1SJ22EC075	49

Sl NO.	USN	BEC613A
76	1SJ22EC076	40
77	1SJ22EC077	45
78	1SJ22EC078	37
79	1SJ22EC079	50
80	1SJ22EC080	48
81	1SJ22EC081	47
82	1SJ22EC082	35
83	1SJ22EC083	46
84	1SJ22EC084	41
85	1SJ22EC085	38
86	1SJ22EC086	42
87	1SJ22EC087	42
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104	1SJ22EC106	46
105	1SJ22EC108	47
106	1SJ22EC109	42
107	1SJ22EC110	20
108	1SJ22EC111	48
109	1SJ22EC112	40
110	1SJ22EC113	50
111	1SJ22EC114	31
112	1SJ22EC115	35
113	1SJ22EC116	44
114	1SJ22EC117	43

Sl NO.	USN	BEC613A
115	1SJ22EC118	50
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117	1SJ22EC120	33
118	1SJ22EC121	50
119	1SJ22EC122	44
120	1SJ22EC123	50
121	1SJ22EC124	30
122	1SJ22EC125	30
123	1SJ22EC126	35
124	1SJ22EC127	40
125	1SJ22EC128	50
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141	1SJ22EC144	49
142	1SJ22EC145	47
143	1SJ22EC146	49
144	1SJ22EC147	48
145	1SJ22EC148	47
146	1SJ22EC150	46
147	1SJ22EC151	50
148	1SJ22EC152	50
149	1SJ22EC154	49
150	1SJ22EC155	47
151	1SJ22EC156	48
152	1SJ22EC157	50
153	1SJ22EC158	49

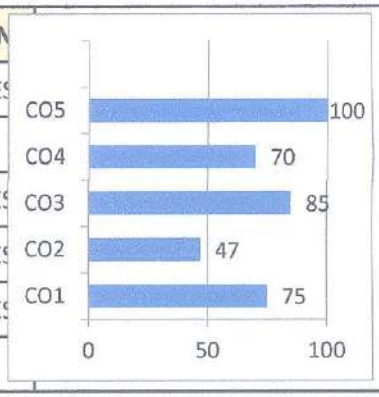
Sl NO.	USN	BEC613A
154	1SJ22EC159	48
155	1SJ22EC160	45
156	1SJ22EC161	50
157	1SJ22EC162	40
158	1SJ22EC163	44
159	1SJ22EC164	41
160	1SJ22EC165	49
161	1SJ22EC166	48
162	1SJ22EC167	48
163	1SJ22EC168	48
164	1SJ22EC169	47
165	1SJ22EC170	50
166	1SJ22EC171	47
167	1SJ22EC172	45
168	1SJ22EC173	45
169	1SJ22EC174	41
170	1SJ22EC175	48
171	1SJ22EC176	46
172	1SJ22EC177	50
173	1SJ22EC178	50
174	1SJ22EC179	45
175	1SJ22EC180	49
176	1SJ22EC181	45
177	1SJ22EC182	48
178	1SJ22EC183	49
179	1SJ22EC184	45
180	1SJ22EC185	43
181	1SJ22EC186	49
182	1SJ22EC187	44
183	1SJ22EC188	48
184	1SJ22EC189	48
185	1SJ22EC190	49
186	1SJ22EC191	46
187	1SJ22EC192	47
188	1SJ22EC193	44
189	1SJ22EC194	43
190	1SJ23EC400	38
191	1SJ23EC401	37
192	1SJ23EC402	33

Sl NO.	USN	BEC613A
193	1SJ23EC403	35
194	1SJ23EC404	39
195	1SJ23EC405	44
196	1SJ23EC406	44
197	1SJ23EC407	47
198	1SJ23EC408	41
199	1SJ23EC409	35
200	1SJ23EC410	50
201	1SJ23EC411	49
202	1SJ23EC412	46
203	1SJ23EC413	50
204	1SJ23EC414	38
205	1SJ23EC415	36
206	1SJ23EC416	48

SJCIT/NBA/ CO-REPT/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering						
Course Title	MULTIMEDIA COMMUNICATION					Course Code	C313
Subject Code	BEC613A	Semester	6	Section	A	Emp.ID	1090
Faculty Name	Dr. S BHARGAVI					No.students	67

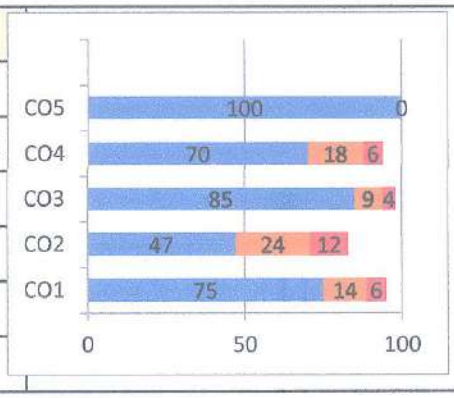
CO Attainment from -TEST - 3, in the Subject: BEC613A-Based on: TYPE-1, Academic Year 2024-25

Sl.	CO Number	Sum	T_Std	Av-AT	TS(=3)	AT,%	Ac_AT	ATN
CO1	C313.1	169	65	2.6	49	75	2.3	YES
CO2	C313.2	116	58	2	27	47	1.4	
CO3	C313.3	186	67	2.8	57	85	2.6	YES
CO4	C313.4	169	67	2.5	47	70	2.1	YES
CO5	C313.5	201	67	3	67	100	3	YES



Distribution of CO Attainment from -TEST - 3, in Subj: BEC613A-Based on: TYPE-1, ACDY:2024-25

Sl.	CO Number	3	%	2	%	1	%
CO1	C313.1	49	75	9	14	4	6
CO2	C313.2	27	47	14	24	7	12
CO3	C313.3	57	85	6	9	3	4
CO4	C313.4	47	70	12	18	4	6
CO5	C313.5	67	100		0		0



Remarks of Course Intructor

* The Course Outcomes CO1, CO3, CO4 & CO5 are attained.
* More Focus will be given on digitization techniques.

Signature of HOD/PAC	Signature of Course Instructor

SJCIT/NBA/ CO-REPT/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering						
Course Title	MULTIMEDIA COMMUNICATION					Course Code	C313
Subject Code	BEC613A	Semester	6	Section	A	Emp.ID	1090
Faculty Name	Dr. S BHARGAVI					No.students	67

CO Analysis from -TEST - 3, in the Subject: BEC613A-Based on: TYPE-1, Academic Year 2024-25

Sl.	USN	Course Outcome Number	CO1	CO2	CO3	CO4	CO5	
		Total Maximum Marks	57	16	37	40	25	
1	1SJ22EC001	ABHI S V	Y	Y	Y	Y	Y	
2	1SJ22EC002	ABHIJITH J V			Y	Y	Y	
3	1SJ22EC003	ABHISHEK H KANKATKAR	Y				Y	
4	1SJ22EC004	ADARSHA R	Y	Y			Y	
5	1SJ22EC005	AJAY KUMAR A V			Y		Y	
6	1SJ22EC006	AKHIL M	Y		Y	Y	Y	
7	1SJ22EC007	AKSHAYA K S	Y	Y	Y	Y	Y	
8	1SJ22EC008	AKSHITHA M	Y	Y	Y	Y	Y	
9	1SJ22EC009	AMARESH H	Y	Y	Y	Y	Y	
10	1SJ22EC010	AMBIKA P	Y	Y	Y	Y	Y	
11	1SJ22EC011	AMULYA M			Y		Y	
12	1SJ22EC012	ANANYA A M	Y	Y	Y	Y	Y	
13	1SJ22EC013	ANBAR SABAHATH	Y		Y	Y	Y	
14	1SJ22EC014	ANIL KUMAR K A	Y				Y	
15	1SJ22EC015	ANUSHREE K R			Y	Y	Y	
16	1SJ22EC017	AYESHA M		Y	Y	Y	Y	
17	1SJ22EC018	AYUSH M	Y	Y		Y	Y	
18	1SJ22EC019	B V BRAMHANANDA REDDY		Y	Y	Y	Y	
19	1SJ22EC020	BHARATH H S	Y		Y	Y	Y	
20	1SJ22EC021	BHARATHI M	Y	Y	Y	Y	Y	
21	1SJ22EC022	BHAVANA B M	Y	Y	Y	Y	Y	
22	1SJ22EC023	BHAVYA S A	Y	Y	Y	Y	Y	
23	1SJ22EC024	BHOOMIKA G	Y	Y	Y	Y	Y	
24	1SJ22EC025	BHUGANIPALLI SREE VIDYA	Y	Y	Y		Y	
25	1SJ22EC026	BHUMIKA	Y		Y		Y	
26	1SJ22EC027	BHUVAN Y A	Y		Y	Y	Y	
27	1SJ22EC028	CHAITHRA N S	Y	Y			Y	
28	1SJ22EC029	CHANDAN A	Y		Y	Y	Y	
29	1SJ22EC030	CHANDAN G	Y		Y	Y	Y	
30	1SJ22EC031	CHANDANA H S	Y		Y	Y	Y	
31	1SJ22EC032	CHANDANA R	Y	Y	Y	Y	Y	
32	1SJ22EC033	CHANDANA V R	Y		Y	Y	Y	
33	1SJ22EC034	CHANDINI T D			Y	Y	Y	
34	1SJ22EC035	CHANDU SHREE Y C	Y	Y	Y	Y	Y	
35	1SJ22EC036	CHETHAN S N					Y	
36	1SJ22EC037	CHIRAG H	Y	Y		Y	Y	
37	1SJ22EC038	D NISARGA	Y		Y	Y	Y	
38	1SJ22EC039	DARSHANNAYKA		Y	Y	Y	Y	

