Q1 Discuss the significance of Sampling and quantization of digital image

- we define image as a Two dimensional intensity function say $f(x, y)$ where x and y are The co-ordinatest representing horizontally and vertically. The value of $f(x, y)$ at any point give The pixel value at the point of image

Typically, a frame grabber or digitizer is used to sample and quantize the analogue video signal

it's digitizer is used to sample and quantize the analog video signal

This process involves Sampling and Quantization processes

The sampling rate governs the resolution of digitized image while The quantization level sixes The number of grey levels in The digitized image.

A magitude of the sampled image is expressed as a digital value in image processing

The number of quantization level should be high enough for human perception of fine shading details in the imag.

Q2- The important of imag processing in understanding the digital image data?

- pre-processing involves operation on images at the lowest level of abstraction

where bothe input and output image are intensity images

The aim of pre-processing is an improvement of the image data That eliminates distortions or enhancement is the most appealing pre processing Technique

Basically The idea behind enhancement is the most technique is to bring out detail that is obscured or simply to highlight

certain features of interest in an image such as: changing brightness & contrast.

- Four categories of image pre-processing methodes according to size of the pixel neighborhood
- Pixel brightness Transformation
- Pre-processing method that used a local neighborhood of the processed pixel

- Image pre processing use the considerable redundancy in image

Q3 - Justify image analysis and understanding is an useful Task for better society building

- The digital image processing deals with developing a digital system that performs operations on a digital image.

it involves Image understanding and image analysis and computer vision electronically.

The fundamental steps in digital image processing are which are aim to imate the process of human

Date / /20

Digital imag processing DIP is a multidisciplinary science that makes us to employ the principles from various fields such as

- Artificial intelligence
- Robotics
- Computer science
- mathematics
- Physics
- statistic

This is the fundamental areas of Digital image processing which is useful Task better in society building.

Q4

Q4 Discuss the important of Biometric considering the current application

There are many example in Biomatrik that which is important considering the current application

- Banking
- Airport
- Electronic voting
- Defense sectors
- Secured Trunsactions

in these we have show how image is to extract

The hidden information in an obliterated imag.
Using suitable pre processing Techiques its possible to extract the hidden information in an image which is commonly used in forensic application

Banking

Typical Tasks include: Document verification, Person authentication, Bankers cheque How these Tasks can be achieved efficiently

Here we have shown The important of image processing in processing bank cheque

The cheque is subjected to segmentation and subsequantly subjected to automated cheque analysis for its understanding and validating the cheque

This image exhibit the role of computer vision in general and imag processing in particular in designing and autonamous

Q5

Date / /20

Q5 - Explain Image representation

A digital image is representation of a two dimensional imag as a finite set of digital values called Picture element or pixels

More formally we define imag as two dimensional intensity and vertically the value of $f(x, y)$ at any point gives the pixel value at that point.
where x and y are the co-ordinates representing ~~bit~~ horizontally and vertically

the value of $f(x, y)$ at any point gives the pixel value at that point of an image

The representation of digital image using array data structure is show here.
we can notic here the reason to perform sampling and quantization processing on a given analog image to digital image

in order to perform operation on an analog signal with a digital computer, and in order to store an analog signal.