Seat No.: _____ Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV(NEW) – EXAMINATION – SUMMER 2019

Subject Code:2142301 Date:09/05/2019

Subject Name: Basic Plastic Processing and Thermal Engineering

Time:02:30 PM TO 05:00 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)**	What is Plastic Processing? List various processing methods for thermoplastics and thermosets.	**03**
	(b)	What are Bulk factor and Preforms? Give Advantages and limitations of Preforms.	**04**
	(c)	With neat diagram explain Rotational molding process steps.	**07**
Q.2	**(a)**	Define: Thermoforming. List various thermoforming processes. Give any two applications of thermoforming products.	**03**
	(b)	Define: Mold, Cavity, Blow ratio, Vent.	**04**
	(c)	Explain with neat diagram (i) Drape forming (ii) Twin sheet thermoforming.	**07**
		OR	
	(c)	With neat diagram explain Plunger type transfer molding process.	**07**
Q.3	**(a)**	Give difference between Extrusion Blow molding and Injection Blow molding.	**03**
	(b)	Which are the factors to be considered for Compression molding? Discuss.	**04**
	(c)	Give advantages and limitations and applications of Rotational molding.	**07**
		OR	
Q.3	**(a)**	The outer surface of a 0.3m thick concrete wall (10 m x 3 m) is kept at a temperature of 10 ºC while the inner surface is kept at 40 ºC. Thermal conductivity of the concrete is 1.2 W/mK. Determine the rate of heat loss through it.	**03**
	(b)	Give causes and remedies in Blow molding process for following defects: (i) Parison Curl (ii) Rough Parison (ii) Warpage (iv) Variable wall thickness.	**04**
	(c)	Give principle of Stretch Blow molding and explain Injection blow molding process with neat diagram.	**07**
Q.4	**(a)**	The outer surface temperature of a roof is 40 ºC and that of the ambient air is 10 ºC. Calculate the rate of heat exchange between ambient air and 250 m^2 of outer roof area if the value of convective heat transfer coefficient is 10 W/ m^2 K.	**03**
	(b)	Discuss melt stability and plastic memory properties for material selection criteria in thermoforming.	**04**
	(c)	What is the role of Heat Exchanger? Discuss various types of Heat exchanger in detail.	**07**
		OR	
Q.4	**(a)**	What is the purpose of Preheating? List various method used for the same.	**03**

	(b)	What are the different types of heating system used for heating the rotational mold? Discuss in brief.	**04**
	(c)	Write a note on: Parison Programming	**07**
Q.5	**(a)**	Differentiate between Blow molding & Injection molding process.	**03**
	(b)	What is Pinch off? Explain materials used for preparation of Blow Mold.	**04**
	(c)	What is conduction? Give heat conduction equation using Fourier's Law.	**07**

OR

Q.5	**(a)**	Give advantages and disadvantages of Transfer molding.	**03**
	(b)	List types of compression molds and explain any one with diagram.	**04**
	(c)	Explain Plug assist thermoforming process with neat diagram.	**07**

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