

**COMPUTER ENGINEERING DEPARTMENT**

**SUBJECT: MULTIMEDIA SYSTEM**

**COURSE: T.E.**

**Year: 2020-2021**

**Semester: V**

**DEPT: Computer Engineering**

**SUBJECT CODE: CSDL05011**

**EXAMINATION DATE: 16/01/2021**

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**MULTIMEDIA SYSTEM ANSWER SHEET**

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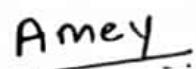
**Exam : SEMESTER V**

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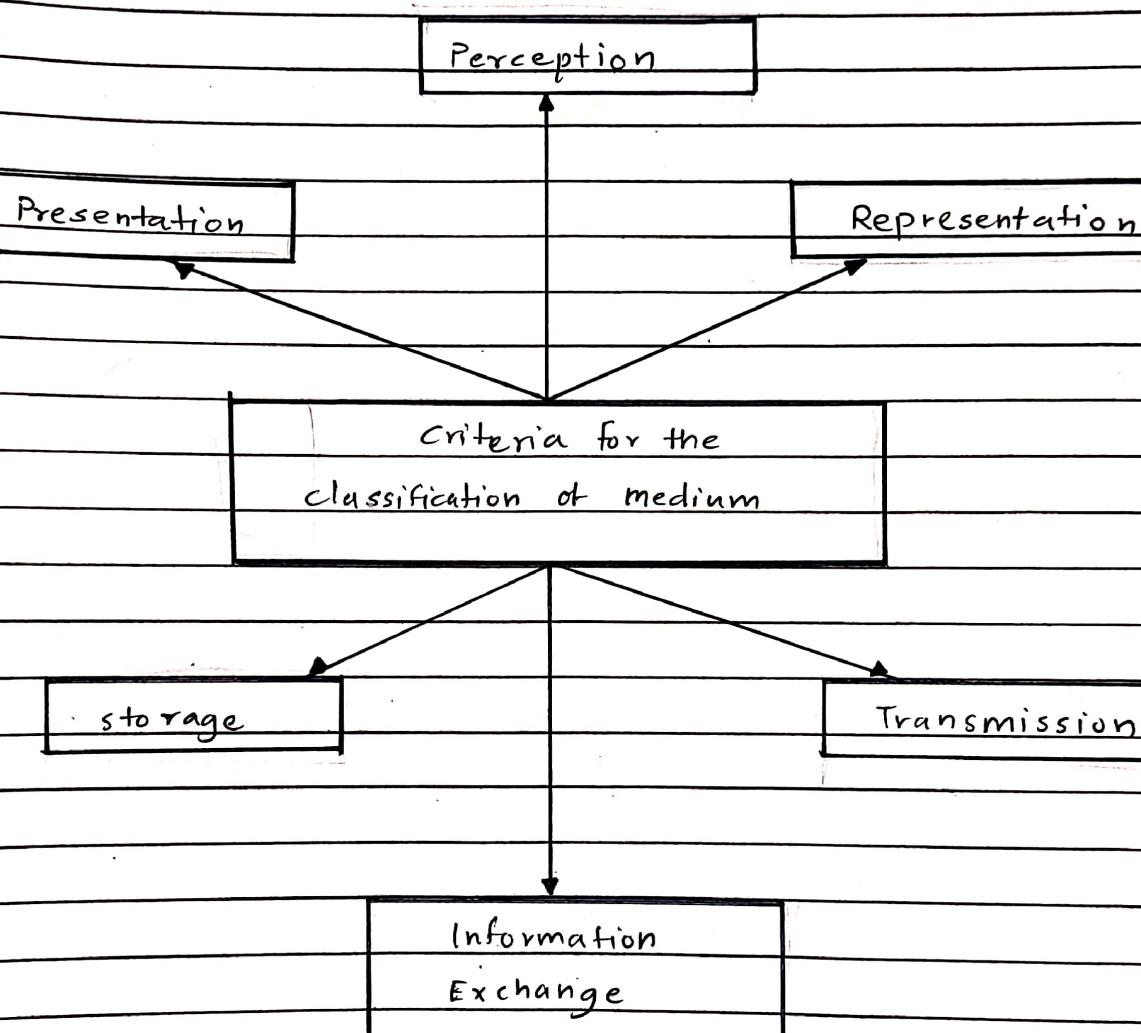
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Q. 2. A]

