**UNIT-I**

Introduction To Computer Vision Image Formation -Geometric Primitives - 2D,3D Transformations - 3D To 2D Projection - Lighting, Reflectance and Shading - Sampling And Aliasing - Image Processing- Point Operators- Pixel Transforms - Color Transform Histogram Equalization - Linear Filtering, non Linear filtering- Fourier transforms

Two-dimensional Fourier transforms -Wiener filtering

**Multiple Choice Questions**

1. Digitization of spatial co-ordinates (x,y)is called

(a)gray level quantization

(b)finite sampling

**(c)image sampling**

(d)image quantization

2. Image transforms are needed for

**(a)conversion information form spatial to frequency**

(b)spatial domain

(c)time domain

(d)both b&c

3. An alternate approach to median filtering is \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**a) Use a mask** b) Gaussian filterc) Sharpeningd) Laplacian filter

4. The amount of white light present in a spectrum is called as \_\_\_\_\_\_\_\_\_\_\_\_

a.intensity **b.saturation** c.hue d.colour

5. well transform is used for \_\_\_\_\_\_\_\_\_\_\_\_

a. highlighting the bright peaks **b. highlighting the dark peaks**

c. highlighting the bright and dark peaks d. highlighting the dark and bright peaks

6. A translation is applied to an object by

**a) Repositioning it along with straight line path**

b) Repositioning it along with circular path

c) Only b

d) All of the mentioned

7. The translation distances (dx, dy) is called as

a) Translation vector

b) Shift vector

**c) Both a and b**

d) Neither a nor b

8. A straight line segment is translated by applying the transformation equation

**a) P’=P+T**

b) Dx and Dy

c) P’=P+P

d) Only c

9. A Grid of square which contains a single color is called

a. Image b. Pixel value c. Pixel d. Color

Ans:c

10. A Fourier transform of a product is equal to

a. Correlation of Fourier transform b. Convolution of Fourier transform

c. Both of the above d. None of the above

Ans:a

11. Intensity can be converted to colour transformation by Assigning colors to

a.Pixels b.Coordinates c.Pixel depth d.Intensity Levels

Ans.d

12. Which of the following filter(s) has the response in which the central pixel value is replaced by value defined by ranking the pixel in the image encompassed by filter?

**a.**Order-Statistic filters **b.** Non-linear spatial filters

**c.**Median filter **d.**All of the above

Ans:d

13. Which of the following is/are used as basic function in nonlinear filter for noise reduction?  
 a) Computation of variance b) Computation of median

c) All of the above d) None of the above

Ans: b

14. In Weiner filtering it is assumed that noise and image are

a. Different b.Homogeneous c.Correlated d. Uncorrelated

Ans:d

15.  Find the Fourier transform of F(x) = 1, |x|<a0, otherwise.

a) 2sin(ap)p b) 2asin(ap)p c) 4sin(ap)p d) 4asin(ap)p

Ans: a

16.Which of the following processes would help avoid aliasing while down sampling an

image?

(a) Image sharpening (b) Image blurring.

(c) Median filtering where you replace every pixel by the median of pixels in a window

around the pixel.

(d) Histogram equalization.

Ans: b

17. Down sampling can lead to aliasing because

(a) Sampling leads to additions of low frequency noise.

(b) Sampled high frequency components result in apparent low frequency components.

(c) Sampling increases the frequency components in an image.

(d) Sampling leads to spurious high frequency noise

Ans: b

18. Which of the following is true for Eigenfaces (PCA)?

(a) Can be used to effectively detect deformable objects.

(b) Invariant to affine transforms.

(c) Can be used for lossy image compression

(d) Is invariant to shadows.

Ans: c

19.  Select one of the most appropriate applications of Computer vision

a) Medical computer imaging

b) remote sensing

c) geographical map

d) medical diagnosis

Ans:a

20. If the pixels of an image are shuffled then the parameter that may change is

a) Histogram b) Mean c) Entropy d) Covariance

Ans:d

21. Computer vision defined as a discipline in which -----------

a) Both the input and output of a process are images.

b) The input of a process is an image description and the output is image

c) Both the input and output of a process are descriptions.

d) The input of a process is an image and the output is an image description.

Ans:d

22. -----------Filter cannot be implemented using a convolution mechanism.

a) Average b) Gaussian c) Median d) Disk

Ans:c

23. Which of the following techniques is based on the Fourier transform?

1. Structural b) Spectral c) Statistical d) Topological

Answer: b

Explanation: Spectral techniques are based on properties of the Fourier spectrum and are used primarily to detect global periodicity in an image by identifying high energy, narrow peaks in the image.

24. The color model which is more relevant to a display system is the

a) RGB Model b) CMY Model c) HIS Model d) YIQ Model

Ans: a