

BTS 161(B)

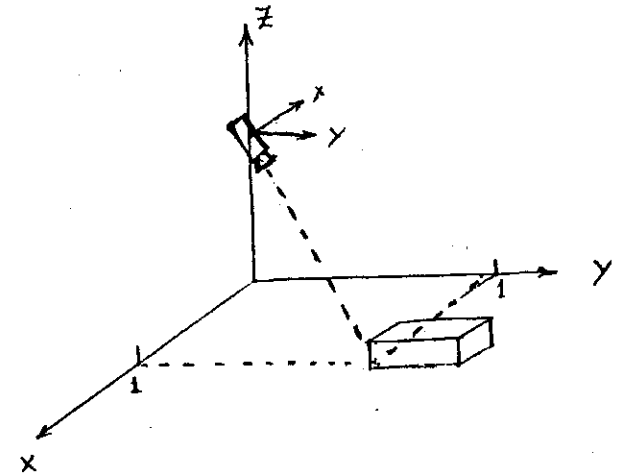
**B.Tech. Degree VII Semester Examination in
Information Technology, May 2002**

**IT 705 (B) DIGITAL IMAGE PROCESSING
(1995 & 1998 Admissions)**

Time: 3 Hours

Max. marks: 100

- I a) A camera is offset from the origin as shown in figure, and is viewing the 3D scene with a pan of 135° and a tilt of 135° . Assume the transformation angles are positive when camera rotates counter clockwise, viewing the origin along the axis of rotation. Find the image co-ordinates of the corner of the block shown. (10)



- b) What is meant by digitization of an image? Discuss the considerations that govern the choice of the number of pixels and the number of grey-levels. What are the consequences of an inappropriate choice of these parameters? (10)

OR

(P.T.O)

- II a) Explain the conjugate symmetry property of 2-D DFT. How is this property useful in image processing operations? (10)
- b) For an $N \times N$ discrete image, how is the spectral component at the origin of the Fourier frequency domain related to the average in the spacial domain. (10)
- III a) Compare Spatial domain and Frequency domain methods of image enhancement. (10)
- b) Explain histogram equalization method of image enhancement. (10)
- OR**
- IV a) Explain how image restoration can be done on an image which is blurred by uniform linear motion. (15)
- b) Explain image restoration in Spatial domain. (5)
- V a) What is variable length coding? Explain any kind of variable length coding. (10)
- b) Explain Predictive Differential Quantizing (PDQ) algorithm in Contour tracing and coding. (10)
- OR**
- VI a) Why is the quantized DCT coefficients in the JPEG scheme coded using a zig zag pattern? What are the advantages of variable length coding?)
- b) Explain the arithmetic coding with an example.) (20)
- VII a) What are the various techniques used for detecting discontinuities in a digital image? Explain. (10)
- b) Bring out the collinearity - detection property of the Hough transform and briefly discuss its application in image processing. (10)

OR

- VIII a) Discuss any kind of Region - Oriented segmentation. (10)
- b) Explain the Spatial technique for use of motion in segmentation. (10)
- IX a) Explain the chain codes used in image representation. (10)
- b) Explain morphology as a tool for extracting image components that are useful in the representation and description of region shapes. (10)
- OR**
- X a) What are signatures? Briefly explain. (10)
- b) Derive the expression for the Bayes classifier. (10)
