## **Question Paper**

Exam Date & Time: 04-Jan-2021 (02:00 PM - 05:00 PM)



## FIFTH SEMESTER B.TECH END SEMESTER EXAMINATIONS, DEC-JAN 2020-21 COLOR SCIENCE & TECHNOLOGY [MED 3151]

Marks: 50

## Answer all the questions.

1)		Explain the factors that influence the ability to see color accurately. With neat labelled diagram of the optical structure of the human eye explain the functions of the two retinal photoreceptors.	(4)
	A)		
	В)	Give the significance of value contrast. Explain the relationship between pure hue and value. Explain the concepts of tints and shades.	(3)
	C)	Explain the additive color system and also shed light on the practical interpretation of additive color system.	(3)
2)		Explain the concept of WHITE POINT. Define Color Temperature with two examples. Bring out the difference between metameric match and spectral match.	(4)
	A)		
	В)	Write short note on focoltone color library. Elaborate on the two kinds of methods for measuring or comparing printed color with a reference color.	(3)
	C)	Explain the color matching experimental setup and define tristimulus value. Explain the birth of CIELUV color system.	(3)
3)	A)	Sneha and Shreya always believed in different ENGINES when it came to color management. Sneha believed Microsoft engine was better while Shreya supported Adobe engine ever since. For the Print Award Competition, they had to print a unique color with L*a*b* value of 20,60,30, unfortunately an out of gamut color for both Sneha and Shreya. As Shreya used adobe color engine, she had the following options available with L*a*b* values for perceptual being 25,43,20, for saturation its 27,44,28, for relative colorimetric its 26,44,22 and for absolute colorimetric its 28,33,16. Sneha used Microsoft color engine, to get L*a*b* values for perceptual as 23,44,20, for saturation as 26,45,28, for relative colorimetric as 25,43,22 and for absolute colorimetric as 24,33,15.	(4)
		(a) which is the best rendering intent option for SNEHA?	
		(b) which is the best rendering intent option for SHREYA?	
		(c) which is the overall best ENGINE for this situation?	
		(d) which is the overall best rendering option for this unique color?	
	В)	Explain the problems we face as a consequence of device-specific colors. Elaborate on the statement "a device's color gamut isn't the same thing as a device's color space".	(3)
	C)	Explain the four distinct types of density measurements. Explain the four comprehensive color measurement modes.	(3)
4)		Define TRAPPING. Name the factors affecting trapping. Explain the two types of inks and how the trapping is achieved in them.	(4)
	A)		

Duration: 180 mins.

- B) Illustrate the basic concept of color separation. Explain the two kinds of rosettes.
- C) Define the optical factor 'Bronzing'. If the printer resolution is 1280 dpi and the image resolution is 160 lpi, calculate the required halftone cell matrix to represent graphically the following halftones: 25%, 50% and 75%. Also, represent them with the dot gains of 15% in midtones and 10% gain in highlight and shadow areas. Assume halftone shape is square.
- 5) Write short note on SPECIAL COLOR. Explain in brief the four variable factors which is necessary (4) to control to maintain consistent color reproduction in process color printing.
  - A)
  - B) Define with one print industry example for each Guidelines, Specifications & Standards. Elaborate (3) on two differences that formal accreditation brings to the standardising process.
  - C) Define mechanical and optical dot gain. Explain the significance of dot gain in the following halftone (3) zone: (a) 1% to 40% Tonal Range (b) 40% to 60% Tonal Range (c) 60% to 99% Tonal Range

-----End-----

(3)