Ref. No.: Ex/PG/PT/T/124A/2018

M.TECH. PRINTING ENGINEERING AND GRAPHIC COMMUNICATION
FIRST YEAR SECOND SEMESTER EXAM 2018
CROSS MEDIA COLOR REPRODUCTION

Time : Three hours **FULL MARKS 100**

Answer any five questions:

1.a)What are the parameters on which exposure depends on? b)How aperture is related to depth of field? c)What is the metrics of color cast? d) What are the parameters of image representation? e)Show with diagram how dichroic prism is used to separate red, green and blue light. f)Briefly describe CRT calibration. g)What are the different technique of characterization? 2+2+2+4+2+6+2=20

2.a)What are the application of image interpolation? b) If f(n) = { 0 ,120 ,240,120,0}, interpolate at 1/2 pixel. c)Briefly describe bicubic interpolation. d)What are the limitations with bicubic interpolation? e)Describe the affine transform and shear of a square. f)Describe sequential interpolation.

4+2+4+2+4+4=20

3.a)Write down the expression of chromatic aberration. b)What are the two types of chromatic aberration ? c) How two types of chromatic aberration are measured? d) How the MTF of a camera lens is measured- describe with a neat sketch. e) How the sensor response of scanner is measured?

2+2+4+6+6=20

4.a) Draw the input device characterization workflow. b) What are the parameters on which sensor response of the input device depends and write down the expression of sensor response in terms of those parameters. c)Give a brief description of model based input device calibration and characterization. d) How the linearization and gray balance of scanner response is done?4 +2+10+4=20

5.a) What are the basic two assumption of display characterization? b) What are the advantages and disadvantages of LCD? c)Draw the color image workflow for capture and display. d)What are the different types of model based printer characterization? e) Describe any one of them. f) What are the different parameters on which optoelectronic conversion function (OECF) depends on?4+2+4+2+4+4=20

6.a) What are the two methods of gamut boundary description. b)Describe any one of them. c)What are the different methods of gamut compression algorithm and describe any two of them.?d) Describe how gamut mapping is done by black shift, rotation matrix and contrast scaling function. 2+4+10+4=20

7.Differentiate between: 4*5=20

a)Knee compression and sigmoidal compression b) Linear least square regression and weighted least square regression c) CRT Calibration an LCD Calibration d) Absolute and relative colorimetry e) Empirical characterization and model based characterization

8. Write short notes on 4*5=20

a) Bayer Mask b) Spatial frequency response (SFR) c) Lattice-based interpolation d) Tetrahedral interpolation e) Polynomial regression for characterization