INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)
Dundigal, Hyderabad - 500 043

INFORMATION TECHNOLOGY

QUESTION BANK

Course Title	**FUNDAMENTALS OF MULTIMEDIA**				
Course Code	AITC13				
Program	B.Tech				
Semester	V				
Course Type	Elective				
Regulation	UG20				
Course Structure	Theory			Practical	
	Lecture	Tutorials	Credits	Laboratory	Credits
	3	-	3	-	-
Course Coordinator	Dr. Ravi Kumar Poluru, Assistant Professor				

COURSE OBJECTIVES:

The students will try to learn:

I	How to describe a firm grounding in the fundamentals of the underpinning technologies in graphics, distributed systems and multimedia.
II	The principled design of effective media for entertainment, communication, training and education.
III	The experience in the generation of animations, virtual environments and multimedia applications,allowing the expression of creativity.

COURSE OUTCOMES:

After successful completion of the course, students should be able to:

CO 1	**Demonstrate** Knowledge and Understanding of the concepts Temporal, Non-Temporal, and Hypertext, Hypermedia	Apply
CO 2	**Describe** integrate audio, visual, and interactive elements into a comprehensive immersive experience.	Understand
CO 3	**Analyze** the ability to extend their basic in Multimedia systems architecture,USB port.	Analyze
CO 4	**Evaluate** Current trends of AR and VR media delivery to propose options to potential clients, and discuss the benefits challenges and misconceptions involved with working in AR and VR.	Evaluate

CO 5	**Evaluate** various interaction schemes common to AR/VR experiences.	Evaluate
CO 6	**Use** immersive effects of visual and audio assets to AR/VR experiences and evaluate implementation methods.	Apply

QUESTION BANK:

Q.No	QUESTION	Taxonomy	How does this subsume the level	CO's
MODULE I				
INTRODUCTION TO MULTIMEDIA				
PART A-PROBLEM SOLVING AND CRITICAL THINKING QUESTIONS				
1	Explain the fundamental differences between non-temporal and temporal media. How do these differences impact the way we perceive and interact with them?	Understand	The learner will try to **recall** the function of temporal and non temporal media and then **explain** the differences between them	CO 1
2	Discuss the role of synchronization in temporal media. How can you ensure that audio, video, and animation elements are synchronized effectively in a multimedia presentation?	Remember	The learner will try to **recall** multimedia shifted from localized to distributed and implications of multimedia	CO 1
3	Discuss the importance of text and ways text can be leveraged in multimedia presentations	Create	The learner will try to **recall** importance of text and leveraged in multimedia presentation	CO 1
4	Explain the importance of synchronization in multimedia presentations. How can you ensure that multimedia elements are displayed or played back at the right time?	Understand	The learner will try to **recall** the concept of hypermedia and then **explain** how implications creating hypermedia	CO 1

5	Discuss the role of events and scripts in creating interactive multimedia presentations. Provide examples of interactive elements that can enhance user engagement.	Apply	The learner will try to **recall** the novel applications of the multimedia **explain** how it is important	CO 1
6	Describe authoring systems for multimedia content creation. How do these tools simplify the process of combining different media types into cohesive presentations?	Understand	The learner will try to **recall** the different ways in multimedia authoring systems	CO 1
7	Compare and contrast different authoring systems available for multimedia content development. What factors should you consider when selecting the most suitable tool for a specific project?	Apply	The learner will try to **recall** the application of multimedia	CO 1
8	Document your findings, noting the various lengths and formats the music is provided in.	Understand	The learner will try to **recall** length and formats of musics	CO 1
9	Imagine you're tasked with creating a multimedia tutorial on a complex topic. How would you use an authoring system to structure the content, add interactivity, and ensure an engaging learning experience?	Remember	The learner will try to **recall** the spoken text and then **Understand** various written text in multimedia	CO 1
10	What would you suppose is meant by the term "active images" in automatic authoring	Remember	The learner will try to **recall** the concept of automatic authoring then **explain** active images	CO 1

PART-B LONG ANSWER QUESTIONS				
1	Explain different types of authoring systems with an example and features of authoring system	Understand	The learner will try to **recall** various types and features of authoring systems and then **explain** with an example	CO 1
2	Explain in detail about temporal media and characteristics of temporal media.	Understand	The learner will try to **recall** the definition of temporal media and then **explain** characteristics of temporal media	CO 1
3	Define hypermedia, hypertext, links, anchors, and nodes and be able to discuss both the potential and limitations of hypertext and hyperlinking systems.	Remember	The learner will try to **recall** the various definitions **explain** with a limitations.	CO 1
4	Discuss the difference between bitmap and vector graphics. Describe five different graphic elements you might use in a project, for example, the background, buttons, icons, or text. Would you use a vector tool or a bitmap tool for each element? Why?	Create	The learner will try to **recall** bitmap and vector graphics then **explain** the different graphic elements	CO 1
5	Describe what MIDI is, what its benefits are, and how it is best used in a multimedia project.	Create	The learner will try to **recall** MIDI and then **benefits** in multimedia	CO 1
6	Explain in detail about non-temporal media and characteristics of non-temporal media.	Understand	The learner will try to **recall** the definition of non-temporal media and then **explain** characteristics of non-temporal media	CO 1
7	Differentiate between Intra-Object and Inter-Object synchronization with an examples.	Understand	The learner will try to **recall** the various intra-object and inter-object and then **explain** the synchronization examples	CO 1

