EC 6018 MULTIMEDIA COMPRESSION AND COMMUNICATION

QUESTION BANK

UNIT I – MULTIMEDIA COMPONENTS

PART A

1. **What is meant by the term multimedia?**   (OR)
   Define the term Multimedia

   Multimedia is the combination of multiple forms of media like text, graphics, audio, video, images and animation integrated in digital form using computer and software.

2. **Define the term image.**

   Image is the digital version of Photograph or drawing manipulated by computers and software.

3. **Distinguish Image and Video.**

   Video is a sequence of images displayed with a predetermined short interval between each image to create the illusion of motion whereas image is a still picture.

4. **What is meant by hyper media?**   (OR)
   Define the term hypermedia

   Hyper media is a structured multimedia document or presentation that contains linked multimedia elements through which the users can navigate multimedia content.

5. **What is meant by hypertext?**

   Hyper text is a text that provides links to the text in the same or other structured documents.

6. **Mention the skill set required for a multimedia designer?**

   A multimedia designer should be capable of creating subject content (Instructional Designer), should be able to create and edit visuals using image & video processing software, should be able to design screens and user interfaces (Interface designer) for navigating through content, and he should be able to design graphics (illustrator) and create animation (animator).

7. **Compare the skill set requirements of multimedia designer and multimedia programmer.**   (OR)
   What are the functions performed by a multimedia programmer?

   A multimedia designer should be able to design screens, graphics, and user interfaces and create animations using Multimedia designing tools like Flash, Illustrator etc. where as a multimedia programmer should be able to integrate multimedia elements using multimedia programming languages (Visual Basic) or using a Multimedia Authoring system like Flash Action Script such that they can be presented interactively with complex timing and transition.

8. What is linear and non-linear multimedia?

A linear multimedia permits only sequential viewing like a cinema starting at the beginning and running through the end but a non-linear multimedia allows the user to navigate through element and choose the required information as we do while seeing web sites or playing video games.

9. What is interactive multimedia?

When the user is permitted to navigate through multimedia elements to choose the required information as in the case of web sites, he has a choice to decide what and when the elements are to be delivered. So he interacts to get information and hence it is called interactive multimedia.

10. What is Tweening?

Tweening means "in betweening". The process of creating or drawing a series of intermediate frames in between two key frames to depict an action or trace the path of motion is called tweening.

11. What is animation?

Animation is the rapid display of a sequence of images (2D /3D) graphics in order to create an illusion of movement.

12. Give one application each suitable for lossy and lossless compression.

Lossy compression is applied to compress an image or a video where as lossless compression is applied when a text document is to be compressed.

13. What is the difference between kerning and leading?

➤ Kerning is the spacing between character pairs.
➤ Leading is the space between lines

14. What are the evolving technologies of Multimedia?

➤ Hypermedia Documents
➤ Hypertext
➤ Hyper speech
➤ HDTV & UDTV
➤ 3D Technologies and Holography
➤ Fuzzy logic
➤ Digital Signal Processing

15. What are the objects of Multimedia?

➤ Text
➤ Images
➤ Audio and Voice
➤ Full-motion and Live video

16. Give the applications of Multimedia?

Document Imaging Image Processing and Image Recognition Full Motion Digital Video Applications Electronic messaging Entertainment Corporate Communications

17. What are the data elements of MM?

Facsimile Document Images Photographic Images Geographic Information System Maps (GIS) Voice Commands and Voice Synthesis Audio Messages Video Messages Full motion stored and Live Video Holographic Images Fractals

18. Mention the major uses of Multimedia?

- Multimedia is heavily used in the entertainment industry, especially to develop special effects in moves and animation for cartoon characters.
- Multimedia games are a popular pastime and these are software programs available either as CD ROMs or online.
- Some video games also use multimedia features.

19. Mention some of the image formats used in multimedia?

Some of the image formats used in multimedia is

- GIF files
- JPG files
- Animated GIF files
- MPEG files
- Shockwave files and
- Nx View files.

20. What is the use of hyperlinks?

- The use of hyperlinks in multimedia makes it easier to search for and view related content.
- Such non–linear access to information definitely speeds–up the learning process and makes it more rewarding.

21. What are the most common file formats used in multimedia?

- The two most common multimedia elements are GIF and JPG files.
- Both of these formats compress static as opposed to animated bitmap images.

PART B

1. In detail, explain the concept behind multimedia components and their characteristics.

2. Give a short note on multimedia and its applications.

3. Alice multimedia company is in the process of creating E content materials for a middle school. list down the people involved and their roles in the multimedia production team to create the multimedia materials.

4. Discuss on the various video broadcast standards and how are they connected techniques used for adding realism to the created animation.

5. Explain the redbook standard also calculate the storage space needed to store 60secs of stereo as redbook with the digital display platform?

6. Discuss the animation audio file.

7. Explain the creation of digital audio and MIDI audio discuss the advantages and disadvantages of MIDI over digital audio suggest the applications suitable for a digital audio and MIDI.

8. Write the capabilies and limitations of bitmaps.

9. Describe the memory, storage and communication devices for multimedia systems.

10. Give a detailed note on digital video technology.

11. Elaborately discuss on how graphics and animation is executed using computers & bring out differences between them.

① multimedia Components and their Characteristics:.
multimedia Components are given by

    1. Text

    2. Sound

    3. Images

    4. graphics

    5. Animation

    6. video

Consider the above Components both hardware and software required for a multimedia system.