Mediums in multimedia



Classification of Medium

### ① Perception Medium

- It is a medium through which data are perceived by users.
- Examples: Sound as perceived by human ear.  
Graphics are perceived by human eye.
- The perception medium refers to the nature of information as perceived and processed by a human.

### ② Representation Medium

- It refers to construction in any medium of aspects of reality such as people, places, objects, events, cultural identities and other abstract concepts.
- Such representation may be in speech or writing as well as still or moving pictures.
- Example: Image is coded using JPEG.

### ③ Presentation Medium

- It is the medium into which the stored document which has been distributed over the distribution medium is converted to facilitate viewing or reading by the end user.
- Presentation medium engage the range of human senses.
- Examples: Keyboard, Mouse, Camera, Microphone, etc.

#### (4) Storage Medium

- It is any technology used to place, keep and retrieve data.
- The term storage includes both primary storage. A storage medium usually means a place to hold secondary storage such as that on a HD or tape.
- Examples - Hard Drive, External HDD, Floppy Disk, Memory stick, CD ROM etc.

#### (5) Transmission Medium

- It describes the type of physical system used to carry a communication signal from one system to another.
- Transmission medium is a material substance that can propagate energy waves.
- Examples - ① Guided Transmission Media are Metallic cables and Optical Fibre.  
② Unguided Transmission Media are the radio signals and the satellite.

#### (6) Information Exchange Medium

- It is the medium used to transport the stored encoded documents, presentation or viewing device.
- Examples - Email, etc.

Q. 2. B]

CCITT Group 3 - 1D

CCITT Group 3 - 2D

- |  |  |
|--|--|
| <p>① Group 3 1D encoding (G3 1D) is the variation of Huffman Kid compression scheme.</p>   | <p>① Entire image is divided into several groups of K-lines.</p>                     |
| <p>② G3 encoder determines the length of a pixel run in a scan line and outputs are variable length binary code word representing length and color of the run.</p> | <p>② First line of each group is coded using CCITT G3 - 1 D.</p>                     |
| <p>③ The run length code words are taken from a predefined table of values representing runs of black &amp; white pixels.</p>                                      | <p>③ Remaining lines are grouped and coded using first line as a reference line.</p> |

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**Page No.:** 5 / 12

<p>④ The size of the code words were originally determined by the CCITT.</p>	<p>④ Lesser compression as compared to group 4-2D.</p>
<p>⑤ There are separate terminating and make up code words for both black and white runs.</p>	<p>⑤ It uses end of line (EOL) signal. At the end of fax it uses RTC signal (Returned to Control)</p>

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### Q.2.C] Redundancies in Images

#### Redundancies in images.

- In digital image compression, three basic data redundancies can be identified and exploited -
  - ① Coding Redundancy
  - ② Inter-pixel Redundancy
  - ③ Psychovisual Redundancy

#### Coding Redundancy

- Coding redundancy is associated with the representation of information.
- The information is represented in the form of codes.
- If the grey levels of an image are coded in a way that uses more code symbols than absolutely necessary to represent each grey level then the resulting image is said to contain coding redundancy.

#### Inter-pixel Spatial Redundancy

- Interpixel redundancy is due to the correlation between the neighboring pixels in an image.
- That means neighboring pixels are not statistically independent. The gray levels are not equally probable.
- The value of any given pixel can be predicted from the value of its neighbors. i.e. they are highly correlated.

- The information carried by individual pixels is relatively small. To reduce the interpixel redundancy the difference between adjacent pixels can be used to represent an image.