SJCIT/NBA/ CO-REPT/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering								
Course Title	MULTIMEDIA COMMUNICATION						Course Code	C313	
Subject Code	BEC613A	Semester	6	Section	A		Emp.ID	1090	
Faculty Name	Dr. S BHARGAVI						No.students	67	
39	1SJ22EC040	DEEKSHA REDDY M			Y	Y	Y	Y	Y
40	1SJ22EC041	DEEKSHITH PATEL C			Y	Y	Y	Y	Y
41	1SJ22EC042	DEEPIKA M			Y		Y	Y	Y
42	1SJ22EC043	DEVARAJU C V						Y	Y
43	1SJ22EC044	DHANUSH A AGNI					Y	Y	Y
44	1SJ22EC045	DHANUSH M			Y		Y	Y	Y
45	1SJ22EC046	DRUTHI G A					Y	Y	Y
46	1SJ22EC047	DUDDU SIDDARTH					Y		Y
47	1SJ22EC048	G AKANKSHA			Y	Y	Y		Y
48	1SJ22EC049	GANAVIKA N					Y		Y
49	1SJ22EC050	GOKUL KUMAR B S					Y	Y	Y
50	1SJ22EC051	GOVARDHAN V K			Y		Y	Y	Y
51	1SJ22EC052	GOWTHAM R			Y				Y
52	1SJ22EC053	GUNASHREE D S			Y	Y	Y	Y	Y
53	1SJ22EC054	HAFSA KHANAM			Y		Y	Y	Y
54	1SJ22EC055	HAMSA K S			Y	Y	Y	Y	Y
55	1SJ22EC056	HARSHITH GOWDA N			Y		Y	Y	Y
56	1SJ22EC057	HARSHITH K R			Y				Y
57	1SJ22EC058	HARSHITH KUMAR A			Y		Y		Y
58	1SJ22EC059	HARSHITHA J V			Y	Y	Y	Y	Y
59	1SJ22EC060	HARSHITHA N			Y		Y	Y	Y
60	1SJ22EC061	HARSHITHA P S			Y		Y		Y
61	1SJ22EC062	HEMANTH KUMAR M P			Y		Y	Y	Y
62	1SJ22EC063	HITHA D				Y	Y	Y	Y
63	1SJ22EC064	JAYANTH B S			Y		Y	Y	Y
64	1SJ23EC400	ACHHUTHAREDDY C P			Y		Y		Y
65	1SJ23EC401	CHANDRA SHEKARA M					Y		Y
66	1SJ23EC402	CHARAN KUMAR					Y		Y
67	1SJ23EC403	DARSHAN H R			Y		Y		Y

SJCIT/NBA/ CES-REPT/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering

Course.Title:	MULTIMEDIA COMMUNICATION					Course.ID:	C313
Course.Code:	BEC613A	Semester:	6	Section:	A	Emp.ID::	1090
Faculty Name:	Dr. S BHARGAVI					No.Stds	67

COURSE END SURVEY

Rating By the student in the scale of 0 to 3
Strongly Agree=3, Agree=2, Some Extent Agree =1

CO Mapping		1	2	3	4	5							
Sl.	Response No	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
1		3	3	3	3	3							
2		3	3	3	3	3							
3		3	3	3	3	3							
4		3	3	3	3	3							
5		3	3	3	3	3							
6		3	3	3	3	3							
7		3	3	3	3	3							
8		3	3	3	3	3							
9		3	3	3	3	3							
10		3	3	3	3	3							
11		3	3	3	3	3							
12		3	3	3	3	3							
13		3	3	3	3	3							
14		3	3	3	3	3							
15		3	3	3	3	3							
16		3	3	3	3	3							
17		3	3	3	3	3							
18		3	3	3	3	3							
19		3	3	3	2	3							
20		3	3	3	3	3							
21		3	3	3	3	3							
22		3	3	3	3	3							
23		3	3	3	3	3							
24		3	3	3	3	3							
25		3	3	3	3	3							
26		1	2	2	2	2							
27		3	3	3	3	3							
28		3	3	3	3	3							
29		3	3	3	3	3							
30		3	3	3	3	3							
31		3	3	3	3	3							
32		3	3	3	3	3							
33		3	3	3	3	3							
34		3	3	3	3	3							

CO Mapping		1	2	3	4	5							
Sl.	Response No	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
35		3	3	3	3	3							
36		3	3	3	3	3							
37		3	3	3	3	3							
38		3	3	3	3	3							
39		3	2	3	2	3							
40		3	3	3	3	3							
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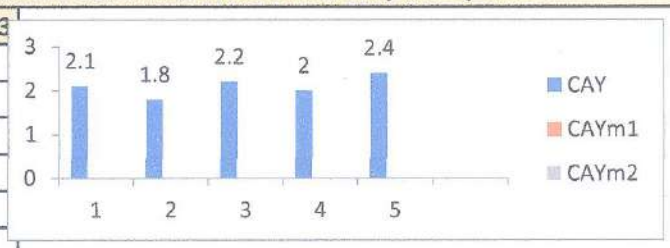
End of Course End Survey Responses

SJCIT/NBA/ S&F-REPT/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering						
Course Title	MULTIMEDIA COMMUNICATION					Course Code	C313
Subject Code	BEC613A	Semester	6	Section	A	Emp.ID	1090
Faculty Name	Dr. S BHARGAVI					No.students	67

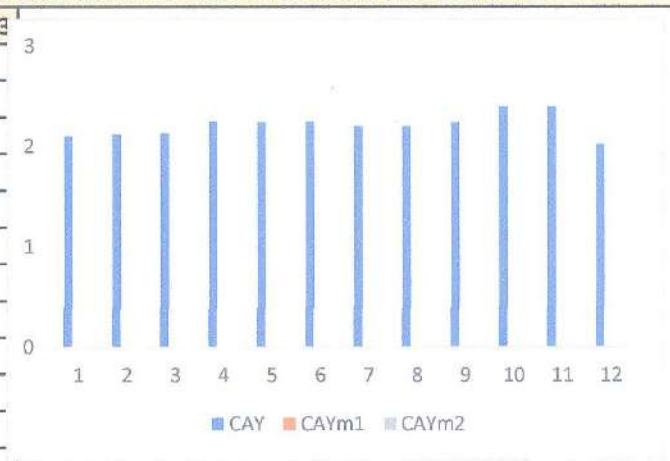
CO-ATTAINMENT COMPARISON FOR THE CAY, CAY-1, CAY-2

Sl.	CO_ID	2024-25	2023-24	2022-23
1	C313.1	2.1		
2	C313.2	1.8		
3	C313.3	2.2		
4	C313.4	2		
5	C313.5	2.4		



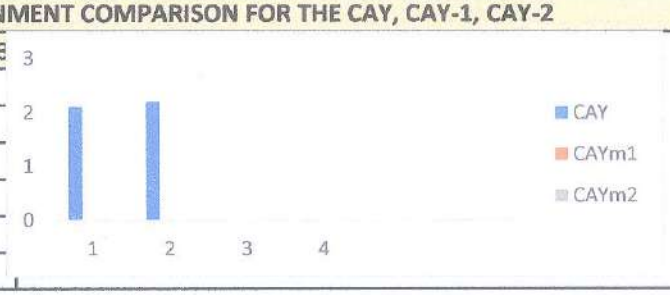
PO-ATTAINMENT COMPARISON FOR THE CAY, CAY-1, CAY-2

Sl.	PO-No.	2024-25	2023-24	2022-23
1	PO-1	2.1		
2	PO-2	2.12		
3	PO-3	2.13		
4	PO-4	2.25		
5	PO-5	2.24		
6	PO-6	2.25		
7	PO-7	2.2		
8	PO-8	2.2		
9	PO-9	2.24		
10	PO-10	2.4		
11	PO-11	2.4		
12	PO-12	2.02		