8	Explain in detail about presentation interactivity with an examples	Understand	The learner will try to **recall** the presentation interactivity and then **explain** the interactivity exampless	CO 1
9	What are the various presentation events and explain with an examples	Understand	The learner will try to **recall** the various presentation events and then **explain** the events examples	CO 1
10	What is an authoring system and authoring paradigm? Can you develop all of your materials in the authoring system? Discuss.	Understand	The learner will try to **recall** the authoring paradigm and then **explain** various authoring systems	CO 1
11	Explain the use of computer audio in multimedia applications.	Understand	The learner will try to **recall** the multimedia applications	CO 1
12	Distinguish between hypertext and hypermedia.	Understand	The learner will try to **recall** the hypertext and hypermedia	CO 1
13	Explain Event-based synchronization.	Understand	The learner will try to **recall** the event-based synchronization	CO 1
14	Describe the steps involved in analog to digital conversion of audio signals.	Understand	The learner will try to **recall** the analog to digital convesion of audio signals	CO 1
15	Explain Scripts and Interactivity.	Understand	The learner will try to **recall** the scripts and interactivity	CO 1
16	What are the characteristics of non-temporal media.	Understand	The learner will try to **recall** the characteristics of non-temporal media	CO 1
17	What is the difference between inter-object and intra-object synchronization.	Understand	The learner will try to **recall** the inter-object and intra-object synchronization	CO 1
18	Define multimedia, hypertext and hypermedia. How are these related?	Understand	The learner will try to **recall** the multimedia, hypertext and hypermedia	CO 1
19	What is Multimedia? Components of Multimedia	Understand	The learner will try to **recall** the multimedia	CO 1

20	Distinguish between Hypermedia and Multimedia	Understand	The learner will try to **recall** the hypermedia and multimedia	CO 1
PART-C SHORT ANSWER QUESTIONS				
1	Difference between Hypermedia and Hypertext.	Understand	The learner will try to **recall** the definition of hypermedia and hypertext and **explain** its differences	CO 1
2	What is meant by the terms static media and dynamic media? Give two examples of each type of media.	Understand	The learner will try to **recall** the definition of static media and dynamic media and its **examples**	CO 1
3	Define Multimedia	Remember	The learner will try to **recall** the definition of multimedia	CO 1
4	Define Authoring Systems.	Remember	The learner will try to **recall** the definition of authoring systems	CO 1
5	Write a short note on Presentations	Understand	The learner will try to **recall** various presentations representation.	CO 1
6	List out the features of authoring tools	Remember	The learner will try to **recall** various features of authoring tools	CO 1
7	Define the term Synchronization	Remember	The learner will try to **recall** the definition of synchronization	CO 1
8	What is the purpose to use synchronization and different types of synchronization in multimedia?	Understand	The learner will try to **recall** various types of synchronization	CO 1
9	Differentiate between Intra-Object and Inter-Object synchronization.	Understand	he learner will try to **recall** the definition of intra-object and inter-object and **explain** its differences	CO 1
10	Write a short notes on scripts in multimedia	Understand	The learner will try to **recall** various scripts representation.	CO 1
11	What is temporal data in multimedia?	Understand	The learner will try to **recall** the temporal data in multimedia	CO 1

12	What do you mean by temporal and non temporal media?	Understand	The learner will try to **recall** temporal and non temporal media	CO 1
13	Which are the characteristics of temporal data?	Understand	The learner will try to **recall** the characteristics of temporal data	CO 1
14	What is temporal redundancy in video encoding?	Understand	The learner will try to **recall** the temporal redundancy in video encoding	CO 1
15	What are the characteristics of hypertext and hypermedia?	Understand	The learner will try to **recall** the characteristics of hypertext and hypermedia	CO 1
16	Write a short notes on Authoring Systems	Understand	The learner will try to **recall** the authoring sysytems.	CO 1
17	Write a short notes on Animation	Understand	The learner will try to **recall** the animation	CO 1
18	Write a short notes on Video Editing	Understand	The learner will try to **recall** video editing.	CO 1
19	Write a short notes on Digital Audio	Understand	The learner will try to **recall** digital audio.	CO 1
20	Write a short notes on Images, Graphics	Understand	The learner will try to **recall** images, graphics .	CO 1

