

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII (NEW) - EXAMINATION – SUMMER 2018

Subject Code: 2183613

Date: 02/05/2018

Subject Name: Engineering of Pigmented Dispersion

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
Q.1	(a) Discuss the concept of pigment dispersion.	03
	(b) Elaborate the adhesion & cohesion phenomenon associated with	04
	(c) Explain the rate of penetration of liquid by using wash-burn equation.	07
Q.2	(a) Write a note on Planetary Mixer	03
	(b) Discuss about underlying fluid mechanics, mill base rheology of high speed mixer.	04
	(c) Explain the working principle & operation of Pug mixer.	07
OR		
	(c) Explain the different impeller geometries & orientations of high speed mixer.	07
Q.3	(a) Write down the working principle of two roll mill.	03
	(b) Discuss about batch & continuous operation of ball mill.	04
	(c) Explain the phenomenon of cascading of ball mill with respect to change in rotational speed of ball mill.	07
OR		
Q.3	(a) How do you analyze the fineness of dispersion?	03
	(b) Explain the triple roll mill with its principle.	04
	(c) Derive the equation with respect to power consumption in ball mill.	07
Q.4	(a) Write the mechanism of attrition.	03
	(b) Discuss about stability of micro bead dispersion.	04
	(c) Explain the micro bead mill with respect to various types of mills.	07
OR		
Q.4	(a) How do you compare attritor with respect to ball mill.	03
	(b) Discuss the pigment size and size distribution, nature of premix processing of micro bead mill.	04
	(c) Explain the effect of retention time/ flow rate, grinding media size, shape & composition on micro-bead mill.	07
Q.5	(a) Elaborate the term combustible dust and combustible solid particulate.	03
	(b) Discuss the secondary explosion mechanism.	04
	(c) Explain in detail the various factors are responsible for combustible dust explosion.	07
OR		
Q.5	(a) Write a note on: Minimum explosive concentration.	03
	(b) Discuss about the hazards analysis.	04
	(c) Explain the various factors should consider for preventing explosion.	07
