

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019****Subject Code: 2173615****Date: 26/11/2019****Subject Name: New Functional dyes & Recent Trends in Dyes Technology****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
<b>Q.1</b>	(a) Give the synthesis of Solvent Yellow 14.	<b>03</b>
	(b) Discuss about functional dyes with respect to electromagnetic radiation.	<b>04</b>
	(c) What are metal complex dyes? Write down the role of metal. Give the properties and applications of metal complex dyes.	<b>07</b>
<b>Q.2</b>	(a) Discuss the application of functional dyes in Photocopying.	<b>03</b>
	(b) Write a note on Dyes in Solar cells.	<b>04</b>
	(c) Discuss application of functional dyes in Ink-jet printing.	<b>07</b>
	<b>OR</b>	
	(c) Discuss in details dyes in Fluorescent Sensors and Probes.	<b>07</b>
<b>Q.3</b>	(a) Write a note on natural hair dyes.	<b>03</b>
	(b) How do you synthesize Orange B and Food Red 9?	<b>04</b>
	(c) Give the structure of human hair and briefly explain traditional method of application of hair dyes.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Discuss about dye-removal preparations.	<b>03</b>
	(b) Give the two different methods for synthesis of food yellow 4.	<b>04</b>
	(c) Discuss the harmful effects of synthetic hair colours.	<b>07</b>
<b>Q.4</b>	(a) Discuss the concept of Right First Time (RFT) dyeing technology.	<b>03</b>
	(b) Elaborate the term Plasma. Give the difference between conventional dyeing and plasma dyeing technology.	<b>04</b>
	(c) Explain the Dye sensitized solar cell (DSSC) with its working principle and operation in detail.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Explain the following terms: (i) % Rate of Exhaustion (ii) Strike Time	<b>03</b>
	(b) Discuss the technology involved is based on solvents used in typical dyes synthesis reactions.	<b>04</b>
	(c) Explain the electrochemical dyeing by considering its advantages, dyeing methods in detail.	<b>07</b>
<b>Q.5</b>	(a) Give the importance of Plasma Technology.	<b>03</b>
	(b) Explain the following terms: (i) % Fixation (ii) Equilibrium time	<b>04</b>
	(c) Discuss the following qualitative control test: (i) Dye Hue Test (ii) Dye Strength Test (iii) Fixation Efficiency	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) Write down the difference between conventional dyeing and supercritical dyeing technology.	<b>03</b>
	(b) Discuss the following quality control test with respect to future dye house : (i) Wash Fastness Test (ii) Rubbing Fastness Test	<b>04</b>

- (c) Explain the plasma with respect to generation of plasma and cascade process of ionization with suitable diagrammatical representation.

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