MODULE II				
COMPRESSION TECHNIQUES				
PART-A PROBLEM SOLVING AND CRITICAL THINKING QUESTIONS				
1	Explain the fundamental principles of data compression. What is the difference between lossless and lossy compression, and when would you choose one over the other?	Understand	The learner will try to **recall** discrete cosine transform and then **explain** its data compression	CO 2
2	Consider a scenario where you need to transmit a large dataset over a slow network connection. How can compression techniques help optimize the data transfer process, and what factors would you consider when selecting a compression method?	Understand	The learner will try to **recall** the graphical objects and then **explain** in detail	CO 2
3	Discuss the trade-offs between compression ratio and compression speed. How do these trade-offs impact the choice of compression techniques for different applications?	Remember	The learner will try to **recall** the MP3 audio and **explain** Layer1 in audio compression	CO 2
4	Describe the JPEG compression algorithm and its basic components, such as discrete cosine transform (DCT) and quantization. How does JPEG achieve lossy compression for still images?	Remember	The learner will try to **recall** the MPEG compression frames and then **explain** various frames in MPEG	CO 2
5	Explain the concept of chroma subsampling in JPEG compression. How does it affect image quality, and what are the considerations when applying subsampling?	Understand	The learner will try to **recall** the D-frames and then **explain** various applications in D-frames	CO 2

6	Compare and contrast JPEG and JPEG2000 compression techniques. What are the key features and advantages of JPEG2000 over the original JPEG standard?	Remember	The learner will try to **recall** the concept of MPEG-1 & MPEG-2 and **explain** its MPEG-2 superseded the MPEG-1	CO 2
7	Explain the principles behind MPEG-1 and MPEG-2 video compression. How do these standards achieve efficient video compression and streaming?	Understand	The learner will try to **recall** the MPEG-2 encoder & decoder and then **explain** with SNR & spatial & temporal hybrid scalability	CO 2
8	Discuss the concept of inter-frame compression in MPEG-2. How does it help reduce redundancy in video data, and what are the implications for video quality?	Understand	The learner will try to **recall** the coding techniques in compression	CO 2
9	Describe the MPEG-4 video compression standard and its features, such as object-based coding and scalability. How does MPEG-4 address the challenges of compressing natural video content?	Understand	The learner will try to **recall** the audio compression then **explain** in detail	CO 2
10	Explore the concept of perceptual coding in MP3 compression. How does it exploit human auditory perception to remove audio data redundancies?	Understand	The learner will try to **recall** the MPEG audio coder and then **explain** its diagram	CO 2
PART-B LONG ANSWER QUESTIONS				
1	What is MPEG-4? State at least three differences between MPEG-1 and MPEG-2 compression standards.	Remember	The learner will try to **recall** MPEG4 and **explain** difference between MPEG-1 and MPEG-2	CO 2

2	What is the difference between “lossless” and “lossy” compression? Why are “key frames” so important to interframe compression?	Remember	The learner will try to **recall** the difference between lossless and lossy compression then **explain** the keyframes	CO 2
3	Explain MP3 compression Scheme.	Understand	The learner will try to **recall** the MP3 compression	CO 2
4	How is the information lost in JPEG compression of images, explain using all the coding steps?	Remember	The learner will try to **recall** the JPEG compression and then **explain** steps of JPEG compression	CO 2
5	What is Interframe Co-relation? Explain the I, P and B-frames technique of MPEG-s Video Compression Technique	Remember	The learner will try to **recall** the concept of Interframe co-relation and then **explain** various video compression in MPEGs	CO 2
6	Describe the quantization process in JPEG Compression Scheme.	Understand	The learner will try to **recall** the concept of quantization process then **explain** its JPEG compression scheme	CO 2
7	State how the compression algorithm used with MPEG-2 differs from that used in the MPEG-1.	Analyze	The learner will try to **recall** the compression algorithm in MPEG-2 and then **explain** differs in compression algorithm	CO 2
8	Discuss Compression of synthetic	Create	The learner will try to **recall** the compression of synthetic	CO 2
9	Why was padding introduced in MPEG-4 VOP-based coding? Name some potential problems of padding	Remember	The learner will try to **recall** the working principle of MPEG-4and then **explain** the padding in MPEG-4 VOP-based coding	CO 2
10	How does MPEG-4 perform VOP-based motion compensation? Outline the necessary steps and draw a block diagram illustrating the data flow	Remember	The learner will try to **recall** the MPEG-4 VOP-based motion and then **explain** necessary steps in it	CO 2

11	Explain the importance of data compression in multimedia	Understand	The learner will try to **recall** the data compression in multimedia	CO 2
12	How is the information lost in JPEG compression of images, explain using all the coding steps?	Remember	The learner will try to **recall** the jpeg compression of images and **explain** the coding steps in it.	CO 2
13	Describe the use of various types of frames used for video encoding in MPEG.	Remember	The learner will try to **recall** types of frames used for video encoding in MPEG.	CO 2
14	How are the following frames used in MPEG compression? i) I-frame ii) P-frame iii) B-frames	Remember	The learner will try to **recall** the MPEG compression such as I-frame, P-frame and B-frame	CO 2
15	How does Compression of synthetic	Remember	The learner will try to **recall** the Compression of synthetic	CO 2
16	What is MPEG-4? State at least three differences between MPEG-1 and MPEG-2 compression standards.	Remember	The learner will try to **recall** the MPEG-4 and then **explain** difference between MPEG-1 and MPEG-2 compression standards.	CO 2
17	What is the difference between “lossless” and “lossy” compression? Why are “key frames” so important to interframe compression?	Remember	The learner will try to **recall** the lossless and lossy compression and then **explain** key frames and interframe compression	CO 2
18	Describe the quantization process in JPEG Compression Scheme.	Remember	The learner will try to **recall** the quantization process in JPEG comprssion scheme.	CO 2
19	What is frequency masking and temporal masking? What does MPEG Layer 3 (MP3) audio do differently from Layer 1 in order to incorporate temporal masking?	Remember	The learner will try to **recall** the frequency masking & temporal masking and then **explain** MP3 audio do differently from layer 1 in ordder to incorporate temporal masking	CO 2

