ourdiu.com | Shared by Abir Mia -231

Daffodil International University

Faculty of Science & Information Technology

Department of Computer Science & Engineering

64-K, CT-03, Spring 2026

Course Code: CSE411, Course Title: Computer Graphics

Time: 45 Minutes **Marks: 15**

Answer ALL Questions [Optional]

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.

$$\begin{bmatrix} 10 & 10 & 10 & 10 & 10 & 10 & 12 & 12 & 12 & 12 & 15 & 15 \\ 10 & 10 & 10 & 10 & 10 & 10 & 12 & 12 & 12 & 12 & 15 & 15 \\ 10 & 10 & 10 & 10 & 10 & 10 & 12 & 12 & 12 & 12 & 15 & 15 \\ 10 & 10 & 10 & 10 & 10 & 10 & 12 & 12 & 12 & 12 & 15 & 15 \\ 20 & 20 & 20 & 20 & 20 & 20 & 25 & 25 & 25 & 25 & 30 & 30 \\ 20 & 20 & 20 & 20 & 20 & 20 & 25 & 25 & 25 & 25 & 30 & 30 \\ 20 & 20 & 20 & 20 & 20 & 20 & 25 & 25 & 25 & 25 & 30 & 30 \\ 35 & 35 & 35 & 35 & 35 & 35 & 40 & 40 & 40 & 40 & 45 & 50 \\ 35 & 35 & 35 & 35 & 35 & 35 & 40 & 40 & 40 & 40 & 45 & 50 \\ 35 & 35 & 35 & 35 & 35 & 35 & 40 & 40 & 40 & 40 & 45 & 50 \end{bmatrix}$$

Given a 10 × 12 grayscale image. Each pixel is represented using a 14-bit image.

a.	Build the Huffman Tree step by step (show intermediate merging) and assign Huffman codes to each pixel value.	[6]	CO2
b.	Compute the following: i) Original size ii) Compressed size iii) Compression Ratio iv) Average bits per pixel v) Relative Redundancy and vi) Savings	[3]	CO2

2. After applying DCT on an image block, the coefficients are: [64,20,10,5,2,1,0,0] and Quantization values are: [8,5,10,10,5,5,10,10]

a.	Perform quantization on the given coefficients.	[3]	CO3
b.	Which step in JPEG is lossy and why?	[2]	CO3
c.	Why is Huffman coding considered lossless?	[1]	CO1

Scanned with CamScanner