SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

QUESTION BANK

VI SEMESTER

PIT403 MULTIMEDIA AND ANIMATION

Regulation – 2023

Academic Year 2025 – 2026 (Even Semester)

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SUBJECT : PIT403 MULTIMEDIA AND ANIMATION

SEM / YEAR: VI / III

UNIT I INTRODUCTION TO MULTIMEDIA

Definitions, Elements, Multimedia Hardware and Software, distributed multimedia systems, challenges: security, sharing / distribution, storage, retrieval, processing, computing. Multimedia metadata, Multimedia databases, Hypermedia, Multimedia Learning.

PART – A

Q.No	Questions	BT Level	Competence
1.	Define multimedia.	BTL1	Remembering
2.	Explain why text is considered a fundamental element of multimedia systems.	BTL2	Understanding
3.	List any four basic elements of multimedia.	BTL1	Remembering
4.	State the purpose of a graphics processing unit (GPU) in multimedia systems.	BTL1	Remembering
5.	Explain the function of audio input and output devices in a multimedia system.	BTL2	Understanding
6.	What is multimedia software? Mention any two categories of multimedia software tools.	BTL1	Remembering
7.	List any four characteristics of distributed multimedia systems.	BTL1	Remembering
8.	Differentiate between inter-media synchronization and intra-media synchronization.	BTL2	Understanding
9.	Explain the role of multimedia servers in a distributed multimedia system.	BTL2	Understanding
10.	List the key security issues in multimedia systems.	BTL1	Remembering
11.	Define Data Tampering.	BTL1	Remembering
12.	Explain how Quality of Service (QoS) impacts the distribution of multimedia content.	BTL2	Understanding
13.	What is the role of a Content Delivery Network (CDN) in multimedia distribution?	BTL1	Remembering
14.	List the key storage issues in multimedia systems.	BTL1	Remembering

15.	Define multimedia sharing and distribution.	BTL1	Remembering
16.	Explain edge computing and its role in addressing computing challenges in multimedia systems.	BTL1	Remembering
17.	What is the purpose of metadata in multimedia files?	BTL1	Remembering
18.	List the types of metadata used in multimedia systems.	BTL2	Understanding
19.	Define multimedia metadata.	BTL1	Remembering
20.	What is meant by Memex?	BTL2	Understanding
21.	Define content-based multimedia retrieval.	BTL2	Understanding
22.	List two features of XML used in multimedia applications.	BTL1	Remembering
23.	Define hypermedia in multimedia systems.	BTL1	Remembering
24.	Describe how visual and auditory channels are used in multimedia learning.	BTL2	Understanding
	PART – B		
1.	Analyze the core elements of multimedia by classifying them into static and dynamic elements.	BTL4	Analyzing
2.	Evaluate the importance of each multimedia element in the construction of an effective multimedia system.	BTL5	Evaluating
3.	Examine the categorization of multimedia software tools and discuss the purpose and functionality of each in detail.	BTL4	Analyzing
4.	What is meant by authoring program? Explain in detail about Adobe Flash, Adobe Director and Dreamweaver.	BTL4	Analyzing
5.	Evaluate the effectiveness of distributed multimedia systems in modern multimedia applications.	BTL5	Evaluating
6.	i. Illustrate the basic architecture of a distributed multimedia system. (8) **ii.** Describe how servers, client devices, storage hardware, and multimedia software tools interact to deliver multimedia content in a distributed environment. (8)	BTL3	Applying
7.	Analyze the differences between physical storage devices and Internet-based multimedia distribution in terms of speed, reliability, and scalability.	BTL4	Analyzing
8.	Evaluate the effectiveness of current strategies for secure and efficient multimedia distribution, and recommend improvements for optimizing sharing in large-scale systems.	BTL5	Evaluating
9.	Illustrate how storage limitations affect multimedia systems and apply appropriate methods to manage large multimedia datasets efficiently.	BTL3	Applying
10.	Compare different computing approaches in handling multimedia workloads, and analyze their effectiveness in overcoming computing challenges.	BTL4	Analyzing
11.	Illustrate with examples how metadata is used to organize and manage multimedia content in a database.	BTL3	Applying