#### Inter-pixel Temporal Redundancy

- Inter-pixel Temporal Redundancy is the statistical correlation between pixels from successive frames in video sequence.
- Temporal redundancy is also called interframe redundancy. Temporal redundancy can be exploited using motion compensated predictive coding.
- Removing a large amount of redundancy leads to efficient video compression.

#### Psychovisual Redundancy

- The psychovisual redundancies exist because human perception does not involve quantitative analysis of every pixel or luminance value in the image.
- Its elimination is real visual information is possible only because the information itself is not essential for normal visual processing.

Q. 2 D]

## WAV and MPEG

WAV	MPEG
① Popular audio file format developed by Microsoft and IBM to store an audio bit stream on computer system.	① MP3 files are actually the sound part of MPEG files. MP3 is the most popular format for music player.
② It is an application of the resource interchange file format (RIFF) bit stream format method for storing data in chunks.	② It is not an MPEG-3 but uses the audio compression found in layer 3, in MPEG-1 or 2 video files, audio stream layer.
③ This file format is also named an audio for windows since it is the main format used on windows system for raw and unprocessed audio.	③ MP3 (MPEG-1 audio layer 3) is a standard technology and format for compressing a sound sequence into a very small file while preserving original level of sound quality when this is played.

<p>④ It plays well on windows MACINTOSH, LINUX OS. and supported by HTML5.</p>	<p>④ MP3 file format supported by all browsers</p>
<p>⑤ The WAV file has become a standard PC audio file format for everything from system and game sounds to CD quality audio.</p>	<p>⑤ MPEG is acronym for Moving Pictures Expert Group it involves the compressing of digital images and sound as well as the synchronization of the two.</p>

Q.2 (b) Types of Video Signals:

Types of Video Signals

- (1) Component video
- (2) Composite video
- (3) S-video.

(1) Component Video

- It is the video signal that has been split into two or more components.
- It refers to a type of analog video information that is transmitted or stored as 3 separate signals.
- In component video, the luminance ( $Y$ ) and 2-color difference signals ( $U$  &  $V$ ) or ( $I$  &  $S$ ) are separated into 3 separate analog signals that can be transmitted over 3 separate wires or stored in 3 separate tracks on analog tape.
- It is used in professional video production and provides best quality.

(2) Composite video

- These signals are analog signals that combine luminance and chrominance information in a single analog signal that can be transmitted over a single wire or stored in a single track on an analog magnetic tape.

ANSWER

- It is particularly prone to errors in reproducing exact colors due to the overlap of the color and luminance signals.
- In composite video, 3 source signals are combined with sync pulses to form a composite video signal.
- These 3 source signals are referred as  $(Y, U, V)$ . In which,  $Y \Rightarrow$  Brightness  
 $U \& V \Rightarrow$  Color-difference signals.

### ③ S-Video

- It is one of a number of methods of separating a video signal into different components for transmission from a video cassette recorder or playback machine to a TV set or video monitor.
- S-Video was a ~~one~~ of a number of enhancements in bringing the signal from the video cassette player to TV.
- S-Video cable carry 4 or more wires wrapped together in an insulated sleeve with S-video connectors at either end.
- S-Video is commonly used throughout the world and it is found on consumer TVs, DVD players, Video cassette and graphic cards.

Q 2. F]

Design issues of the authoring system.

- (1) Display Resolution
- (2) File format and compression issues "Authoring system should be capable of handling different file formats."
- (3) - The first and hardest part is to choose the technology for your presentation.
  - The choice comes down to two main containers.
- (4) Adobe Flash
  - Flash allows you to create presentation where you can build in powerful animations.
  - Perhaps the best part of Flash is that it also allows you to put presentation directly onto your website.
  - The biggest problem is that Flash is a difficult system to get to use.
- (5) Microsoft Powerpoint
  - The easiest way to create multimedia presentations is in Microsoft Powerpoint.
  - By far the biggest advantage of making multimedia presentations in Powerpoint is that it is easy for anyone to be able to edit the presentation.