

MANIPAL INSTITUTE OF TECHNOLOGY

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V SEMESTER B.TECH. (PRINT AND MEDIA TECHNOLOGY) END SEMESTER MAKE-UP EXAMINATIONS, DEC/JAN 2016-17 SUBJECT: COLOR ANALYSIS AND REPRODUCTION [PMT 3103] REVISED CREDIT SYSTEM

(03/01/2017)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer ALL the questions.
- ✤ Missing data may be suitable assumed.
- **1A.** Explain the effect of Value in different Hues with suitable examples. Explain the relationship between pure Hues and Value.
- **1B.** Explain the principle of Under Color Removal and Gray Component Replacement.
- 1C. Explain Electronic Color Separation and Desktop Color Separation. If the printer resolution is 1200dpi and the image resolution is 120lpi, calculate the required halftone cell matrix to represent graphically the following halftones: 10%, 50% and 90%. Also represent them with the dot gains of 15% and 10% for highlight and shadow areas respectively. Assume halftone shape is square.

[03+03+04]

- **2A.** Explain the following color systems : (i) Focoltone (ii) Trumatch
- **2B.** With suitable examples explain raster and vector computer graphics.
- 2C. Explain the Device-Dependent Color Models.Explain the following Device Limitations (i) Gamut (ii) Dynamic Range

[03+03+04]

- **3A.** Explain the types of scanner and its basic elements.
- **3B.** Explain the logical reasoning behind selecting the screen angles for process colors.
- **3C.** Explain the following:(i) Metameric match(ii) Visual acuity of color(iii) Color Names(iv) Memory Color

[03+03+04]

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4A. If the reference color has the L*a*b* value of 20,65,35, which is an out of gamut color, suggest the best color engine and the most suitable rendering intent from the data given below:

For adobe color engine, L*a*b* values for perceptual is 24,43,20, for saturation is 28,44,28, for relative colorimetric is 25,44,22 and for absolute colorimetric is 27,33,16.

For Microsoft color engine, L*a*b* values for perceptual is 23,44,20, for saturation is 28,45,28, for relative colorimetric is 25,43,22 and for absolute colorimetric is 27,33,15.

- 4B. Explain the four production problems influencing the sequence of process colors.Mention the recommended screen angles for
 - (i) tritones jobs (ii) jobs with skin color predominates

(ii) duotones jobs (iv) jobs with light green predominates

4C. "Measuring color is really an oxymoron". Jusify this statement. Explain the following color measurement concepts (i) Colorimetry (ii) Spectrophotometry

[03+03+04]

- **5A.** Explain with neat diagrams the color-matching experiment that allowed the trichromatic properties of human vision to be studied and characterized.
- **5B.** Elaborate the following concepts :

(i) Proportionality failure (ii) Additivity failure (c) Gloss

5C. Give the theory behind Neugebauer Equations. Give the three color Neugebauer equation for blue filter and green filter.

[03 + 03 + 04]