PSO-ATTAINMENT COMPARISON FOR THE CAY, CAY-1, CAY-2

Sl.	PSO-No.	2024-25	2023-24	2022-23
1	PSO-1	2.1		
2	PSO-2	2.2		
3	PSO-3			
4	PSO-4			



Academic Year	Course Intructor Name
2024-25	Dr. S BHARGAVI
2023-24	
2022-23	

Signature of Course Intructor

Signature of HOD/PAC

SJCIT/NBA/ CER/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering

A. Course Details

Course Title	MULTIMEDIA COMMUNICATION					Course Code	C313
Subject Code	BEC613A	Semester	6	Section	A	Programme	UG
Course	Theory	Course Type		ELECTIVE		No.of students	67
Date of commencement		10.02.2025		Date of Closure			31.05.2025

B. Course Intructor Details

Course Intructor Name	Dr. S BHARGAVI	Emp.ID	1090
Total Teaching Experience	24	No.of times taught this course	01

C. Course Delivery

1	Course Plan was circulated among students before the start of course				YES	
2	Total No of Modules/Chapters the course consists	05	Covered	05	%	100
3	Total No of Classes Planned for the course	40	Classes Held	41	%	100
4	Any reasons for non-coverage of 100 % syllabus (if not covered)			—		

D. Course Outcome(s) & University Examination Results

University Examination Results						67
1	Appeared	67	Pass	59	%Pass	88
2	Lost eligibility due to shortage of attendance			—	%	#VALUE!
3	No. of students obtained minimum CIE marks			0	%	0

Grades obtained by the students (No. of students)

Grade Letter	S	A	B	C	D	E	E
Grade Point	10	9	8	7	6	4	0
No.of Students	5	22	19	10	3		1
% Students)	7	33	28	15	4		2

Marks	Max.	Avg.
CIE	50	42
SEE	50	31
Total	100	74

SJCIT/NBA/ CER/ 2024-25	S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Electronics and Communication Engineering

Summary of Course Outcomes

	Attainment				Blooms Levels	
Weight, %	40	50	10		Level's	No.
CO-Number	CIE	SEE	CES	Total		
C313.1	2.3	1.8	3	2.1		L2
C313.2	1.4	1.8	2.9	1.8		L2
C313.3	2.6	1.8	3	2.2		L2
C313.4	2.1	1.8	2.8	2		L3
C313.5	3	1.8	3	2.4		L5

E. Students Feedback

Over all feedback value	3

F. Remarks on CIE, attainment and suggestion(s) to improve course delivery by course instructor

Few more innovative teaching methods will be adopted to improve course delivery.

G. Innovative/Best methods used for course delivery by the course instructor

Think pair share, Quiz, Peer Teaching, TAPPS, Flipped class, Round Robin Discussion, Mini-project

H. Remarks of the Module Coordinator

More Focus will be given on explaining the concepts of digitization techniques and compression techniques.

Signature
Name

Module Coordinator

Dr. S BHARGAVI
Course Instructor

SJCIT/NBA/ CER/ 2024-25	**S J C INSTITUTE OF TECHNOLOGY** **Chickballapur - 562 101** **Department of Electronics and Communication Engineering**
	Signature of the HOD

||Jai Sri Gurudev||

SJC INSTITUTE OF TECHNOLOGY, CHICKBALLAPUR

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Analysis on Gaps and Action Plan

Name of the staff: Dr. S.Bhargavi/Dr. Bhaskar S/Prof. Anil Kumar R

Subject: Multimedia Communication

Sub code: BCE613A

Semester: 6th

Course Outcomes of 2024-25

CO1	Interpret the concepts of multimedia communication, networking and its applications.
CO2	Apply digitization techniques to represent different types of media.
CO3	Compute compression ratios, bandwidth requirements and storage capacity for multimedia data.
CO4	Analyze various compression techniques for text, images, audio and video.
CO5	Examine multimedia concepts and demonstrate media compression using Spyder Python IDE.

Action Plan

- To do a mini-project on multimedia compression techniques using Python programming to address PO5 by improving students' skills in using modern engineering tools.
- The student mini-project demonstration and presentation is planned to address the following Program Outcomes (POs):

  PO1: Apply basic engineering and programming knowledge to develop the project.

  PO2: Analyze multimedia data to choose suitable compression methods.

  PO3: Design and build a solution using appropriate tools and techniques.

  PO4: Investigate and compare different compression approaches.

  PO5: Use Python and modern libraries for implementation and testing.

  PO6: Understand the impact of multimedia compression on society and the environment.

PO8: Follow ethical practices, ensure originality, and cite sources properly.

PO9: Complete the project individually, showing responsibility and time management.

PO10: Communicate project outcomes clearly through presentation and report.

PO11: Plan and execute the project efficiently within given time and resources.

PO12: Learn new tools independently and continue upgrading technical skills.

- To incorporate videos in lectures to enhance visual learning and deepen students' understanding of key concepts in multimedia communication.
- To facilitate collaborative activities during the course, promoting teamwork, peer learning, and problem-solving.

21/03/2025
Course Faculty

21/03/2025
Reviewer

21/03/25
HOD

Prof. & Head
Dept. of Electronics & Communication
S.J.C. Institute of Techonology
Chickballapur-562101.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Course: Multimedia Communication (BEC613A)

Semester & Section: 6th Semester A Section

CIE +SEE Marks

SL. NO.	USN	NAME OF THE STUDENT	CIE MARKS (50)	SEE MARKS (50)	TOTAL MARKS (100)
1	1SJ20EC070	KIRAN RAJ BASAYYA HIREMATH	36	22	58
2	1SJ21EC056	HEMANTH KUMAR A	39	18	57
3	1SJ22EC001	ABHI S V	48	32	80
4	1SJ22EC002	ABHIJITH J V	46	30	76
5	1SJ22EC003	ABHISHEK H KANKATKAR	37	23	60
6	1SJ22EC004	ADARSHA R	39	29	68
7	1SJ22EC005	AJAY KUMAR A V	41	35	76
8	1SJ22EC006	AKHIL M	43	38	81
9	1SJ22EC007	AKSHAYA K S	48	34	82
10	1SJ22EC008	AKSHITHA M	49	39	88
11	1SJ22EC009	AMARESH H	49	30	79
12	1SJ22EC010	AMBIKA P	49	43	92
13	1SJ22EC011	AMULYA M	28	20	48
14	1SJ22EC012	ANANYA A M	48	37	85
15	1SJ22EC013	ANBAR SABAHATH	47	32	79
16	1SJ22EC014	ANIL KUMAR K A	31	32	63
17	1SJ22EC015	ANUSHREE K R	36	23	59
18	1SJ22EC017	AYESHA M	40	31	71
19	1SJ22EC018	AYUSH M	44	39	83
20	1SJ22EC019	B V BRAMHANANDA REDDY	43	39	82
21	1SJ22EC020	BHARATH H S	38	28	66
22	1SJ22EC021	BHARATHI M	46	34	80
23	1SJ22EC022	BHAVANA B M	50	31	81
24	1SJ22EC023	BHAVYA S A	47	41	88
25	1SJ22EC024	BHOOMIKA G	50	44	94
26	1SJ22EC025	BHUGANIPALLI SREE VIDYA	48	25	73
27	1SJ22EC026	BHUMIKA	42	32	74
28	1SJ22EC027	BHUVAN Y A	45	40	85
29	1SJ22EC028	CHAITHRA N S	42	33	75