20	Explain why DCT encoding is used in MPEG-1 and MPEG-2	Understand	The learner will try to **recall** the DCT encoding is used in MPEG-1 and MPEG-2	CO 2
PART-C SHORT ANSWER QUESTIONS				
1	Write short note on Compression Technology	Remember	The learner will try to **recall** the compression technology	CO 2
2	Write a short notes on Lossless Compression	Remember	The learner will try to **recall** the lossless compression	CO 2
3	Write a short notes on Lossy Compression	Remember	The learner will try to **recall** the lossless compression	CO 2
4	What are various layers in MPEG audio	Remember	The learner will try to **recall** the layers in MPEG audio compression	CO 2
5	Explain Some Major Steps For Jpeg Compression	Understand	The learner will try to **recall** the disadvantages in JPEG compression	CO 2
6	Explain the Features Of Jpeg 2000 Standard	Understand	The learner will try to **recall** the features of JPEG 2000	CO 2
7	What is still image compression	Remember	The learner will try to **recall** the still image compression	CO 2
8	How many basic techniques are used in MPEG video compression	Remember	The learner will try to **recall** the techniques in MPEG video compression	CO 2
9	List the different types of compression	Understand	The learner will try to **recall** the types compression	CO 2
10	Difference between jpeg and jpeg 2000	Understand	The learner will try to **recall** the difference between jpeg & jpeg2000	CO 2
11	What is compression and types of compression?	Remember	The learner will try to **recall** the compression and **explain** the types of compression	CO 2
12	What is the main benefit of compression?	Remember	The learner will try to **recall** the advantages of compression	CO 2

13	What are the two types of image compression?	Understand	The learner will try to **recall** the types of image compression	CO 2
14	What are major steps for JPEG compression	Understand	The learner will try to **recall** the steps for jpeg compression	CO 2
15	Which is better JPEG 2000 or PNG?	Understand	The learner will try to **recall** the difference between jpeg 2000 and PNG	CO 2
16	What compression does MPEG use	Understand	The learner will try to **recall** the MPEG	CO 2
17	What are object-based visual coding in MPEG-4	Understand	The learner will try to **recall** the object-based visual coding in MPEG-4	CO 2
18	What is Static Texture Coding	Remember	The learner will try to **recall** the static texture coding	CO 2
19	What is MPEG-7 descriptors	Remember	The learner will try to **recall** the MPEG-7 descriptors	CO 2
20	Write a short notes on Description Scheme (DS)	Understand	The learner will try to **recall** the description scheme	CO 2

MODULE III				
MULTIMEDIA SYSTEMS ARCHITECTURE				
PART A-PROBLEM SOLVING AND CRITICAL THINKING QUESTIONS				
1	When designing a multimedia PC or workstation, what are the key hardware components and specifications that need to be considered to ensure optimal multimedia performance?	Remember	The learner will try to **recall** architecture of multimedia PC/Workstation and then **explain**s the concept of multimedia PC/Workstation	CO 3
2	Describe IEEE 1394 interface and draw an architecture of IEEE 1394	Understand	The learner will try to **recall** the IEEE 1394 interface and then **explain** IEEE 1394 and draw the architecture of IEEE 1394	CO 3
3	Explain the features of firewire and advantages & drawbacks of firewire	Understand	The learner will try to **recall** features of firewire and then **explain** advantages and disadvantages	CO3
4	Explain USB port overview and differentiate between USB 2.0 and Firewire	Understand	The learner will try to **recall** usb port and then **explain** difference between usb 2.0 and firewire	CO 3
5	Draw a neat diagram Operating System Support for Multimedia and explain in detail	Apply	The learner will try to **recall** the architecture of operating system support for multimedia and then **explain** the operating system support for multimedia	CO 3
6	Describe the Resource Scheduling with real-time considerations in multimedia	Analyze	The learner will try to **recall** the working principle of resource scheduling with real-time considerations and **explain** in detail	CO 3
7	List out Resource Scheduling with real-time considerations and explain in details	Remember	The learner will try to **recall** the types of Resource Scheduling with real-time considerations and then **explain** the Resource Scheduling with real-time considerations	CO 3

