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Question # 1
Part (a).

Ans: 1

D. Gray Level Slicing

Grey level slicing is equivalent to band pass filtering. It manipulates group of intensity levels in an image up to specific range by diminishing rest or by leaving them alone. This transformation is applicable in medical images and satellite images such as X-rays, plasms, CT scan. Two different approaches are adopted for grey level slicing [6][7].

1). Grey level slicing without background:

It displays high value in the specific region of an image and low value to other regions by ignoring background. Fig. 6 highlights range [A, B] of grey level by reducing all others to a constant level.

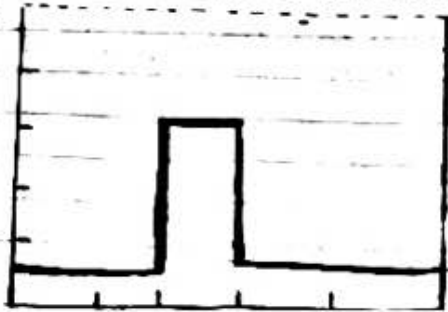


Fig: 6. Range $[A, B]$ of Grey Levels By Reducing all Others to A Constant Level.

2) Grey Level Slicing With Backgrounds-

$[A, B]$ by preserving all other levels. Fig. 7 highlights range in specific region of an image and original grey level to other region by preserving background. [8][9][10]

Question #1

Part (b).

It is possible to get details in the negative of a picture. Justify your answer with suitable Example.

NEGATIVE OF A PICTURE:-

Negative of an image is a total inversion, in which light areas appear dark & negative colour image is additionally colour reversed. Negative image has basically details in it but they are reversed in the film they are opened on the photographic page.

WIDER DYNAMIC RANGE:-

Negative film usually have less contrast but a wider dynamic range than the original positive images. The contrast typically increase when they are printed on photographic page. When negative film are brought into digital form their contrast can be adjusted at the time of scanning or by other means.

Question # 2

Consider the Picture Below:-

Answer:-

In the given picture it is enhanced by the histogram equalizer technique.

IMAGE APPEARANCE:-

In histogram equalizer technique the adjustment of contrast of the image take place. This technique improves the image appearance by scaling out the intensity range of the image. Though the reassignment of pixel value, the distribution on the histogram is stretched out to produce a more uniformly distribution.

Q:3. Answer:-

$$p(x, y) = (6, 1)$$

$$q(s, t) = (3, 7)$$

$$\begin{aligned}\Rightarrow D_4(p, q) &= |x-s| + |y-t| \\ &= |6-3| + |1-7| \\ &= 3+6 \\ &= 9\end{aligned}$$

$$\begin{aligned}\Rightarrow D_8(p, q) &= \text{Max}(|x-s|, |y-t|) \\ &= \text{Max}(|6-3|, |1-7|) \\ &= \text{Max}(3, 6) \\ &= \text{Max}(6) \\ &= 6\end{aligned}$$

$$\begin{aligned}\Rightarrow D_e(p, q) &= \sqrt{(x-s)^2 + (y-t)^2} \\ &= \sqrt{(6-3)^2 + (1-7)^2} \\ &= \sqrt{3^2 + (-6)^2} \\ &= \sqrt{9 + 36} \\ &= \sqrt{45}\end{aligned}$$

Question #4 Part (a)

What does Histogram of an image shows?

Answers-

Histogram are very usefull tools that they indy cameras offer their uses to help them get a quick summary of the tonal range present in any given image.

The graph shows the tones in the image from black (on the left) to white (on the right). The higher graph at any point to more ~~are~~ pixels of that tone that are present in an ~~edge~~ image. Histogram with lots of dark ~~pixels~~ pixels will be skewed to the left and one with lots of lighter tones will be skewed to right.

Question # 4
Part (b)

Match each picture with its possible histogram.

Answers:

1) Pic a matches Hgm 2
Pic a : Hgm 2

Pic b matches Hgm 4
Pic b : Hgm 4

Pic c matches Hgm 3
Pic c : Hgm 3

Pic d matches Hgm 1
Pic d : Hgm 1