30	1SJ22EC029	CHANDAN A	49	33	82
31	1SJ22EC030	CHANDAN G	48	31	79
32	1SJ22EC031	CHANDANA H S	49	36	85
33	1SJ22EC032	CHANDANA R	48	36	84
34	1SJ22EC033	CHANDANA V R	43	28	71
35	1SJ22EC034	CHANDINI T D	44	33	77
36	1SJ22EC035	CHANDU SHREE Y C	43	43	86
37	1SJ22EC036	CHETHAN S N	30	25	55
38	1SJ22EC037	CHIRAG H	46	38	84
39	1SJ22EC038	D NISARGA	46	26	72
40	1SJ22EC039	DARSHANNAYKA	42	38	80
41	1SJ22EC040	DEEKSHA REDDY M	48	46	94
42	1SJ22EC041	DEEKSHITH PATEL C	47	42	89
43	1SJ22EC042	DEEPIKA M	37	44	81
44	1SJ22EC043	DEVARAJU C V	41	36	77
45	1SJ22EC044	DHANUSH A AGNI	33	19	52
46	1SJ22EC045	DHANUSH M	30	07	37
47	1SJ22EC046	DRUTHI G A	41	26	67
48	1SJ22EC047	DUDDU SIDDARTH	35	14	49
49	1SJ22EC048	G AKANKSHA	44	40	84
50	1SJ22EC049	GANAVIKA N	41	21	62
51	1SJ22EC050	GOKUL KUMAR B S	30	18	48
52	1SJ22EC051	GOVARDHAN V K	43	28	71
53	1SJ22EC052	GOWTHAM R	41	20	61
54	1SJ22EC053	GUNASHREE D S	49	45	94
55	1SJ22EC054	HAFSA KHANAM	44	29	73
56	1SJ22EC055	HAMSA K S	48	42	90
57	1SJ22EC056	HARSHITH GOWDA N	30	28	58
58	1SJ22EC057	HARSHITH K R	40	31	71
59	1SJ22EC058	HARSHITH KUMAR A	40	25	65
60	1SJ22EC059	HARSHITHA J V	47	33	80
61	1SJ22EC060	HARSHITHA N	47	24	71
62	1SJ22EC061	HARSHITHA P S	38	34	72
63	1SJ22EC062	HEMANTH KUMAR M P	46	38	84
64	1SJ22EC063	HITHA D	43	19	62
65	1SJ22EC064	JAYANTH B S	44	30	74
66	1SJ23EC400	ACHHUTHAREDDY C P	38	26	64
67	1SJ23EC401	CHANDRA SHEKARA M	37	18	55
68	1SJ23EC402	CHARAN KUMAR	33	29	62
69	1SJ23EC403	DARSHAN H R	35	26	61

22/07/2025

Signature of the Course Faculty

S.J.C. INSTITUTE OF TECHNOLOGY CHICKBALLAPUR

Branch : EC Semester : 6

Sl NO.	USN	BEC613A
1	1SJ20EC070	36
2	1SJ21EC056	39
3	1SJ22EC001	48
4	1SJ22EC002	46
5	1SJ22EC003	37
6	1SJ22EC004	39
7	1SJ22EC005	41
8	1SJ22EC006	43
9	1SJ22EC007	48
10	1SJ22EC008	49
11	1SJ22EC009	49
12	1SJ22EC010	49
13	1SJ22EC011	28
14	1SJ22EC012	48
15	1SJ22EC013	47
16	1SJ22EC014	31
17	1SJ22EC015	36
18	1SJ22EC017	40
19	1SJ22EC018	44
20	1SJ22EC019	43
21	1SJ22EC020	38
22	1SJ22EC021	46
23	1SJ22EC022	50
24	1SJ22EC023	47
25	1SJ22EC024	50
26	1SJ22EC025	48
27	1SJ22EC026	42
28	1SJ22EC027	45
29	1SJ22EC028	42
30	1SJ22EC029	49
31	1SJ22EC030	48
32	1SJ22EC031	49
33	1SJ22EC032	48
34	1SJ22EC033	43
35	1SJ22EC034	44
36	1SJ22EC035	43

Sl NO.	USN	BEC613A
37	1SJ22EC036	30
38	1SJ22EC037	46
39	1SJ22EC038	46
40	1SJ22EC039	42
41	1SJ22EC040	48
42	1SJ22EC041	47
43	1SJ22EC042	37
44	1SJ22EC043	41
45	1SJ22EC044	33
46	1SJ22EC045	30
47	1SJ22EC046	41
48	1SJ22EC047	35
49	1SJ22EC048	44
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54	1SJ22EC053	49
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56	1SJ22EC055	48
57	1SJ22EC056	30
58	1SJ22EC057	40
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60	1SJ22EC059	47
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62	1SJ22EC061	38
63	1SJ22EC062	46
64	1SJ22EC063	43
65	1SJ22EC064	44
66	1SJ22EC065	43
67	1SJ22EC066	45
68	1SJ22EC067	47
69	1SJ22EC068	41
70	1SJ22EC069	47
71	1SJ22EC070	37
72	1SJ22EC071	39
73	1SJ22EC072	44
74	1SJ22EC074	49
75	1SJ22EC075	49

Sl NO.	USN	BEC613A
76	1SJ22EC076	40
77	1SJ22EC077	45
78	1SJ22EC078	37
79	1SJ22EC079	50
80	1SJ22EC080	48
81	1SJ22EC081	47
82	1SJ22EC082	35
83	1SJ22EC083	46
84	1SJ22EC084	41
85	1SJ22EC085	38
86	1SJ22EC086	42
87	1SJ22EC087	42
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99	1SJ22EC100	35
100	1SJ22EC101	44
101	1SJ22EC102	45
102	1SJ22EC103	42
103	1SJ22EC104	43
104	1SJ22EC106	46
105	1SJ22EC108	47
106	1SJ22EC109	42
107	1SJ22EC110	20
108	1SJ22EC111	48
109	1SJ22EC112	40
110	1SJ22EC113	50
111	1SJ22EC114	31
112	1SJ22EC115	35
113	1SJ22EC116	44
114	1SJ22EC117	43

Sl NO.	USN	BEC613A
115	1SJ22EC118	50
116	1SJ22EC119	50
117	1SJ22EC120	33
118	1SJ22EC121	50
119	1SJ22EC122	44
120	1SJ22EC123	50
121	1SJ22EC124	30
122	1SJ22EC125	30
123	1SJ22EC126	35
124	1SJ22EC127	40
125	1SJ22EC128	50
126	1SJ22EC129	42
127	1SJ22EC130	45
128	1SJ22EC131	50
129	1SJ22EC132	47
130	1SJ22EC133	37
131	1SJ22EC134	41
132	1SJ22EC135	48
133	1SJ22EC136	50
134	1SJ22EC137	48
135	1SJ22EC138	45
136	1SJ22EC139	50
137	1SJ22EC140	44
138	1SJ22EC141	48
139	1SJ22EC142	48
140	1SJ22EC143	44
141	1SJ22EC144	49
142	1SJ22EC145	47
143	1SJ22EC146	49
144	1SJ22EC147	48
145	1SJ22EC148	47
146	1SJ22EC150	46
147	1SJ22EC151	50
148	1SJ22EC152	50
149	1SJ22EC154	49
150	1SJ22EC155	47
151	1SJ22EC156	48
152	1SJ22EC157	50
153	1SJ22EC158	49

Sl NO.	USN	BEC613A
154	1SJ22EC159	48
155	1SJ22EC160	45
156	1SJ22EC161	50
157	1SJ22EC162	40
158	1SJ22EC163	44
159	1SJ22EC164	41
160	1SJ22EC165	49
161	1SJ22EC166	48
162	1SJ22EC167	48
163	1SJ22EC168	48
164	1SJ22EC169	47
165	1SJ22EC170	50
166	1SJ22EC171	47
167	1SJ22EC172	45
168	1SJ22EC173	45
169	1SJ22EC174	41
170	1SJ22EC175	48
171	1SJ22EC176	46
172	1SJ22EC177	50
173	1SJ22EC178	50
174	1SJ22EC179	45
175	1SJ22EC180	49
176	1SJ22EC181	45
177	1SJ22EC182	48
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179	1SJ22EC184	45
180	1SJ22EC185	43
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182	1SJ22EC187	44
183	1SJ22EC188	48
184	1SJ22EC189	48
185	1SJ22EC190	49
186	1SJ22EC191	46
187	1SJ22EC192	47
188	1SJ22EC193	44
189	1SJ22EC194	43
190	1SJ23EC400	38
191	1SJ23EC401	37
192	1SJ23EC402	33

||Jai Sri Gurudev||
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Course: Multimedia Communication (BEC613A)

