**IT6005-DIGITAL IMAGE PROCESSING**

**Internal Assessment-3 key**

PART-A

**1.Image enhancement:**

-To highlight certain features of interest in an image.

-To improve the quality of image in which resultant image is useful for further process.

Image restoration:

-It deals with improving the appearance of an image.

-Based on mathematical or probabilistic models of image degradation.

**2.Region Growing:**

-Procedure that groups pixels or subregions into larger regions based on predefined criteria.

-Start with a set of seed points and from these grow region by appending to each seed those neighboring pixels that have properties similar to that seed.

**3.Function of image sensor:**

-Is to acquire or get digital images.It requires two devices,

1.physical device is to sense the object.

2.Digitizer is to convert the output of physical sensing device into digital form.

4.Run length coding:

-Is a technique used to reduce the size of a repeating string(run) of characters .-RLE encodes a run of symbols into two bytes called count and symbol.

**5.operation performed by error free compression**:

- To reduce the inter pixel redundancy.

-to reduce the coding redundancy

**6.pattern classes:**

pattern-arrangement of descriptors

pattern clases:is the family of pattern that share common properties between them.

**PART-B**

**1.sampling and quantization:**

-To convert the continuous sensed input image into digital image by sampling the each pixel of an images.

-to convert analog to digital image

Sampling:digitizing the co-ordinate value

Quantization : is to digitizing the amplitude value

- quantization value is divided into 8 discrete partitions

**2. Transform based image compression scheme**

to map the image into set of transform coefficients

Operations:

1. decomposition

2. Transformation

3. Quantization

4. coding

Input n\*n is divided into subimage of size n\*n

Non adaptive transform coding

**3. Enhancement in frequency domain**

is to manipulation of FT or wavelet of an image

Basic steps:

input : f(x,y)

1. Preprocessing

2. Fourier transform

output: f(u,v)

3. filter function h(u,v)

4. Inverse fourier transform

5. Post processing

output: G(u,v)

G(u,v) = f(u,v).h(u,v)

Low pass filters

1. ideal low pass filter

2. butterworth low pass filter

3. gaussian low pass filter

Sharpening of frequency

high pass filter

1. ideal high pass filter

2. butterworth high pass filter

3. gaussian high pass filter

**4.recognition based on matching**

decision function or discriminants

X= x1,x2,x3,.....xn

di(x) > dj(x) j=1,2,3,....n

di(x) = dj(x) j=1,2,3,....n

Mean vector of prototype of classes

minimum distance classifier

distance measure

decision boundary

matching by correlation

**5. HSI colour models**

hue - h

saturation - s

intensity - i

TO find intensity

intensity axis : line joining black vertex (0,0,0,) & white vertex (1,1,1)

To find saturation

to find hue

s= (1-3)/(R+G+B) min(r,g,b)

I=1/3(R+G+B)