

Total No. of Printed Pages:02

**SUBJECT CODE NO:- H-305**  
**FACULTY OF SCIENCE AND TECHNOLOGY**  
**B.E. (EC/ECT/E&C) (Sem-I)**  
**Digital Image Processing**  
**[OLD]**

[Time: Three Hours]

[Max. Marks: 80]

Please check whether you have got the right question paper.

- N.B
- i. Q. 1 and 6 are compulsory.
  - ii. Solve any two from remaining in each section
  - iii. Assume suitable data whenever required

**Section A**

- Q.1 Answer any two
- a) Explain digital image file formats 05
  - b) Explain simple image formation model 05
  - c) Explain any two properties of DFT with proof 05
- Q.2
- a) Explain fundamental steps in digital image processing 08
  - b) Explain image sampling and quantization. 07
- Q.3
- a) Write short note on stereo imaging 07
  - b) Write short note on DCT. 08
- Q.4
- a) Explain image enhancement using arithmetic and logical operators. 07
  - b) Apply histogram equalization to following data of image. 08

$r_K$	0	1	2	3	4	5	6	7
$h_K$	790	1023	850	656	329	245	122	81

- Q.5
- a) Explain image smoothing filters in spatial domain. 07
  - b) For image shown below  $v=\{0, 1\}$  find the length of shortest 4 path and shortest 8 path between p and q if a particular path does not exists explain why? 08

3	1	2	1
2	2	0	2
1	2	1	1
1	0	1	2

(p) (q)

## Section B

- |      |   |    |
|------|---|----|
| Q.6  | Write short note on (any two)   |    |
|      | a) Dilation and erosion   | 05 |
|      | b) Redundancy   | 05 |
|      | c) Boundary Descriptors   | 05 |
| Q.7  | a) What is an image segmentation? How point and line detection is done? | 08 |
|      | b) Explain edge detection in detail?                                    | 07 |
| Q.8  | a) Explain simple image compression model.                              | 07 |
|      | b) Explain fidelity criteria in detail.                                 | 08 |
| Q.9  | a) Explain regional descriptors in detail.                              | 07 |
|      | b) Explain topological descriptors in detail.                           | 08 |
| Q.10 | a) Explain region filling with suitable example                         | 08 |
|      | b) Explain transform coding.  | 07 |