Semester & Section: 6th Semester A Section

FINAL CIE Marks

SL. NO.	USN	NAME OF THE STUDENT	FINAL CIE MARKS (50)
1	1SJ20EC070	KIRAN RAJ BASAYYA HIREMATH	36
2	1SJ21EC056	HEMANTH KUMAR A	39
3	1SJ22EC001	ABHI S V	48
4	1SJ22EC002	ABHIJITH J V	46
5	1SJ22EC003	ABHISHEK H KANKATKAR	37
6	1SJ22EC004	ADARSHA R	39
7	1SJ22EC005	AJAY KUMAR A V	41
8	1SJ22EC006	AKHIL M	43
9	1SJ22EC007	AKSHAYA K S	48
10	1SJ22EC008	AKSHITHA M	49
11	1SJ22EC009	AMARESH H	49
12	1SJ22EC010	AMBIKA P	49
13	1SJ22EC011	AMULYA M	28
14	1SJ22EC012	ANANYA A M	48
15	1SJ22EC013	ANBAR SABAHATH	47
16	1SJ22EC014	ANIL KUMAR K A	31
17	1SJ22EC015	ANUSHREE K R	36
18	1SJ22EC017	AYESHA M	40
19	1SJ22EC018	AYUSH M	44
20	1SJ22EC019	B V BRAMHANANDA REDDY	43
21	1SJ22EC020	BHARATH H S	38
22	1SJ22EC021	BHARATHI M	46
23	1SJ22EC022	BHAVANA B M	50
24	1SJ22EC023	BHAVYA S A	47
25	1SJ22EC024	BHOOMIKA G	50
26	1SJ22EC025	BHUGANIPALLI SREE VIDYA	48
27	1SJ22EC026	BHUMIKA	42
28	1SJ22EC027	BHUVAN Y A	45
29	1SJ22EC028	CHAITHRA N S	42
30	1SJ22EC029	CHANDAN A	49
31	1SJ22EC030	CHANDAN G	48
32	1SJ22EC031	CHANDANA H S	49
33	1SJ22EC032	CHANDANA R	48
34	1SJ22EC033	CHANDANA V R	43

35	1SJ22EC034	CHANDINI T D	44
36	1SJ22EC035	CHANDU SHREE Y C	43
37	1SJ22EC036	CHETHAN S N	30
38	1SJ22EC037	CHIRAG H	46
39	1SJ22EC038	D NISARGA	46
40	1SJ22EC039	DARSHANNAYKA	42
41	1SJ22EC040	DEEKSHA REDDY M	48
42	1SJ22EC041	DEEKSHITH PATEL C	47
43	1SJ22EC042	DEEPIKA M	37
44	1SJ22EC043	DEVARAJU C V	41
45	1SJ22EC044	DHANUSH A AGNI	33
46	1SJ22EC045	DHANUSH M	30
47	1SJ22EC046	DRUTHI G A	41
48	1SJ22EC047	DUDDU SIDDARTH	35
49	1SJ22EC048	G AKANKSHA	44
50	1SJ22EC049	GANAVIKA N	41
51	1SJ22EC050	GOKUL KUMAR B S	30
52	1SJ22EC051	GOVARDHAN V K	43
53	1SJ22EC052	GOWTHAM R	41
54	1SJ22EC053	GUNASHREE D S	49
55	1SJ22EC054	HAFSA KHANAM	44
56	1SJ22EC055	HAMSA K S	48
57	1SJ22EC056	HARSHITH GOWDA N	30
58	1SJ22EC057	HARSHITH K R	40
59	1SJ22EC058	HARSHITH KUMAR A	40
60	1SJ22EC059	HARSHITHA J V	47
61	1SJ22EC060	HARSHITHA N	47
62	1SJ22EC061	HARSHITHA P S	38
63	1SJ22EC062	HEMANTH KUMAR M P	46
64	1SJ22EC063	HITHA D	43
65	1SJ22EC064	JAYANTH B S	44
66	1SJ23EC400	ACHHUTHAREDDY C P	38
67	1SJ23EC401	CHANDRA SHEKARA M	37
68	1SJ23EC402	CHARAN KUMAR	33
69	1SJ23EC403	DARSHAN H R	35

16/06/2025

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Estd : 1986
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Course: Multimedia Communication (BEC613A)

Semester & Section: 6th Semester A Section

CIE Marks

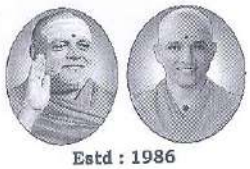
Sl. No.	USN	Name of The Student	CIE 1 (50M)	CIE 1 (25M)	CIE 2 (50M)	CIE 2 (25M)	CIE 3 (50M)	CIE 3 (25M)	CIE AVG (25M)	Assignment (10M)	Mini-Project (10M)	MCQs (5M)	CCE (25M)	Total CIE+CCE (50M)	Sign
1	1SJ20EC070	KIRAN RAJ	AB	-	21	11	26	13	12	10	10	4	24	36	
2	1SJ21EC056	HEMANTH KUMAR	26	13	32	16	13	07	15	10	9	5	24	39	
3	1SJ22EC001	ABHI S V	39	20	46	23	44	22	23	10	10	5	25	48	
4	1SJ22EC002	ABHIJITH J V	37	19	43	22	05	03	21	10	10	5	25	46	
5	1SJ22EC003	ABHISHEK H K	35	18	AB	-	20	10	14	09	09	5	23	37	
6	1SJ22EC004	ADARSHA R	38	19	30	15	15	8	17	9	9	4	22	39	
7	1SJ22EC005	AJAY KUMAR A V	36	18	33	17	10	05	18	9	9	5	23	41	
8	1SJ22EC006	AKHIL M	42	21	31	16	10	05	19	10	09	05	24	43	
9	1SJ22EC007	AKSHAYA K S	37	19	47	24	41	21	23	10	10	5	25	48	
10	1SJ22EC008	AKSHITHA M	45	23	50	25	42	21	24	10	10	5	25	49	
11	1SJ22EC009	AMARESH H	44	22	50	25	12	06	24	10	10	5	25	49	
12	1SJ22EC010	AMBIKA P	42	21	47	24	48	24	24	10	10	5	25	49	
13	1SJ22EC011	AMULYA M	13	07	22	11	AB	-	09	09	8	2	19	28	
14	1SJ22EC012	ANANYA A M	40	20	49	25	13	07	23	10	10	05	25	48	
15	1SJ22EC013	ANBAR SABAHATH	44	22	46	23	AB	-	23	10	9	05	24	47	
16	1SJ22EC014	ANIL KUMAR K A	32	16	AB	—	7	04	10	09	8	4	21	31	
17	1SJ22EC015	ANUSHREE K R	28	14	AB	-	24	12	13	10	9	4	23	36	