12.	Analyze the different types of multimedia metadata and explain in detail.	BTL4	Analyzing
13.	Evaluate the effectiveness of various multimedia retrieval techniques and recommend strategies to improve accuracy and user satisfaction in large-scale multimedia systems.	BTL5	Evaluating
14.	Illustrate with examples how each component of a multimedia database contributes to efficient storage, retrieval, and management of multimedia content."	BTL3	Applying
15.	Evaluate the effectiveness of XML and its specifications in managing and exchanging multimedia content over the Internet, and suggest improvements for better interoperability and content organization.	BTL5	Evaluating
16.	Illustrate with examples how multimedia learning principles are applied in educational multimedia systems to enhance student understanding.	BTL3	Applying
17.	Evaluate the effectiveness of multimedia design principles in a real-world application, such as e-learning or interactive simulations, and propose improvements for better usability and comprehension.	BTL5	Evaluating

UNIT II - MULTIMEDIA FILE FORMATS AND STANDARDS

File formats – Text, Image file formats, Graphic and animation file formats, Digital audio and Video file formats, Color in image and video, Color Models. Multimedia data and file formats for the web.

PART – A

Q.No	Questions	BT Level	Competence
1.	Define bimaps.	BTL1	Understanding
2.	What is meant by halftone printing?	BTL1	Understanding
3.	Compare Windows WMF with EMF+.	BTL2	Remembering
4.	List the file formats that belong to the family of open-source Netpbm formats.	BTL1	Understanding
5.	Explain how the JPEG image file format overcomes a limitation of the human vision system.	BTL2	Remembering
6.	Describe the process of setting up the GIF color map with the help of a block diagram.	BTL2	Understanding
7.	What is meant by Windows WMF?	BTL1	Understanding
8.	List the file formats belongs to Netpbm formats.	BTL1	Understanding
9.	Describe the use of EXIF in multimedia systems.	BTL2	Remembering
10.	Explain the techniques of Polynomial Texture Mapping.	BTL2	Remembering
11.	What is meant by stroke-based graphics feature?	BTL1	Understanding

12.	Which file format supports the representation of text, figures, and multiple languages?	BTL1	Understanding
13.	Explain the purpose of gamma correction in multimedia images.	BTL2	Remembering
14.	Define the Munsell Color Naming System	BTL1	Understanding
15.	Define printer gamuts.	BTL1	Understanding
16.	Compare the additive and subtractive color models.	BTL2	Remembering
17.	Define CIELAB space.	BTL1	Understanding
18.	Describe the image formation model and explain its components with the help of a diagram	BTL2	Remembering
19.	What is meant by colorimeter?	BTL2	Remembering
20.	Explain the significance of digital representation and interactivity as characteristics of multimedia data.	BTL1	Understanding
21.	List any four characteristics of multimedia data.	BTL1	Understanding
22.	Name two audio and two video file formats used for web-based multimedia.	BTL1	Understanding
23.	Explain why certain file formats like JPEG and MP4 are preferred for web multimedia.	BTL1	Understanding
24.	List any two image file formats commonly used for the web.	BTL2	Remembering
	PART –B		
1.	Classify different types of popular multimedia file formats and illustrate their features with suitable examples.	BTL3	Applying
2.	Evaluate different multimedia file formats used for web applications and justify the selection of suitable formats for efficient web delivery.	BTL5	Evaluating
3.	Illustrate the JPEG image compression process with a neat block diagram and explain how the JPEG file format is used in multimedia applications.	BTL3	Applying
4.	Illustrate with suitable examples how different text file formats such as plain text, HTML, XML, and PDF are used in multimedia systems for content representation and delivery.	BTL3	Applying
5.	Analyze the standard structure of the GIF file format using a neat diagram and examine how its specifications support features such as compression, color limitation, and animation.	BTL4	Analyzing
6.	Illustrate with suitable examples how Netpbm formats, EXIF, PS/PDF, and PTM are used in multimedia systems, highlighting their structure and practical applications.	BTL3	Applying
7.	Evaluate PNG, TIFF, Windows BMP, and Windows WMF image file formats by comparing their advantages and limitations, and justify their suitability for web graphics, professional imaging, and multimedia applications.	BTL5	Evaluating
8.	Evaluate the principles and applications of color science in multimedia systems.	BTL5	Evaluating

