Reg. No. : | | | | | | | | | | | | |

Question Paper Code: U8507

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Professional Elective

21ITV507 - DIGITAL AUDIO AND VIDEO DESIGN

(Common to CSE & CSD Engineering branches)

(Regulations 2021)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	What is sound?	CO1- U
2.	Write a program in Python to detect an edge using Canny algorithm.	CO2–App
3.	What is General MIDI?	CO1 – U
4.	Which instrument sound corresponds to the following GM program numbers from 57 to 64?	CO1 – U
5.	Sketch the diagram used to represent binaural recording and reproduction.	CO1 – U
6	Write a program in Python for Pitch Shifting.	CO2–App
7	What is meant by Chroma subsampling?	CO1 - U
8	Write a program in Python to save a video file clip.	CO2–App
9	What is the dynamic range in sound?	CO1 – U
10	What is real-time video compression?	CO1 – U

PART – B (5 x 16= 80Marks)

11. (a) Develop a program that applies different filter effects to an audio   CO2–App   (16)
file, such as low-pass, high-pass, and band-pass filters, and
demonstrate its effect on various types of audio inputs

Or

(b) Develop a program that applies pitch shifting to audio files, allowing the user to adjust the pitch up or down by specific intervals, and demonstrate its effect on different types of audio inputs such as music, speech, and sound effects. — CO2–App (16)

12. (a) Explain various techniques such as subtractive, additive, and granular synthesis. Analyze how each technique impacts the texture and character of the sound, and provide examples of musical applications for each method. — CO1 - U (16)

Or

(b) Discuss some of the MIDI principles. — CO1 – U (16)

13. (a) Write a program to implement a local binary pattern. — CO2–App (16)

Or

(b) Write a program that implements local binary patterns (LBP) for image processing. It should allow users to apply LBP on various images, visualize the resulting feature maps, and analyze how different parameters affect the texture representation. — CO2–App (16)

14. (a) Examine and explain the implementation and usage of various analog video standards. — CO1 - U (16)

Or

(b) Explain in detail the concept of Chroma subsampling and its significance in video compression. — CO1 – U (16)

15. (a) Write a program to visualize key points of extracted features in an image. — CO2-AP (16)

Or

(b) Create a program that allows users to upload an image and manipulate its brightness and contrast. The user should be able to adjust the brightness (from -100 to +100) and contrast (from 0.5x to 2.0x) using sliders. The program should apply the changes in real-time and display both the original and the adjusted images side by side for comparison. Implement the solution using a suitable image processing library. — CO2-AP (16)

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