18	1SJ22EC017	AYESHA M	29	15	37	19	23	12	17	10	08	5	23	40	Ayesha.m
19	1SJ22EC018	AYUSH M	38	19	46	23	07	4	21	09	09	5	23	44	Ayush.M
20	1SJ22EC019	BRAMHANANDA REDDY	34	17	42	21	AB	–	19	10	09	5	24	43	D
21	1SJ22EC020	BHARATH H S	31	16	26	38	AB	–	15	09	09	5	23	38	Bharath
22	1SJ22EC021	BHARATHI M	41	21	44	22	9	5	22	10	9	5	24	46	B
23	1SJ22EC022	BHAVANA B M	49	25	48	24	19	10	25	10	10	5	25	50	Bhavana B M
24	1SJ22EC023	BHAVYA S A	41	21	43	22	22	11	22	10	10	5	25	47	Bhavya S A
25	1SJ22EC024	BHOOMIKA G	45	23	48	24	50	25	25	10	10	5	25	50	Bhoomika.G
26	1SJ22EC025	BHUGANIPALLI SREE VIDYA	43	22	45	23	28	14	23	10	10	5	25	48	B.Sreevidya
27	1SJ22EC026	BHUMIKA	35	18	31	16	20	10	17	10	10	5	25	42	B
28	1SJ22EC027	BHUVAN Y A	39	20	37	19	19	10	20	10	10	5	25	45	Bhuvan Y.A
29	1SJ22EC028	CHAITHRA N S	36	18	30	15	13	7	17	10	10	5	25	42	Chaithra
30	1SJ22EC029	CHANDAN A	45	23	48	24	12	06	24	10	10	5	25	49	Chandan
31	1SJ22EC030	CHANDAN G	48	24	41	21	AB	–	23	10	10	5	25	48	Chandan G.
32	1SJ22EC031	CHANDANA H S	45	23	47	24	AB	–	24	10	10	5	25	49	Chandana H.S
33	1SJ22EC032	CHANDANA R	40	20	50	25	20	10	23	10	10	5	25	48	Chandana.R
34	1SJ22EC033	CHANDANA V R	31	16	39	20	27	14	18	10	10	5	25	43	Chandana V.R
35	1SJ22EC034	CHANDINI T D	27	14	49	25	24	12	20	10	9	5	24	44	Chandini T.D
36	1SJ22EC035	CHANDU SHREE	24	12	46	23	25	13	18	10	10	5	25	43	Chandu
37	1SJ22EC036	CHETHAN S N	04	02	27	14	16	8	11	09	08	2	19	30	Chetan
38	1SJ22EC037	CHIRAG H	39	20	45	23	12	6	22	10	9	5	24	46	Chirag H
39	1SJ22EC038	D NISARGA	37	19	43	22	AB	–	21	10	10	5	25	46	D.Nisarga
40	1SJ22EC039	DARSHANNAYKA	12	6	39	20	30	15	18	10	9	5	24	42	D
41	1SJ22EC040	DEEKSHA REDDY	45	23	46	23	29	15	23	10	10	5	25	48	Deeksha
42	1SJ22EC041	DEEKSHITH PATEL C	45	23	44	22	9	5	23	10	9	5	24	47	Deekshith
43	1SJ22EC042	DEEPIKA M	29	15	AB	–	25	13	14	10	8	5	23	37	Deepika
44	1SJ22EC043	DEVARAJU C V	31	16	42	21	5	3	19	9	9	4	22	41	Devaraju
45	1SJ22EC044	DHANUSH A AGNI	AB	–	28	14	19	10	12	9	8	4	21	33	Dhanush
46	1SJ22EC045	DHANUSH M	18	9	0	0	20	10	10	9	8	3	20	30	Dhanush M
47	1SJ22EC046	DRUTHI G A	14	7	37	19	27	14	17	10	9	5	24	41	Druthi G A

48	1SJ22EC047	DUDDU SIDDARTH	20	10	28	14	AB	—	12	9	9	5	23	35	D	
49	1SJ22EC048	G AKANKSHA	46	23	21	11	27	14	19	10	10	05	25	44		
50	1SJ22EC049	GANAVIKA N	31	16	29	15	13	07	16	10	10	05	25	41	Ganavika.N	
51	1SJ22EC050	GOKUL KUMAR BS	4B	—	18	9	20	10	10	9	9	2	20	30		
52	1SJ22EC051	GOVARDHAN V K	33	17	38	19	23	12	18	10	10	05	25	43		
53	1SJ22EC052	GOWTHAM R	48	24	Ab	—	19	10	17	10	9	5	24	41		
54	1SJ22EC053	GUNASHREE D S	43	22	50	25	37	19	24	10	10	05	25	49		
55	1SJ22EC054	HAFSA KHANAM	47	24	44	22	AB.	—	23	09	09	03	21	44.	Hafsa Khanam.	
56	1SJ22EC055	HAMSA K S	48	24	42	21	33	17	23	10	10	5	25	48		
57	1SJ22EC056	HARSHITH GOWDA N	18	09	00	00	20	10	10	09	08	03	20	30		
58	1SJ22EC057	HARSHITH K R	32	16	32	16	10	5	16	10	9	5	24	40		
59	1SJ22EC058	HARSHITH KUMAR	31	16	29	15	20	10	16	9	10	5	24	40		
60	1SJ22EC059	HARSHITHA J V	39	20	46	23	40	—	22	10	10	5	25	47		
61	1SJ22EC060	HARSHITHA N	40	20	47	24	15	8	22	10	10	5	25	47	Harshitha.N	
62	1SJ22EC061	HARSHITHA P S	30	15	33	17	23	12	16	10	09	03	22	38		
63	1SJ22EC062	HEMANTH KUMAR	40	20	41	21	AB	—	21	10	10	5	25	46		
64	1SJ22EC063	HITHA D	29	15	45	23	6	3	19	10	9	5	24	43		
65	1SJ22EC064	JAYANTH B S	36	18	45	23	0	0	21	9	9	5	23	44		
66	1SJ23EC400	ACHHUTHAREDDY	22	11	36	18	AB	—	15	9	9	5	23	38		
67	1SJ23EC401	CHANDRA SHEKARA M	3	2	30	15	21	11	13	10	9	5	24	37		
68	1SJ23EC402	CHARAN KUMAR	9	5	36	13	22	11	12	9	8	4	21	33		
69	1SJ23EC403	DARSHAN H R	AB	—	29	15	25	13	14	9	8	4	21	35		

02/06/2025

Signature of Course Faculty



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AICTE Approved, Accredited by NAAC with A+ Grade & NBA (CSE, ISE, ECE, ME, CV & AE), Gold Rated by QS I-Gauge

P.B. No.20, B.B Road, Chikkballapur - 562 101, Karnataka

www.sjcit.ac.in

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

MULTIMEDIA COMMUNICATION(BEC613A) - MCQs

Sl.No.	Timestamp	Name	USN	Total (20)	Total (05)
1.	2025/05/22 1:47:11 PM	KIRANRAJ BASAYYA HIREMATH	1SJ20EC070	17.00 / 20	4
2.	2025/05/22 1:48:01 PM	HEMANTH KUMAR A	1SJ21EC056	18.00 / 20	5
3.	2025/05/22 1:49:20 PM	ABHI SV	1SJ22EC001	20.00 / 20	5
4.	2025/05/22 1:46:34 PM	ABHIJITH J V	1SJ22EC002	20.00 / 20	5
5.	2025/05/22 1:51:33 PM	ABHISHEK H K	1SJ22EC003	20.00 / 20	5
6.	2025/05/22 2:57:50 PM	ADARSH. R	1SJ22EC004	15.00 / 20	4
7.	2025/05/22 1:55:12 PM	AJAY KUMAR A V	1sj22ec005	20.00 / 20	5
8.	2025/05/22 1:55:05 PM	AKHIL M	1SJ22EC006	20.00 / 20	5
9.	2025/05/22 1:46:30 PM	AKSHAYA KS	1SJ22EC007	19.00 / 20	5
10.	2025/05/22 1:48:41 PM	AKSHITHA M	1SJ22EC008	20.00 / 20	5
11.	2025/05/22 1:52:30 PM	AMARESH H	1SJ22EC009	20.00 / 20	5
12.	2025/05/22 1:48:10 PM	AMBIKA.P	1SJ22EC010	18.00 / 20	5
13.	2025/05/22 2:58:26 PM	AMULYA M	1sj22ec011	6.00 / 20	2
14.	2025/05/22 1:48:32 PM	ANANYA A M	1SJ22EC012	20.00 / 20	5
15.	2025/05/22 1:49:11 PM	ANBAR SABAHATH	1sj22ec013	20.00 / 20	5
16.	2025/05/22 1:49:56 PM	ANIL KUMAR K A	1SJ22EC014	14.00 / 20	4
17.	2025/05/22 1:47:24 PM	ANUSHREE K R	1SJ22EC015	16.00 / 20	4
18.	2025/05/22 1:50:54 PM	AYESHA M	1SJ22EC017	18.00 / 20	5
19.	2025/05/22 1:48:13 PM	AYUSH M	1SJ22EC018	20.00 / 20	5
20.	2025/05/22 1:49:36 PM	BAGGIRI VEERA BRAMHANANDA REDDY	1SJ22EC019	18.00 / 20	5
21.	2025/05/22 1:46:10 PM	BHARATH H S	1SJ22EC020	19.00 / 20	5
22.	2025/05/22 1:46:41 PM	BHARATHI M	1sj22ec021	18.00 / 20	5
23.	2025/05/22 1:47:55 PM	BHAVANA	1SJ22EC022	20.00 / 20	5
24.	2025/05/22 1:49:13 PM	BHAVYA S A	1SJ22EC023	20.00 / 20	5
25.	2025/05/22 1:48:31 PM	BHOOMIKA G	1sj22ec024	20.00 / 20	5
26.	2025/05/22 1:49:09 PM	B.SREEVIDYA	1SJ22EC025	19.00 / 20	5
27.	2025/05/22 1:47:10 PM	BHUMIKA	1SJ22EC026	18.00 / 20	5
28.	2025/05/22 1:46:58 PM	BHUVAN Y A	1SJ22EC027	20.00 / 20	5
29.	2025/05/22 1:47:15 PM	CHAITHRA N S	1SJ22EC028	18.00 / 20	5
30.	2025/05/22 1:48:01 PM	CHANDAN A	1SJ22EC029	20.00 / 20	5
31.	2025/05/22 1:53:20 PM	CHANDAN G	1SJ22EC030	20.00 / 20	5
32.	2025/05/22 1:49:09 PM	CHANDANA H S	1SJ22EC031	20.00 / 20	5
33.	2025/05/22 1:51:01 PM	CHANDANA R	1SJ22EC032	20.00 / 20	5
34.	2025/05/22 1:50:03 PM	CHANDANA V R	1SJ22EC033	20.00 / 20	5
35.	2025/05/22 1:52:10 PM	CHANDINI T D	1SJ22EC034	20.00 / 20	5
36.	2025/05/22 1:52:32 PM	CHANDUSHREE Y C	1SJ22EC035	20.00 / 20	5
37.	2025/05/22 1:47:07 PM	CHETHAN S N	1SJ22EC036	4.00 / 20	2
38.	2025/05/22 1:55:03 PM	CHIRAG H	1SJ22EC037	20.00 / 20	5