9.	Analyze the characteristics of RGB, and HSV color models by comparing their components, color representation mechanisms.	BTL4	Analyzing
10.	Analyze the concepts and examine the following for their impact on accurate color reproduction in imaging systems. i. printer gamuts (8) ii. multi-ink printers (8)	BTL3	Applying
11.	Illustrate the CMY color models with neat diagrams and explain how this model is applied in image representation and processing.	BTL3	Applying
12.	Illustrate the following color models and explain how they are applied in video processing and transmission systems. i. Video Color Transforms (4) ii. YUV Color Model (4) iii. YIQ Color Model (4) iv. YCbCr Color Model (4)	BTL3	Applying
13.	Illustrate the L*a*b* (CIELAB) color model with a neat diagram and explain how it is used in image processing and multimedia applications.	BTL3	Applying
14.	Evaluate the usefulness of the CIE Chromaticity Diagram in color management for multimedia applications, and suggest ways to improve its accuracy and applicability in modern imaging systems.	BTL5	Evaluating
15.	Analyze the different characteristics of multimedia data and examine their impact on multimedia processing and system performance.	BTL4	Analyzing
16.	Evaluate the key considerations for selecting multimedia file formats for the web, including compression, quality, browser compatibility, device support, and streaming efficiency.	BTL5	Evaluating
17.	Analyze various multimedia file formats used for the web, including image, audio, and video formats.	BTL4	Analyzing

UNIT III - MULTIMEDIA AUTHORING

Authoring metaphors, Tools Features and Types: Card and Page Based Tools, Icon and Object Based Tools, Time Based Tools, Cross Platform Authoring Tools, Editing Tools, Painting and Drawing Tools, 3D Modeling and Animation Tools, Image and Audio Editing Tools, Digital Movie Tools, Creating interactive presentations, virtual learning, simulation.

PART – A

Q.No	Questions	BT Level	Competence
1.	Define authoring metaphor in multimedia systems.	**BTL-1**	Remembering
2.	List any two advantages of using authoring metaphors.	**BTL-1**	Remembering
3.	How authoring metaphors simplify multimedia application development?	**BTL-2**	Understanding
4.	Differentiate between page-based and card-based authoring metaphors.	**BTL-2**	Understanding
5.	What are card-based authoring tools? Give one example.	**BTL-1**	Remembering

