

BACHELOR OF PRINTING ENGINEERING, EXAMINATION, 2017

3rd Year, 2nd Semester

DIGITAL IMAGING Time: Three hours

Full Marks: 100

Answer any Five Questions

1. a) Convert the following image matrix into halftone using Floyd and Steinberg method of error diffusion. 8
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|-----|-----|-----|
| 0.5 | 0.7 | 0.5 |
| 0.5 | 0.8 | 0.5 |
- b) Briefly describe the various kinds of inkjet systems. 6
- c) Write the role of polarization filters in densitometry. 4
- d) Write the role of screen ruling in moiré removal. 2
2. a) Elaborate the proofs and approval cycle with necessary diagram. 6
- b) Explain rosette patterns. 4
- c) Write the advantages and disadvantages of moiré. 5
- d) Describe the dot diffusion method. 5
3. a) Why proofs are made. 6
- b) Write the benefits of stochastic screening. 6
- c) Compare Bayer filter and Bayer matrix. 2
- d) Write on the ideal requirements of a proofing system. 6
4. a) Describe PMT with necessary diagram. 8
- b) Why sometimes softproof and hardproof does not match? 4
- c) Compare PMT and CCD. 4
- d) Write the various methods of CCD arrangement technique. 4

5. a) Generate 8 by 8 order dither matrix from the following matrix D_2 6
 $D_2 = \begin{bmatrix} 3 & 1 \\ 0 & 2 \end{bmatrix}$
- b) Convert the following image matrix into a halftone using above generated 4 by 4 order dither matrix. 4
- | | | | | |
|-----|-----|-----|-----|-----|
| 140 | 48 | 120 | 61 | 92 |
| 170 | 205 | 160 | 77 | 6 |
| 100 | 10 | 75 | 120 | 145 |
| 60 | 77 | 170 | 125 | 240 |
- c) Explain the role of interpolation in imaging. 4
- d) Write the role of halftone dot shape. 4
- e) Distinguish between Hell and Royal Zenith drum scanner. 2
6. a) Write the required relation to compute the scan resolution of line art, grayscale and color images. 6
- b) Describe one method of photomechanical and one method of electrostatic proofing system. 5
- c) What are the various types of proofing systems? 5
- d) Describe Floyd Steinberg method of error diffusion. 4
7. a) Describe various types of imagesetter. 9
- b) Write on imagesetter calibration. 6
- c) Explain monotype lasercomp with necessary diagram. 5
8. a) Compare CAD and DAD based laser printers. 3
- b) Compare CCD and CMOS sensors. 2
- c) Write the factors that determine the file size of a digital image. 3
- d) Distinguish between three pass and single pass scanning. 4
- e) Compare clustered dot dither and dispersed dot dither. 4
- f) Explain some drawbacks of pixel grid patterning. 4