39.	2025/05/22 1:48:14 PM	D NISARGA	1SJ22EC038	20.00 / 20	5
40.	2025/05/22 1:54:35 PM	DARSHAN NAYKA	1SJ22EC039	18.00 / 20	5
41.	2025/05/22 1:48:27 PM	DEEKSHA REDDY M	1SJ22EC040	20.00 / 20	5
42.	2025/05/22 2:07:15 PM	DEEKSHITH C	1SJ22EC041	19.00 / 20	5
43.	2025/05/22 2:07:44 PM	DEEPIKA M	1SJ22EC042	18.00 / 20	5
44.	2025/05/22 4:00:46 PM	DEVARAJU C V	1SJ22EC043	16.00 / 20	4
45.	2025/05/22 1:53:57 PM	DHANUSH A AGNI	1sj22ec044	17.00 / 20	4
46.		DHANUSH M	1SJ22EC045		3
47.	2025/05/22 1:48:46 PM	DRUTHI. G. A	1SJ22EC046	19.00 / 20	5
48.	2025/05/22 1:50:04 PM	D SIDDARTH	1sj22ec047	20.00 / 20	5
49.	2025/05/22 1:52:29 PM	G AKANKSHA	1SJ22EC048	20.00 / 20	5
50.	2025/05/22 1:46:45 PM	GANAVIKA.N	1SJ22EC049	20.00 / 20	5
51.		GOKUL KUMAR B S	1SJ22EC050		2
52.	2025/05/22 1:47:56 PM	GOVARDHAN V K	1SJ22EC051	20.00 / 20	5
53.	2025/05/22 1:51:44 PM	GOWTHAM R	1SJ22EC052	20.00 / 20	5
54.	2025/05/22 1:46:26 PM	GUNASHREE D S	1SJ22EC053	20.00 / 20	5
55.	2025/05/22 2:07:48 PM	HAFSA KHANAM	1SJ22EC054	12.00 / 20	3
56.	2025/05/22 1:51:47 PM	HAMSA K S	1SJ22EC055	19.00 / 20	5
57.		HARSHITH GOWDA N	1SJ22EC056		3
58.	2025/05/22 1:47:27 PM	HARSHITH K R	1SJ22EC057	18.00 / 20	5
59.	2025/05/22 1:48:07 PM	HARSHITH KUMAR A	1SJ22EC058	20.00 / 20	5
60.	2025/05/22 1:48:56 PM	HARSHITHA JV	1SJ22EC059	20.00 / 20	5
61.	2025/05/22 1:45:51 PM	HARSHITHA N	1SJ22EC060	19.00 / 20	5
62.		HARSHITHA P S	1SJ22EC061		3
63.	2025/05/22 1:50:01 PM	HEMANTHKUMAR MP	1SJ22EC062	20.00 / 20	5
64.	2025/05/22 1:46:48 PM	HITHA D	1sj22ec063	20.00 / 20	5
65.	2025/05/22 1:55:13 PM	JAYANTH B S	1SJ22EC064	20.00 / 20	5
66.	2025/05/22 1:48:05 PM	ACHHUTHAREDDY CP	1sj23ec400	18.00 / 20	5
67.	2025/05/22 1:52:26 PM	CHANDRA SHEKARA. M	1SJ23EC401	20.00 / 20	5
68.	2025/05/22 1:53:55 PM	CHARAN KUMAR	1sj23ec402	16.00 / 20	4
69.	2025/05/22 1:48:09 PM	DARSHAN HR	1sj23ec403	17.00 / 20	4

23/05/2025

Signature of the Course Faculty

S.J.C Institute of Technology
P.B, No. 20, BB Rd, Chikkaballapura, Karnataka 562101 - 562101
Phone: 08156-200183, Fax: 08156-08156200186

Progress Report

Academic Year : 2024-25
Degree : BE
Department : Electronics & Communication Engineering ,
Semester : 6
Scheme : CBCS 2022
Section : A
Course Name : MULTIMEDIA COMMUNICATION [BCE613A]

Student USN	Student Name	IA-1
		Max (50)
1SJ20EC070	KIRANRAJ BASAYYA HIREMATH	Ab
1SJ21EC056	HEMANTH KUMAR A	26
1SJ22EC001	ABHI S V	39
1SJ22EC002	ABHIJITH J V	37
1SJ22EC003	ABHISHEK H KANKATKAR	35
1SJ22EC004	ADARSHA R	38
1SJ22EC005	AJAY KUMAR A V	36
1SJ22EC006	AKHIL M	42
1SJ22EC007	AKSHAYA K S	37
1SJ22EC008	AKSHITHA M	45
1SJ22EC009	AMARESH H	44
1SJ22EC010	AMBIKA P	42
1SJ22EC011	AMULYA M	13
1SJ22EC012	ANANYA A M	40
1SJ22EC013	ANBAR SABAHATH	44
1SJ22EC014	ANIL KUMAR K A	32
1SJ22EC015	ANUSHREE K R	28
1SJ22EC017	AYESHA M	29
1SJ22EC018	AYUSH M	38
1SJ22EC019	BAGGIRI VEERA BRAMHANANDA REDDY	34
1SJ22EC020	BHARATH H S	31
1SJ22EC021	BHARATHI M	41
1SJ22EC022	BHAVANA B M	49
1SJ22EC023	BHAVYA S A	41
1SJ22EC024	BHOOMIKA G	45
1SJ22EC025	BHUGANIPALLI SREE VIDYA	43
1SJ22EC026	BHUMIKA	35
1SJ22EC027	BHUVAN Y A	39
1SJ22EC028	CHAITHRA N S	36
1SJ22EC029	CHANDAN A	45
1SJ22EC030	CHANDAN G	48
1SJ22EC031	CHANDANA H S	45

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Phone: 08156-200183, Fax: 08156-08156200186