6.	What is meant by icon-based authoring tools?	**BTL-1**	Remembering
7.	State the working principle of object-based authoring tools.	**BTL-2**	Understanding
8.	Compare time-based and icon-based authoring tools.	**BTL-2**	Understanding
9.	Define cross-platform authoring tools.	**BTL-1**	Remembering
10.	State the importance of cross-platform authoring tools in multimedia development.	**BTL-2**	Understanding
11.	What are editing tools in multimedia?	**BTL-1**	Remembering
12.	List any two features of painting and drawing tools.	**BTL-1**	Remembering
13.	Give the role of 3D modeling tools in multimedia applications.	**BTL-2**	Understanding
14.	Differentiate between 2D animation and 3D animation tools.	**BTL-2**	Understanding
15.	What are image editing tools? Give one example.	**BTL-1**	Remembering
16.	What is meant by audio editing tools?	**BTL-1**	Remembering
17.	Explain how image and audio editing tools enhance multimedia quality.	**BTL-2**	Understanding
18.	Describe the basic functions of digital movie tools.	**BTL-2**	Understanding
19.	Define interactive presentations.	**BTL-1**	Remembering
20.	Explain how multimedia tools support interactive presentations.	**BTL-2**	Understanding
21.	What is meant by virtual learning?	**BTL-1**	Remembering
22.	State the role of multimedia authoring tools in virtual learning environments.	**BTL-2**	Understanding
23.	Define simulation in multimedia applications.	**BTL-1**	Remembering
24.	How simulations are used for training and education.	**BTL-2**	Understanding
	PART – B		
1.	Illustrate the use of different authoring metaphors with suitable examples in multimedia application development.	**BTL-3**	Apply
2.	Analyze the strengths and limitations of card-based, page-based, and icon-based authoring tools.	**BTL-4**	Analyze
3.	Evaluate various authoring metaphors and justify the most suitable one for developing an e-learning application.	**BTL-5**	Evaluate
4.	Design a multimedia application framework using an appropriate authoring metaphor for an educational system.	**BTL-6**	Create
5.	Demonstrate the workflow of time-based authoring tools in developing an animation-rich multimedia project.	**BTL-3**	Apply

6.	Analyze the differences between object-based and icon-based authoring tools with suitable examples.	**BTL-4**	Analyze
7.	Evaluate cross-platform authoring tools and assess their role in modern multimedia development.	**BTL-5**	Evaluate
8.	Propose the design of a cross-platform multimedia application highlighting the tools and technologies used.	**BTL-6**	Create
9.	Apply painting, drawing, and image-editing tools to create visual content for a multimedia application.	**BTL-3**	Apply
10.	Analyze the role of 3D modeling and animation tools in enhancing user experience in multimedia systems.	**BTL-4**	Analyze
11.	Evaluate various digital movie tools and justify the selection of a suitable tool for educational media production.	**BTL-5**	Evaluate
12.	Design a multimedia content development process using image, audio, video, and animation editing tools.	**BTL-6**	Create
13.	Explain how interactive presentations can be developed using multimedia authoring and editing tools.	**BTL-3**	Apply
14.	Analyze the impact of multimedia tools on virtual learning environments.	**BTL-4**	Analyze
15.	Evaluate the effectiveness of multimedia-based virtual learning systems compared to traditional learning methods.	**BTL-5**	Evaluate
16.	Design a virtual learning system using appropriate multimedia tools and authoring techniques.	**BTL-6**	Create
17.	Develop a multimedia-based simulation model for training or educational purposes and explain its components and workflow.	**BTL-6**	Create

UNIT IV – ANIMATION

Principles of animation: staging, squash and stretch, timing, onion skinning, secondary action, 2D, 2 ½ D, and 3D animation, Animation techniques: Key frame, Morphing, Inverse Kinematics, Hand Drawn, Character rigging, vector animation, stop motion, motion graphics, Fluid Simulation, skeletal animation, skinning Virtual Reality, Augmented Reality.

PART – A

Q.No	Questions	BT Level	Competence
1.	Define the principle of staging in animation.	**BTL-1**	Remembering
2.	What is meant by squash and stretch?	**BTL-1**	Remembering
3.	State the importance of timing in animation.	**BTL-2**	Understanding
4.	What is onion skinning**?**	**BTL-1**	Remembering
5.	Distinguish between primary action and secondary action.	**BTL-2**	Understanding
6.	Identify two benefits of using secondary action in animation.	**BTL-2**	Understanding
7.	Define 2D animation.	**BTL-1**	Remembering

