

2025

COMPUTER SCIENCE — HONOURS

Paper : DSE-A-4

(Multimedia and Its Applications)

Full Marks : 50

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Answer *question no. 1* and *any four* from the rest.

1. Answer *any five* questions : 2×5
 - (a) Name four major components of multimedia.
 - (b) Briefly discuss the role of entropy in multimedia.
 - (c) State two differences between MIDI and Digital Audio.
 - (d) What is the purpose of a colour palette in digital imaging?
 - (e) Define Keyframe in Animation.
 - (f) Differentiate between lossless and lossy audio compression.
 - (g) Name two commonly used video file format and their use cases.
 - (h) Define the term frame rate in video processing.

2.
 - (a) Explain how file size of a digital audio impacts the quality of the audio.
 - (b) A frame buffer is used to store images at a resolution of 1920×1080 pixels, with each pixel requiring 24 bits of colour information. Calculate the total amount of memory (in bytes) required to store a single frame.
 - (c) Calculate the required bandwidth in bytes per second to display a 1920×1080 resolution video at 60 Hz with 24 bits per pixel. 4+3+3

3.
 - (a) Discuss the process of digitizing an audio signal.
 - (b) What are the key requirements for real-time multimedia communication over networks? 6+4

4.
 - (a) Explain the role of a multimedia authoring tool. What are some commonly used authoring tools?
 - (b) Discuss the role of graphics processing units (GPUs) in multimedia. How do they differ from CPUs in this context? (3+2)+(3+2)

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(2017)

5. (a) State two advantages and two disadvantages of MIDI files over Digital audio.
(b) Describe 2D, 2.5D and 3D animation. 4+6
6. (a) What are the differences between vector-drawn objects (vector image) and bitmap (bitmap image)?
(b) Explain why vector images achieve higher quality while scaling than bitmap images. 5+5
7. (a) Differentiate between analog and digital signal.
(b) Differentiate between key-frame and path animation.
(c) Discuss the steps to create a key-frame animation with appropriate diagrams. 2+4+4
8. (a) Describe the impact of multimedia on advertising and marketing strategies.
(b) Discuss the ethical considerations in using multimedia content. 5+5
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