1SJ22EC032	CHANDANA R	40
1SJ22EC033	CHANDANA V R	31
1SJ22EC034	CHANDINI T D	27
1SJ22EC035	CHANDU SHREE Y C	24
1SJ22EC036	CHETHAN S N	4
1SJ22EC037	CHIRAG H	39
1SJ22EC038	D NISARGA	37
1SJ22EC039	DARSHANNAYKA	12
1SJ22EC040	DEEKSHA REDDY M	45
1SJ22EC041	DEEKSHITH PATEL C	45
1SJ22EC042	DEEPIKA M	29
1SJ22EC043	DEVARAJU C V	31
1SJ22EC044	DHANUSH A AGNI	Ab
1SJ22EC045	DHANUSH M	Ab
1SJ22EC046	DRUTHI G A	14
1SJ22EC047	DUDDU SIDDARTH	20
1SJ22EC048	G AKANKSHA	46
1SJ22EC049	GANAVIKA N	31
1SJ22EC050	GOKUL KUMAR B S	Ab
1SJ22EC051	GOVARDHAN V K	33
1SJ22EC052	GOWTHAM R	48
1SJ22EC053	GUNASHREE D S	43
1SJ22EC054	HAFSA KHANAM	47
1SJ22EC055	HAMSA K S	48
1SJ22EC056	HARSHITH GOWDA N	Ab
1SJ22EC057	HARSHITH K R	32
1SJ22EC058	HARSHITH KUMAR A	31
1SJ22EC059	HARSHITHA J V	39
1SJ22EC060	HARSHITHA N	40
1SJ22EC061	HARSHITHA P S	30
1SJ22EC062	HEMANTH KUMAR M P	40
1SJ22EC063	HITHA D	29
1SJ22EC064	JAYANTH B S	36
1SJ23EC400	ACHHUTHAREDDY C P	22
1SJ23EC401	CHANDRA SHEKARA M	3
1SJ23EC402	CHARAN KUMAR	9
1SJ23EC403	DARSHAN H R	Ab

Show Notification

Score /Internal Assessment

BE

Semester 6-CBCS 2022

MULTIMEDIA COMMUNICATION (BCE613A - T...

EC-A

IA-1

Generate PDF

Tabulate

View Archive

91.3

Pass %

49

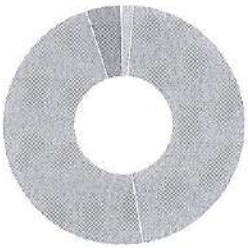
Topper Score

35

Mean Score*

Apply

Bloom's Level



BT/CL	% of Students	# of Students (63)
Evaluate	0	0
Create	0	0
No Level	1.59	1
Apply	46.03	29
Analyze	47.62	30
Remember	0	0
Understand	4.76	3

RESULT	% of Students	# of Students (69)
>25	78.26	54
<0	0	0
0-25	13.04	9
Absent	8.7	6

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Department : Electronics & Communication Engineering ,
Semester : 6
Scheme : CBCS 2022
Section : A
Course Name : MULTIMEDIA COMMUNICATION [BCE613A]

Student USN	Student Name	IA-1	IA-2
		Max (50)	Max (50)
1SJ20EC070	KIRANRAJ BASAYYA HIREMATH	Ab	21
1SJ21EC056	HEMANTH KUMAR A	26	32
1SJ22EC001	ABHI S V	39	46
1SJ22EC002	ABHIJITH J V	37	43
1SJ22EC003	ABHISHEK H KANKATKAR	35	Ab
1SJ22EC004	ADARSHA R	38	30
1SJ22EC005	AJAY KUMAR A V	36	33
1SJ22EC006	AKHIL M	42	31
1SJ22EC007	AKSHAYA K S	37	47
1SJ22EC008	AKSHITHA M	45	Ab
1SJ22EC009	AMARESH H	44	50
1SJ22EC010	AMBIKA P	42	47
1SJ22EC011	AMULYA M	13	Ab
1SJ22EC012	ANANYA A M	40	49
1SJ22EC013	ANBAR SABAHATH	44	46
1SJ22EC014	ANIL KUMAR K A	32	Ab
1SJ22EC015	ANUSHREE K R	28	Ab
1SJ22EC017	AYESHA M	29	37
1SJ22EC018	AYUSH M	38	46
1SJ22EC019	BAGGIRI VEERA BRAMHANANDA REDDY	34	42
1SJ22EC020	BHARATH H S	31	26
1SJ22EC021	BHARATHI M	41	44
1SJ22EC022	BHAVANA B M	49	48
1SJ22EC023	BHAVYA S A	41	43
1SJ22EC024	BHOOMIKA G	45	48
1SJ22EC025	BHUGANIPALLI SREE VIDYA	43	45
1SJ22EC026	BHUMIKA	35	31
1SJ22EC027	BHUVAN Y A	39	37
1SJ22EC028	CHAITHRA N S	36	30
1SJ22EC029	CHANDAN A	45	48
1SJ22EC030	CHANDAN G	48	39

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1SJ22EC031	CHANDANA H S	45	47
1SJ22EC032	CHANDANA R	40	50
1SJ22EC033	CHANDANA V R	31	39
1SJ22EC034	CHANDINI T D	27	Ab
1SJ22EC035	CHANDU SHREE Y C	24	Ab
1SJ22EC036	CHETHAN S N	4	27
1SJ22EC037	CHIRAG H	39	45
1SJ22EC038	D NISARGA	37	43
1SJ22EC039	DARSHANNAYKA	12	39
1SJ22EC040	DEEKSHA REDDY M	45	46
1SJ22EC041	DEEKSHITH PATEL C	45	44
1SJ22EC042	DEEPIKA M	29	Ab
1SJ22EC043	DEVARAJU C V	31	42
1SJ22EC044	DHANUSH A AGNI	Ab	28
1SJ22EC045	DHANUSH M	Ab	4
1SJ22EC046	DRUTHI G A	14	37
1SJ22EC047	DUDDU SIDDARTH	20	28
1SJ22EC048	G AKANKSHA	46	21
1SJ22EC049	GANAVIKA N	31	29
1SJ22EC050	GOKUL KUMAR B S	Ab	18
1SJ22EC051	GOVARDHAN V K	33	38
1SJ22EC052	GOWTHAM R	48	Ab
1SJ22EC053	GUNASHREE D S	43	50
1SJ22EC054	HAFSA KHANAM	47	44
1SJ22EC055	HAMSA K S	48	42
1SJ22EC056	HARSHITH GOWDA N	Ab	2
1SJ22EC057	HARSHITH K R	32	32
1SJ22EC058	HARSHITH KUMAR A	31	29
1SJ22EC059	HARSHITHA J V	39	46
1SJ22EC060	HARSHITHA N	40	47
1SJ22EC061	HARSHITHA P S	30	33
1SJ22EC062	HEMANTH KUMAR M P	40	41
1SJ22EC063	HITHA D	29	45
1SJ22EC064	JAYANTH B S	36	45
1SJ23EC400	ACHHUTHAREDDY C P	22	36
1SJ23EC401	CHANDRA SHEKARA M	3	30
1SJ23EC402	CHARAN KUMAR	9	36
1SJ23EC403	DARSHAN H R	Ab	29

Show Notification

Score /Internal Assessment

BE | Semester 6-CBCS 2022

MULTIMEDIA COMMUNICATION (BCE613A - THEORY) | EC-A | IA-2

Generate PDF Tabulate

View Archive

86.96

Pass %

50

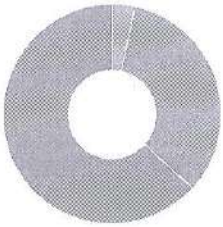
Topper Score

38

Mean Score*

Apply

Bloom's Level



BT/CL	% of Students	# of Students (60)
Evaluate	0	0
Create	0	0
No Level	3.33	2
Apply	33.33	20
Analyze	63.33	38
Remember	0	0
Understand	0	0

RESULT	% of Students	# of Students (69)
>25	79.71	55
<0	0	0
0-25	7.25	5
Absent	13.04	9

Show Notification

Score /Internal Assessment

BE

Semester 6-CBCS 2022

MULTIMEDIA COMMUNICATION (BCE613A - THEORY)

EC-A

IA-3

Generate PDF Tabulate

View Archive

82.61

Pass %

48

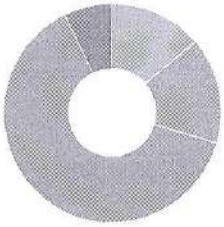
Topper Score

19

Mean Score*

Apply

Bloom's Level



BT/CL	% of Students	# of Students (57)
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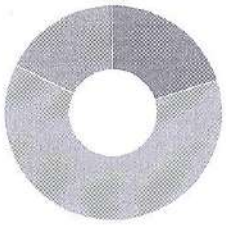
Create	0	0
No Level	14.04	8
Apply	15.79	9
Analyze	63.16	36
Remember	0	0
Understand	7.02	4



RESULT	% of Students	# of Students (69)
>25	20.29	14
<0	0	0
0-25	62.32	43
Absent	17.39	12