8.	What is 2½D animation?	**BTL-1**	Remembering
9.	Define 3D animation.	**BTL-1**	Remembering
10.	Compare 2D animation and 3D animation.	**BTL-2**	Understanding
11.	State two applications of 3D animation.	**BTL-2**	Understanding
12.	Differentiate between 2D and 2½D animation.	**BTL-2**	Understanding
13.	What is key frame animation?	**BTL-1**	Remembering
14.	Define morphing in animation.	**BTL-1**	Remembering
15.	What is meant by inverse kinematics?	**BTL-1**	Remembering
16.	Compare key frame animation and hand-drawn animation.	**BTL-2**	Understanding
17.	State the purpose of character rigging.	**BTL-2**	Understanding
18.	What is vector animation?	**BTL-1**	Remembering
19.	Define stop motion animation.	**BTL-1**	Remembering
20.	What is meant by motion graphics?	**BTL-1**	Remembering
21.	State the use of fluid simulation in animation.	**BTL-2**	Understanding
22.	Define skeletal animation**.**	**BTL-1**	Remembering
23.	What is Virtual Reality (VR)?	**BTL-1**	Remembering
24.	Differentiate between Virtual Reality and Augmented Reality.	**BTL-2**	Understanding
	PART – B		
1.	Apply the principles of staging, squash and stretch, timing, and secondary action to develop a realistic animated sequence.	**BTL-3**	Apply
2.	Analyze how timing and onion skinning influence motion clarity and continuity in animation.	**BTL-4**	Analyze
3.	Evaluate the effectiveness of squash and stretch in conveying emotion and realism in character animation.	**BTL-5**	Evaluate
4.	i. Design an animation sequence that integrates staging, squash and stretch, timing, onion skinning, and secondary action to achieve believable motion. (8) ii. Construct an original animation workflow that demonstrates the combined use of major animation principles for realistic character movement. (8)	**BTL-6**	Create

5.	Apply suitable animation techniques for developing a 2D and a 3D animated scene.	**BTL-3**	Apply
6.	i. Analyze the differences between 2D animation and 2½D animation with respect to production workflow and visual depth. (8) ii. Analyze the differences between 2½D animation and 3D animation with respect to production workflow and visual depth. (8)	**BTL-4**	Analyze
7.	Evaluate the suitability of 2D, 2½D, and 3D animation for educational and entertainment applications.	**BTL-5**	Evaluate
8.	Apply key frame animation and inverse kinematics to animate a character walk cycle.	**BTL-3**	Apply
9.	Analyze the role of character rigging, skeletal animation, and skinning in character movement.	**BTL-4**	Analyze
10.	Evaluate hand-drawn animation and vector animation techniques with respect to scalability and performance.	**BTL-5**	Evaluate
11.	Create a complete animation workflow using morphing, motion graphics, and stop-motion techniques.	**BTL-6**	Create
12.	Apply fluid simulation techniques to create realistic natural phenomena such as fire, smoke, or water.	**BTL-3**	Apply
13.	Analyze the computational challenges involved in fluid simulation and motion graphics.	**BTL-4**	Analyze
14.	Design an animated simulation system incorporating skeletal animation and physics-based motion.	**BTL-6**	Create
15.	Apply animation techniques to develop an immersive Virtual Reality experience.	**BTL-3**	Apply
16.	Analyze the differences between Virtual Reality and Augmented Reality with respect to user interaction and immersion.	**BTL-4**	Analyze
17.	Create a conceptual design for an Augmented Reality application integrating animation and real-time interaction.	**BTL-6**	Create

UNIT V - MULTIMEDIA APPLICATIONS

Multimedia Big data computing, social networks, smart phones, surveillance, Analytics, Multimedia Cloud Computing, Multimedia streaming cloud, media on demand, security and forensics, online social networking, multimedia ontology, Content based retrieval from digital libraries.

