Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

II SEMESTER M.TECH. (PRINTING AND MEDIA TECHNOLOGY)

END SEMESTER EXAMINATIONS, APRIL 2018

SUBJECT: COLOR MANAGEMENT SYSTEMS [PME 5202]

REVISED CREDIT SYSTEM
(19/04/2018)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitable assumed.

1A. Define Visual Angle. With a neat labeled schematic diagram of the human eye, explain the functional photoreceptors for the mesopic vision.

1B. Explain Metamerism and Color constancy. Explain why devices don't have color constancy.

1C. If the reference color has the L*a*b* value of 35,-65,50 which is an out of gamut color, suggest the best color engine and the most suitable rendering intent from the data given.

For the adobe color engine, L*a*b* values for perceptual is 35,-44,17 for saturation is 39,-46,18 for relative colorimetric is 37,-46,18 and for absolute colorimetric is 38,-38,16.

For the Microsoft color engine, L*a*b* values for perceptual is 35,-44,16 for saturation is 38,-46,18 for relative colorimetric is 36,-46,17 and for absolute colorimetric is 38,-38,17.

[03 + 03 + 04]

2A. Explain the Maxwell's color matching method and elaborate on W. D. Wright's concept of individual differences.

2B. Explain Wien's displacement law with a neat diagram. Mention the Wien's formula and Rayleigh–Jeans formula.

2C. Explain the four components of Swedish Natural Color System.

[03 + 03 + 04]

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3A. Explain CIE standard illuminant. Elaborate on generic profiles.

3B. Define illuminance. Elaborate on the three key points which will help clarify what illuminance actually measures.

3C. Explain the genesis of color management and explain the four different ways of dealing with "out-of-gamut" colors.

[03 + 03 + 04]

4A. Explain colorants, white point and black point as variables in the color management workflow.

4B. Define a profile. What information does the device profile contain? Elaborate on the three limitations in the process of creating profiles that one should keep in mind.

4C. Explain the four basic components of ICC-based color management systems.

[03 + 03 + 04]

5A. Explain the following ICC recommendations for color measurement of reflecting media (a) Fluorescence (b) Backing (c) Polarization Filters

5B. Explain the following industry standards for viewing conditions:
(a) ISO 3664:2009 and (b) ASTM D1729-2016

5C. Explain the two functions performed ICC profiles (both v2 and v4). Explain four significant shortcomings of ICC Profiles Version 2.

[03 + 03 + 04]