Text :- It includes both unformatted text, comprising strings of Characted from a limited Character set and formatted set.

Images :- These include Computer generated image, Comprising lines, Curves and Circle and digitized images of documents and pictures.

Audio : This includes both low-fidelity speechas used in telephony and high fidelity stereophonic music as used with Compact discs

Video : This includes short sequences of moving images (also known as video clips) and Complete movies / films.

② Short notes on multimedia:

The word 'multimedia' is a combination of two words, 'multi' and 'media'. Multi means many and media means materials through which something can be transmitted (or) send.

multimedia combined all the media elements like Text and graphics to make the inform -ation more effective and alternatives.

Application of multimedia:

Document Imaging, Image processing and Image Recognition, Full motion Digital video Application, Electronic messaging, entertainment Corporate Communications.

④ MIDI:

MIDI Stands for music Instrument Digital Interface and the format of MIDI message consist of a Status bytes. which define the particular event that has caused the message to be generated.

There are three main Components of MIDI

1. Computer
2. Keyboard
3. Sound generator

⑧ BITMAPS :-

There are two forms of representation of a computer graphics a high level version (similar to source code of a high level program) and the actual pixel image of the graphics.

That is similar to byte string corresponding to lower level machine code of the program. It is known as Bit-map format.

limitations of Bit-maps:-

1. Interms of the amount digital storage bitmaps are memory intensive, and the higher the resolution the larger the file size

2. When an image is enlarged, the individual coloured squares become visible and the illusion of a smooth image is lost to the viewer. this pixelate makes the image look coarse.

⑨ memory and storage device and communication:-

1) RAM (Random Access memory) also called as primary memory, locates the OS, application programs and data in current use so that the computer's processor reaches them quickly.

2) RAM is much faste than the hard disk; the floppy disk and the CD-Rom.

3) users of graphic application usually need 128 plus megabytes of memory. That is why,

(10) Digital Video Technology:-

&) Fundamental properties of the video signal.
  ✓ Each individual image in a video stream is called a Frame. A digital image is defined as a number of rows of picture elements/ pixels, or a matrix of pixels if you like
  ✓ The size of a fram are important. Components in the description of a video stream.
  ✓ A complete description of a video stream is called a video format:

  *) Frame-rate, Aspect ratio, Digital video.

  *) Compression of digital video

  *) Digital Video Recorders (DVR's) and H.264

② Compression for security surveillance (CCTV)

(11) Graphics:-

       Compute graphics deals with the generation representation, manipulation and display of picture with the aid of a Computer. Graphics is a more poweful way to illustrate the information.

    It classified into two Types.

       1. Gererative Graphics

       2. Images

    Examples: Illustrative Diagrams

Applications of Graphics:-

1. Computer Aided Design (CAD).

2. Computer Aided manufacturing (CAM).

Using CAD and CAM the design ideas can be quickly checked and graphically conceptualized Interactively.

ANIMATION :-

✓ It deals with the generation, sequencing and display of a set of images to create an effect of visual motion.

✓ Visual effects such as wipes, fades, zoom and dissolves available in most authoring packages, are a simple form of animation.

Why use Animation :-

*) Animation is useful of illustrating concepts which involve movement.

*) Animation can help organize thoughts and illustrate processes.

Examples : 1. Teaching swimming, 2. Flow of blood.

⑥ Animation Audio File:-

✓ Speech signals : 50 Hz to 10 kHz.
  Nyquist rate is 20 kSPS.

✓ music quality audio: 15 Hz to 20 kHz.
  Nyquist rate is 40 kSPS.

The peaks of the sound waves are visible in the Time Slider, and the time slider is ready to play (or) scrub the sound.

Platform	Audio file format
Linux Ⓔ	.aiff, .wav
microsoft windows	.aiff, .wav
Apple, mac os, x	.aiff, .wav, .mp3.

④ Video Broadcast Standards:-
It is the one Types of video applications on Entertainment process such as Broadcast TV, VCR/DVD recording.

TV Broadcast Color signals:-

*) Color TV should be able to produce black and white pictures from monochrome broadcast

*) Color TV broadcast should be used by an existing monochrome (black and white) TV set

Broadcast Standards :-

1) ATSC - Advanced television Systems committee
2) NTSC - National Television Standards committee
3) PAL - Phase Alternative line
4) SECAM - Systeme Electronic pour couleur Avec memorie.

⑤ Red Book (Audio CD Standard)

Red Book is the Standard for Audio CD's (Compact Disc Digital Audio System, or CDDA).

These various colored books supply audio standards for

1. Yellow CD-Rom and CD-Rom XA
2. orange CD-R and CD-RW
3. white video CD
4. Blue Enhanced CD, CD+4, and CD-Plw.
5. Beise Photo CD
6. Green CD-I (Interactive)
7. Purple DDCD (Double Density compact Disc)
8. Scarlet SACD (Supe Audio CD).

A Standard CD is 120mm (4.75 inches) in diameter and 1·2mm (0·05 inches) thick and is composed of a polycarbonate plastic Substrate one (or more thin reflective metal layers, and a lacquer coating