

CBCS SCHEME

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BMT714A

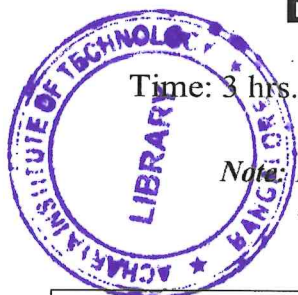
Seventh Semester B.E./B.Tech. Degree Examination, June/July 2026

Digital Image Processing and Robot Vision

Time: 3 hrs.

Max. Marks: 100

- Note:* 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks, L: Bloom's level, C: Course outcomes.



Module – 1			M	L	C
Q.1	a.	Explain fundamental steps in digital image processing using a block diagram.	10	L2	CO1
	b.	Explain false contouring and checker board effect in image processing. How these effects can be minimized?	10	L2	CO1
OR					
Q.2	a.	Explain in detail five fields that use digital image processing.	10	L2	CO1
	b.	Explain with a neat diagram how image is acquired using linear sensor strip.	10	L2	CO1
Module – 2					
Q.3	a.	What is Histogram Equalization? Show that equalization yields a flat response.	10	L2	CO2
	b.	Explain the following gray level transformations: i) Gray level slicing ii) Bit plane slicing	10	L2	CO2
OR					
Q.4	a.	With necessary equations and graphs explain the following: i) Log transformation ii) Contrast stretching	10	L2	CO2
	b.	Discuss Local Histogram Processing.	10	L2	CO2
Module – 3					
Q.5	a.	With the help of a neat diagram explain steps involved in frequency domain filtering.	10	L2	CO3

	b.	Describe the structure and mathematical representation of any two colour models (eg. RGB, HSI, CMY/CMYK, Ycb(r). Compare their features and typical areas of application.	10	L2	CO3
OR					
Q.6	a.	Explain the working of homomorphic filtering in image processing using mathematical equations and response.	10	L2	CO3
	b.	Differentiate between true-colour and pseudo colour image processing. Provide scenarios where each approach is preferable in engineering (or) scientific applications.	10	L2	CO3
Module – 4					
Q.7	a.	Define and explain coding redundancy, inter-pixel redundancy and psycho-visual redundancy.	10	L2	CO4
	b.	Describe the transform coding technique as applied in image compression.	10	L2	CO4
OR					
Q.8	a.	Describe run length coding and Huffman coding as lossless image compression.	10	L2	CO4
	b.	With the help of a neat diagram, explain the JPEG compression technique.	10	L2	CO4
Module – 5					
Q.9	a.	Explain the working of optical sensors and discuss how camera models and geometry are used to relate 3-D world points to 2-D image coordinates in computer vision application.	10	L2	CO5
	b.	Explain the concept of image segmentation in high-level vision. Compare region based and edge-based segmentation techniques.	10	L2	CO5
OR					
Q.10	a.	Describe various intensity transformation techniques in digital image processing.	10	L2	CO5
	b.	Discuss Optimum Thresholding Techniques. How do split-and-merge segmentation methods work and for what types of images (or) applications are they most suited?	10	L2	CO5