PART – A

Q.No	Questions	BT Level	Competence
1.	Define multimedia big data computing.	**BTL-1**	Remembering
2.	List any two characteristics of multimedia big data.	**BTL-1**	Remembering
3.	State the role of big data analytics in multimedia applications.	**BTL-2**	Understanding
4.	Differentiate between traditional data processing and multimedia big data processing.	**BTL-2**	Understanding
5.	Define online social networking.	**BTL-1**	Remembering

6.	List two types of multimedia content commonly shared in social networks.	**BTL-1**	Remembering
7.	Identify the impact of multimedia on user engagement in social networks.	**BTL-2**	Understanding
8.	Compare multimedia usage in social networks and traditional media platforms.	**BTL-2**	Understanding
9.	Define smartphone-based multimedia systems.	**BTL-1**	Remembering
10.	What is meant by multimedia surveillance?	**BTL-1**	Remembering
11.	Identify two applications of multimedia surveillance systems.	**BTL-2**	Understanding
12.	Distinguish between manual surveillance and automated multimedia surveillance.	**BTL-2**	Understanding
13.	Define multimedia analytics.	**BTL-1**	Remembering
14.	List any two components of a multimedia analytics system.	**BTL-1**	Remembering
15.	State the significance of analytics in multimedia decision-making systems.	**BTL-2**	Understanding
16.	Differentiate between text analytics and multimedia analytics.	**BTL-2**	Understanding
17.	Define multimedia cloud computing.	**BTL-1**	Remembering
18.	What is meant by multimedia streaming cloud?	**BTL-1**	Remembering
19.	State the advantages of cloud-based multimedia streaming.	**BTL-2**	Understanding
20.	Compare media-on-demand services with traditional broadcasting systems.	**BTL-2**	Understanding
21.	Define multimedia security**.**	**BTL-1**	Remembering
22.	What is meant by multimedia forensics?	**BTL-1**	Remembering
23.	Define multimedia ontology.	**BTL-1**	Remembering
24.	State the purpose of content-based retrieval from digital libraries**.**	**BTL-2**	Understanding
	PART – B		
1.	i. Apply multimedia big data computing techniques for large-scale image data processing. (8) ii. Apply multimedia big data computing techniques for large-scale video data processing. (8)	**BTL-3**	Apply
2.	Analyze the challenges involved in processing and managing multimedia big data.	**BTL-4**	Analyze
3.	Evaluate the role of analytics frameworks in improving multimedia big data performance.	**BTL-5**	Evaluate
4.	Apply multimedia analytics to study user behavior in online social networking platforms.	**BTL-3**	Apply

5.	Analyze the influence of multimedia content on information diffusion in social networks.	**BTL-4**	Analyze
6.	Evaluate the impact of social network–based multimedia sharing on privacy and data security.	**BTL-5**	Evaluate
7.	Apply smartphone-based multimedia technologies for real-time surveillance applications.	**BTL-3**	Apply
8.	Analyze the architecture of a multimedia surveillance system using smart devices.	**BTL-4**	Analyze
9.	Evaluate the effectiveness of automated multimedia surveillance systems over manual monitoring.	**BTL-5**	Evaluate
10.	i. Apply suitable multimedia analytics techniques for content classification in large-scale multimedia datasets. (8) ii. Apply multimedia analytics techniques for event detection in audio-visual data streams. (8)	**BTL-3**	Apply
11.	Analyze the workflow of a multimedia analytics system for large-scale data processing.	**BTL-4**	Analyze
12.	Evaluate different multimedia analytics approaches used in surveillance and social media.	**BTL-5**	Evaluate
13.	Apply multimedia cloud computing models to support media-on-demand services.	**BTL-3**	Apply
14.	Analyze the architecture of multimedia streaming clouds and their performance issues.	**BTL-4**	Analyze
15.	Evaluate cloud-based multimedia streaming against traditional content delivery methods.	**BTL-5**	Evaluate
16.	Analyze multimedia security and forensics techniques used to detect content manipulation.	**BTL-4**	Analyze
17.	Design a content-based multimedia retrieval system for digital libraries using ontology-based indexing.	**BTL-6**	Create