→Multimedia: it is a Computer Information can be represented through audio, video, animation in addition to traditional media.

→Multimedia field: computer-controlled integration of text, graphics, drawings, still and moving images, animation, audio.

→Multimedia System: it is a system capable of processing multimedia data and applications.

→Multimedia System Characterized: processing storage, generation, manipulation and rendition of multimedia information.

→Characteristics of a Multimedia System: Computer Controlled, Integrated, digitally, Interactive.

→Multimedia Systems Challenges: Inter media scheduling, Sequencing within the media.

→Multimedia System Features: Very High Processing Power, Efficient and High I/O, Network Support.

→Multimedia domain: Device domain, system domain, application domain, sychronisation.

→Cross Domain: Relationships among the various media.

→Medium: এটি intervening Substance যার মাধ্যমে কিছু transmit হয়.

→Medium Classification: Perception, Representation, Presentation, Storage ,Transmission and Information exchange.

→Perception Medium: text image & videos

→Presentation Medium: as paper, screen and speaker

→Storage Medium: Microfilm, Hard Disk, Floppy Disk, CD ROM

→Data stream: একটি time dependent fashion এ একটি Sequence of individual packets transmit হওয়াকে বলা হয়।

→data transmission modes: Asynchronous, Synchronous, Isochronous

→Asynchronous : যেখানে primary storage Device দরকার হয়না এবং Irregular Data transmission হয়

→Synchronous: যেখানে primary storage Device দরকার হয় এবং regular Data transmission হয়

→Isochronous: minimum delay and individual packet is bounded

→Strongly Periodic System : যখন দুটি consecutive packet এর মধ্যকার time interval constant হবে।

→Weakly Periodic System : যখন দুটি consecutive packet এর মধ্যকার time interval constant হবেনা কিন্তু periodical function দিয়ে describe করা যাবে।

→Aperiodic System : যখন দুটি consecutive packet এর মধ্যকার time interval constant হবেনা এবং periodical function দিয়ে describe করা যাবেনা.

→Flickering Effect: slow motion এর মধ্য দিয়ে brightness perception এর periodic fluctuation.

→Viewing angle: it is the maximum angle at which a display can be viewed with acceptable visual performance.

→Viewing distance: true-length distance, central visual ray থেকে eye position to the center of vision on the picture plane.

→Aspect ratio : ratio of the picture width W to picture Height H.

→Perception of depth: third spatial dimension , width and height এর পর.

→YUV model: focuses on brightness information, luminance Y, chrominance U &V

→YIQ signal: it is builds the basis of NTSC format

→ NTSC: National Television System Committee

→Luminance: NTSC video signal এর portion যা brightness information contain করে.

→Chrominance: composite signal এর portion যা color information contain করে.

→ CGA : Color Graphics Adapter, resolution of 320×200, four colors. apacity per image 16,000 bytes

→ EGA : Enhanced Graphics Adapter, resolution of 640×350, 16 color, capacity per image 112,000 bytes

→ VGA : Video Graphics Array, resolution of 640×480, 256 color, 307,200 bytes

→ XGA: Extended Graphics Array, supports resolution 640×480, 65,000 color, But resolution of 1024×768 pixels, 256 color, capacity per image 786,432 bytes

→ SVGA: Super video graphics array, resolution up to 1024×768, color 24 bits per pixel, capacity per image 23,59,296 bytes.

→ 8514/A Display Adapter: 1024×768 pixels, 256 colors, capacity per image 786,432 bytes

→ Composite signals: যেখানে RGB, YUV, YIQ combine হয় একটি signal এ

→ HDTV: High Definition Television

→ Advantages of HDTV: Resolution high, Aspect Ratio 1.777

→ Coding Techniques for HDTV: Composite Coding, Composite Coding

→ Composite Coding: all signal components are converted together into a digital representation

→ Component Coding: এটি গঠিত হয় image component এর separate digitization দিয়ে,এখানে Luminance and chrominance signals একসাথে transmit হয় না, এখানে Luminance signal 13.5 MHz, chrominance signal 6.75 MHz

→ Standards of multimedia transmission: Standard 1: Luminance 11.25 MHz, Chrominance 5.635 MHz, data rate 180×106 bits/second… Standard 2: Luminance 10.125 MHz, Chrominance 3.375 MHz, data rate

125×106 bits/second or 16.875×106 bytes/second… Standard 3: Luminance 11.25 MHz, Chrominance 5.635 MHz, data rate 180×106 bits/second or 22.5×106 bytes/second…

→Video vs animation : video takes continuous motion and breaks it up into discrete frames, animation starts with independent pictures and puts them together to form the illusion of continuous motion.

→Raster: it is a type of digital image that uses tiny rectangular pixels, or picture elements, arranged in a grid formation to represent an image.

→advantages of Raster Graphics: n display realistic images of 3D objects, refresh process is independent of the image complexity.

→Dithering: এটি image processing operation যেটি ব্যবহার করা হয় image এ illusion of color depth তৈরি করতে with a limited color palette.

→steps of image recognition technique:

1.Conditioning: informative pattern অনুমান করা based on observed image i.e. suppresses noise and normalizes background.

2. Labeling: নির্ধারণ করা কোন ধরনের spatial event এ each pixel participate করে e.g. edge detection, corner finding.

3. Grouping… 4. Extracting…5. Matching…

→Motion Dynamics: এখানে respect to stationary observer, objects move করতে পারে অথবা Object স্থির থেকে Object এর আশেপাশের view move করতে পারে

→ Update Dynamics: actual change of the shape, color or other properties of the objects being viewed.

→Digital image vs graphics:

Image	Graphics
It is represented by pixel matrix.	It is not represented by pixel matrix, rather specified through graphics primitives.
In digital image, direct manipulation of objects is not allowed.	In graphics, direct manipulation of objects is allowed
Huge data is to be stored.	Comparatively very small amount of data is to be stored.
It is itself in pixel representation.	It requires additional steps to be converted to pixel representation.

→Opacity: A digital image is usually represented by three samples per point, each for a red or green or blue. If it is represented by four samples per point, then there is an extra characteristics called opacity

→Bitmap image: A bitmap image is a three dimensional array specified as width×height×24 (8 bit for each color),3D

→JPEG image: Joint Photographic Experts Group, 2D

→GIF: Graphical Interchange Format.

→PNG: Portable Network Graphic.

→Digital Image Processing:

→High level, Mid Level and Low Level Distinction:

Low Level Process	**Mid Level Process**	**High Level Process**
Input: Image Output: Image Examples: Noise Removal, Image Sharpening	Input: Image Output: Attributes Examples: Object Recognition, Segmentation	Input: Attributes Output: Understanding Examples: Scene Understanding, Autonomous Navigation

→ Digital image processing system: image restoration, morphology processing, segmentation, object recognition, image compression, image acquisition, image enhancement