8	Describe the multimedia file system paradigms	Analyze	The learner will try to **recall** the multimedia file system paradigms and then **explain** different types of multimedia file system paradigms	CO 3
9	Define File systems. Differentiate between Near Video on Demand and Near Video on Demand with VCR Functions	Analyze	The learner will try to **recall** the difference between Near Video on Demand and Near Video on Demand with VCR Functions	CO 3
10	Discuss in detail I/O Device Management	Create	The learner will try to **recall** the I/O Device Management	CO 3
PART-B LONG ANSWER QUESTIONS				
1	What is MMX technology instruction also explain the data type and instruction set of MMX technology instruction	Remember	The learner will try to **recall** the MMX technology instructions and **explain** the data types and instruction set of MMX technology instructions	CO 3
2	What is the purpose of MMX technology needed? How many instructions are in MMX?	Remember	The learner will try to **recall** purpose of MMX technology and then **explain**s the instructions are in MMX	CO 3
3	What is meant by file system? Explain the characteristics of MMX instruction set	Remember	The learner will try to **recall** file system and then **explain** its characteristics of MMX instruction set	CO 3
4	Explain Multimedia Workstation Architecture? What are the components of multimedia workstation architecture	Understand	The learner will try to **recall** the multimedia workstation architecture and then **explain** the components of multimedia workstation	CO 3
5	Explain I/O Device. management What are the characterstics of I/O Devices	Understand	The learner will try to **recall** the I/O device and then **explain** its characterstics of I/O devices	CO 3
6	Discuss I/O systems in multimedia.	Create	The learner will try to **recall** various I/O Systems	CO 3

7	List out the scheduling in real time system and explain in detail	Remember	The learner will try to **recall** the scheduling in real time systems and and then **explain** in detail	CO 3
8	Draw the diagram of VCR Control Functions and explain it	Understand	The learner will try to **recall** the VCR Control Functions and then **explain** it	CO 3
9	Explain different types of FireWire? Differentiate between FireWire and IEEE 1394	Understand	The learner will try to **recall** the different types of firewire and then **explain** difference between firewire and IEEE 1394	CO 3
10	Discuss briefly about FireWire types in multimedia and feature of FireWire	Create	The learner will try to **recall** the firewire various types and then **explain** the features	CO 3
11	Discuss multimedia workstation architecture	Understand	The learner will try to **recall** the multimedia workstation architecture	CO 3
12	What is multimedia system. Describe the framework for multimedia system in detail with diagram	Understand	The learner will try to **recall** the multimedia system and then **explain** the framework for multimedia system with neat diagram	CO 3
13	Describe how can you use IEEE 1394 interface for connecting multimedia devices to your system.	Understand	The learner will try to **recall** the IEEE1394 interface	CO 3
14	Explain the following: a) Transform coding b) USB Ports	Understand	The learner will try to **recall** the transform coding and USB ports	CO 3
15	Explain IO system management	Understand	The learner will try to **recall** the IO system management	CO 3
16	Explain the real-time processing requirements for multimedia information.	Understand	The learner will try to **recall** the real-time processing requirements	CO 3
17	Discuss resource allocation in multimedia	Understand	The learner will try to **recall** the resource allocation and then **explain** various resource allocation in multimedia	CO 3

18	Explain how are multimedia workstations configured?	Understand	The learner will try to **recall** the multimedia workstations configured	CO 3
19	Explain IO management system and with an example?	Understand	The learner will try to **recall** the IO management system and then **explain** with an example	CO 3
20	Explain the purpose of MMX technology needed? How many instructions are in MMX?	Understand	The learner will try to **recall** the purpose of MMX technology needed	CO 3
PART-C SHORT ANSWER QUESTIONS				
1	What are the three data types supported by MMX instructions	Remember	The learner will try to **recall** the data types in MMX instructions	CO 3
2	What is I/O system	Remember	The learner will try to **recall** the I/O Systems	CO 3
3	What are the characteristics of I/O device	Remember	The learner will try to **recall** the characteristics of I/O device	CO 3
4	What are the two types of USB ports	Remember	The learner will try to **recall** the types of USB ports	CO 3
5	What is filesystem and file types	Remember	The learner will try to **recall** the filesystem and file types	CO 3
6	What is a IEEE 1394 port	Remember	The learner will try to **recall** the IEEE 1394 port	CO 3
7	What are the 2 types of FireWire	Remember	The learner will try to **recall** the types of Firewire	CO 3
8	What is operating system in multimedia	Remember	The learner will try to **recall** the definition of operating system in multimedia	CO 3
9	What are the different types of I/O devices	Remember	The learner will try to **recall** the types of I/O devices	CO 3
10	What are the functions of file system	Remember	The learner will try to **recall** the functions of file systems	CO 3

11	Define multimedia system. Explain the structure for multimedia system in detail with diagram	Remember	The learner will try to **recall**multimedia system and then **explain** the structure for multimedia systems	CO 3
12	What are the different applications of multimedia.	Remember	The learner will try to **recall** the applications of multimedia and then **explain** in detail	CO 3
13	How many new instructions did MMX add to the x86 instruction set	Remember	The learner will try to **recall** the instructions in MMX	CO 3
14	What are the 3 categories of IO devices	Remember	The learner will try to **recall** the categories of IO devices	CO 3
15	What are IO operations in OS?	Remember	The learner will try to **recall** the IO operations in OS	CO 3
16	Write a short notes on USB port	Remember	The learner will try to **recall** the USB port	CO 3
17	Write a short notes on IEEE 1394	Remember	The learner will try to **recall** the IEEE 1394	CO 3
18	What is Scheduling with real-time considerations	Remember	The learner will try to **recall** the scheduling with real-time	CO 3
19	How many types of scheduling are available in process management of real time operating system	Remember	The learner will try to **recall** the various types of scheduling.	CO 3
20	What real time scheduling algorithm uses deadline as its scheduling criteria	Remember	The learner will try to **recall** the real time scheduling algorithm	CO 3

MODULE IV				
MULTIMEDIA INFORMATION MANAGEMENT				
PART A- PROBLEM SOLVING AND CRITICAL THINKING QUESTIONS				
1	When designing a multimedia database, what are the key considerations for efficiently storing and retrieving multimedia content like images, videos, and audio files?	Remember	The learner will try to **recall** multimedia database and **explain**s different types of multimedia applications	CO 4
2	How can you address the challenges of managing metadata in a multimedia database, and why is metadata crucial for effective content retrieval?	Remember	The learner will try to **recall** the content of multimedia database and then **explain**s the challanges in multimedia databases	CO 4
3	Discuss the trade-offs between centralized and distributed multimedia database architectures. In what scenarios would each be more suitable?	Understand	The learner will try to **recall** the concept of content based information retrieval and then **explain** the different types of indexing n content based information retrieval	CO 4
4	Explain the concept of indexing and its significance in multimedia database design. What are the different indexing techniques used for multimedia content?	Understand	The learner will try to **recall** the content based image retrieval	CO 4
5	In the context of multimedia databases, how can you ensure data integrity and reliability, especially when dealing with large volumes of multimedia files?	Understand	The learner will try to **recall** different techniques and then **explain** in detail of techniques	CO 4
6	How can feature extraction and similarity measures be employed to perform content-based image retrieval? Provide examples of applications where this technology is valuable.	Remember	The learner will try to **recall** the architecture and then **explain**s the content-based video retrieval	CO 4

7	What is the major motivation behind the development of MPEG-7? Give three examples of real-world applications that may benefit from MPEG-7.	Remember	The learner will try to **recall** the motivation of MPEG-7 and then **explain**s the applications of MPEG-7	CO 4
8	Discuss the challenges of content-based video retrieval. What techniques can be used to analyze video content and extract meaningful information for retrieval purposes?	Understand	The learner will try to **recall** the concept of MPEG-7 descriptor	CO 4
9	What is the MPEG-7 standard, and how does it contribute to multimedia content description and retrieval? Explain its key components and goals.	Remember	The learner will try to **recall** the MPEG-7 description scheme	CO 4
10	When designing a video-on-demand system, what are the essential components and architecture considerations? How can you ensure scalability and high availability?	Understand	The learner will try to **recall** the working principle of design of video-on-demand systems	CO 4
PART-B LONG ANSWER QUESTIONS				
1	Design and construct multimedia database	Understand	The learner will try to **recall** the concept of multimedi database and then **explain** the multimedia database design	CO 4
2	Explain the different types of multimedia databases	Understand	The learner will try to **recall** the various types of multimedia databases	CO 4
3	Write about the content-based information retrieval	Understand	The learner will try to **recall** the content-based information retrieval	CO 4
4	Explain about content-based image retrieval	Understand	The learner will try to **recall** the content-based image retrieval	CO 4

5	What is image retrieval techniques	Remember	The learner will try to **recall** the techniques of image retrieval	CO 4
6	What are the advantages and disadvantages of Video-on-demand systems?	Remember	The learner will try to **recall** the advantages and disadvantages of video-on-deman systems	CO 4
7	Discuss the typical features of MPEG-7.	Create	The learner will try to **recall** the features of MPEG-7	CO 4
8	How are multimedia databases organized? Give examples.	Remember	The learner will try to **recall** the multimedia databases organized and **explain** with examples	CO 4
9	Discuss about video retrieval techniques	Create	The learner will try to **recall** the techniques of video retrieval	CO 4
10	What do you understand by benchmarking of multimedia databases? Distinguish between relational and object oriented model of multimedia databases.	Remember	The learner will try to **recall** the concept of benchmarking of multimedia datbases and then **explain** difference between relational and object oriented model	CO 4
11	What do you understand by benchmarking of multimedia databases? Distinguish between relational and object oriented model of multimedia databases. Why synchronization is important for delivery of multimedia data?	Create	The learner will try to **recall** the benchmarking of multimedia databases and then **explain** the difference between realtional and object oriented model	CO 4
12	Explain, how video-conferencing standards are different from video and/or audio compression standards.	Create	The learner will try to **recall** the video-conferencing standards	CO 4
13	How does MPEG-7 address the challenges of multimedia content indexing, searching, and retrieval? Provide examples of practical implementations.	Remember	The learner will try to **recall** the MPEG-7	CO 4

14	What is the difference between video conferencing and videophone service? Show major components of each?	Create	The learner will try to **recall** the difference between video conferencing and video phone service	CO 4
15	Discuss about Design of video-on-Demand Systems	Create	The learner will try to **recall** the design of video-on-demand systems	CO 4
16	What are the kinds of redundancy that are considered for compressing video data? How does motion compensated predictive scheme work for videoconference.	Create	The learner will try to **recall** the redundancy in compressing video data	CO 4
17	Discuss about various types of frames used for video encoding in MPEG.	Create	The learner will try to **recall** the techniques of frames used for video encoding	CO 4
18	Describe local area network architecture for delivering multimedia information.	Create	The learner will try to **recall** the local area network architecture	CO 4
19	Discuss about Descriptor techniques	Create	The learner will try to **recall** the techniques of descriptor	CO 4
20	Discuss about Image Retrieval techniques	Create	The learner will try to **recall** the techniques of image retreival	CO 4
PART-C SHORT ANSWER QUESTIONS				
1	How will you design multimedia database	Remember	The learner will try to **recall** the multimedia database design	CO 4
2	What are the various classifications of multimedia databases	Remember	The learner will try to **recall** the techniques of multimedia databases	CO 4
3	Define content-based information retrieval	Remember	The learner will try to **recall** the definition of content-based information retrieval	CO 4
4	What is content based image retrieval in multimedia	Remember	The learner will try to **recall** the image retrieval in multimedia	CO 4

5	What is image text retrieval	Remember	The learner will try to **recall** the image text retrieval	CO 4
6	What is video indexing and retrieval	Remember	The learner will try to **recall** the video retrieval and indexing	CO 4
7	What is image retrieval applications	Remember	The learner will try to **recall** the applications of image retrieval	CO 4
8	What is MPEG-7	Remember	The learner will try to **recall** the definition of MPEG-7	CO 4
9	What is video on demand system	Remember	The learner will try to **recall**video on demand system	CO 4
10	What is the difference between streaming and video on demand	Remember	The learner will try to **recall** the difference between streaming and video on demand	CO 4
11	What is image retrieval used for?	Remember	The learner will try to **recall** image retrieval	CO 4
12	How will you design and construct multimedia database	Remember	The learner will try to **recall** design and construct multimedia database	CO 4
13	What are the types of multimedia database	Remember	The learner will try to **recall** the various types of multimedia database	CO 4
14	How does MPEG work?	Remember	The learner will try to **recall** MPEG work	CO 4
15	What are the features of MPEG?	Remember	The learner will try to **recall** the features of MPEG	CO 4
16	What are the two basic approaches to image retrieval?	Remember	The learner will try to **recall** the two basic approaches to image retrieval	CO 4
17	What is text video retrieval	Remember	The learner will try to **recall** the text video retrieval	CO 4
18	Write short notes on Content Based retrieval	Remember	The learner will try to **recall**video on content based retrieval	CO 4

19	Write a short notes video on demand system	Remember	The learner will try to **recall**video on demand system	CO 4
20	What are the key problem in designing multimedia database	Remember	The learner will try to **recall** key problem in designing multimedia database	CO 4
MODULE V				
INTRODUCTION TO VIRTUAL REALITY				
PART A-PROBLEM SOLVING AND CRITICAL THINKING QUESTIONS)				
1	How can virtual reality be used to improve teleoperation of remote devices or vehicles, such as drones or robots? What are the potential benefits and challenges?	Remember	The learner will try to **recall** properties of virtual reality and **explain** the tools for training in virtual reality	CO 5
2	Compare and contrast the advantages and disadvantages of different input devices for virtual reality, such as head and hand trackers, data gloves, and haptic input devices. When would you choose one over the other for a specific application?	Analyze	The learner will try to **recall**input-devices in virtual reality and **explain** the various input devices in virtual reality	CO 5
3	Explain the importance of haptic feedback in virtual reality experiences. How does haptic feedback enhance immersion, and what are some innovative applications that make use of it?	Understand	The learner will try to summarize various techniques in virtual reality and **explain** benefits and limitations in virutal reality	CO 5
4	Compare the use of stereo displays (like 3D glasses) and autostereoscopic displays (glasses-free 3D) in virtual reality. What are the technical challenges and user experience differences between the two?	Analyze	The learner will try to **recall** the haptic devices and then **explain** role in virtual reality.	CO 5

5	Discuss the advantages and limitations of head-mounted displays (HMDs) in virtual reality. What factors should be considered when selecting an HMD for a specific VR application?	Understand	The learner will try to **recall** peripheral devices in virtual reality	CO 6
6	Explore the potential applications and challenges of using holographic displays in virtual reality. How do they differ from traditional displays, and what unique experiences can they offer?	Remember	The learner will try to **recall** head-mounted display technology and **explain** it	CO 6
7	Describe how force feedback devices contribute to a more realistic virtual reality experience. Provide examples of applications where force feedback is crucial.	Understand	The learner will try to summarize the stereoscopic, head mounted displays to 3D world then **explain** the virtual and real world	CO 6
8	How can augmented reality systems interface with virtual reality to create mixed reality experiences? What are the practical use cases and challenges of blending the virtual and real worlds?	Remember	The learner will try to summarize the auto-stereoscopic displays then **explain** it	CO 6
9	Consider the design principles for user interaction in virtual reality. How does designing for VR differ from designing for traditional 2D interfaces, and what are the key considerations?	Remember	The learner will try to summarize the holographic displays then **explain** it	CO 6

10	Discuss the importance of making virtual reality accessible to individuals with disabilities. What technologies and design approaches can be employed to ensure inclusivity in VR experiences? Explain	Remember	The learner will try to summarize the hap tic and force feedbac then **explain** it	CO 6
PART-B LONG ANSWER QUESTIONS				
1	What are haptic devices? What role do these device play in a virtual reality system?	Remember	The learner will try to **recall** the concept of heptic devices and then **explain** the role do these device	CO 5
2	What is teleoperation? What are the levels of teleoperation	Remember	The learner will try to **recall** the teleoperation and levels in it	CO 5
3	What is Augmented Reality Systems Interface to the Virtual World-Input	Remember	The learner will try to **recall** the augmented reality systems interface	CO 5
4	What is Augmented Reality Systems Interface to the Virtual World-Output	Understand	The learner will try to **recall** the augmented reality systems interface	CO 5
5	Discuss the Key challenges in the application of haptic feedback?	Create	The learner will try to **recall** challenges in haptic feedback	CO 5
6	Discuss the Globe Data Management	Create	The learner will try to **recall** globe data management	CO 6
7	Define Stereo Display? What are the types of Stereo displays and methodologies involved in the Stereo Displays	Remember	The learner will try to **recall** the stereo display and methodologies used in it	CO 6
8	Write briefly about the Head-mounted Devices	Understand	The learner will try to **recall** head-mounted devices.	CO 6
9	What are the technologies needed to develop autostereoscopic 3D displays	Remember	The learner will try to **recall** technologies in autostereoscopic in virtual reality	CO 6
10	What are the Technologies used in the holographic displays	Remember	The learner will try to **recall** the technologies used in holographic displays	CO 6

11	Explain the Telnet protocol as used for multimedia transmission.	Remember	The learner will try to **recall** the telnet protocol used for multimedia transmission	CO 6
12	What are the Technologies used in the holographic displays	Remember	The learner will try to **recall** the technologies used in holographic displays	CO 6
13	Describe the advantages of using VR technology.	Remember	The learner will try to **recall** the advantages of using VR technology	CO 6
14	How is Head-mounted display technology used in virtual reality. Explain.	Remember	The learner will try to **recall** the head mounted display technology in virtual reality	CO 6
15	Discuss about the Augmented Reality Systems.	Remember	The learner will try to **recall** the augmented reality systems	CO 6
16	Explain the functioning of holographic displays.	Remember	The learner will try to **recall** the functions in holographic displays	CO 6
17	Explain 6 features that make Virtual Reality (VR) a usable tool for training/entertainment etc.	Remember	The learner will try to **recall** the 6 features that use in virtual reality	CO 6
18	Describe, how different input-devices are used in a virtual reality system.	Remember	The learner will try to **recall** different input-devices in virtual reality system	CO 6
19	Outline the different techniques that can be used for tracking user movements in VR applications and compare their benefits and limitations.	Remember	The learner will try to **recall** the different techniques in VR applications	CO 6
20	Describe the steps involved in creating interactive 3D product using VRML.	Remember	The learner will try to **recall** the steps involved in 3D	CO 6
PART-C SHORT ANSWER QUESTIONS				
1	What is teleoperation	Remember	The learner will try to **recall** the teleoperation	CO 5
2	What Are Challenges Of Teleoperation Systems	Remember	The learner will try to **recall** the challenges of teleoperation systems	CO 5

3	Why is head and hand trackers	Remember	The learner will try to **recall** the head and hand trackers	CO 5
4	What Is Augmented Reality	Remember	The learner will try to **recall** the augemented reality	CO 5
5	What is data globes	Remember	The learner will try to **recall** the data globes	CO 5
6	What are the tracking technologies	Remember	The learner will try to **recall** the tracking technologies	CO 6
7	What are the types of Stereo displays	Remember	The learner will try to **recall** the types of stereo displays	CO 6
8	What are the Applications of headmounted display	Remember	The learner will try to **recall** the applications of headmounted display	CO 6
9	What are the Types of holographic displays	Remember	The learner will try to **recall** the types of holographic displays	CO 6
10	What is haptic and force feedback.	Remember	The learner will try to **recall** the haptic and force feedback	CO 6
11	Write a short notes on Teleoperation.	Remember	The learner will try to **recall** the teleoperation	CO 6
12	How head-mounted display is used in implementing virtual reality system.	Remember	The learner will try to **recall** the head-mounted display in virtual reality system	CO 6
13	What are haptic devices?.	Remember	The learner will try to **recall** the haptic devices.	CO 6
14	What role do these device play in a virtual reality system?	Remember	The learner will try to **recall** the device play in virtual reality system	CO 6
15	Describe the steps involved in creating interactive 3D product using VRML.	Remember	The learner will try to **recall** the steps involved in creating interactive 3D	CO 6
16	Explain the functioning of holographic displays.	Understand	The learner will try to **recall** the functioning of holographic displays	CO 6
17	What is Virtual Reality Peripheral Devices.	Remember	The learner will try to **recall** the virtual reality peripheral devices	CO 6

18	What are the features of VRML.	Remember	The learner will try to **recall** the features of VRML	CO 6
19	Write a short note on hand trackers.	Remember	The learner will try to **recall** the hand trackers	CO 6
20	What is force feedback.	Remember	The learner will try to **recall** the force feedback	CO 6

Course Coordinator: **HOD IT**
Dr. Ravi Kumar Poluru