· (44)

No. of Printed pages: 03

## SARDAR PATEL UNIVERSITY

M.Sc. (Semester-I) Examination (CBCS)
Tuesday, 30<sup>th</sup> October 2018

Course No.: PS01ECHE22, Polymer Chemistry-I 10:00 AM to 1:00 PM

			Total Marks: 70
<b>)-1</b>		swer the following.	##### # # <b>[8]</b>
	(i)	The word polymer me (a) any unit	ant for material made from
		(b) single unit (c) two units	para de transferial de la compara de la comparada del comparada de la comparada del comparada del comparada de la comparada de la comparada de la comparada del co
		(d) multiple units	profit in a second of the months and the second of the sec
	(ii)	The number average m (a) viscosity	olecular weight is determined to
s <sub>to</sub> ley		(4) 110003ity	ra uraneura i crasi norte in caso i crasi na Perio. O porege coto a composito i crasi na Mitrano in
	- 3	(c) ultracentrifugation	e un que la late du Albanda
		(d) end group analysis	
	(iii)	(") right of radiation	can activate chain initiation?
		(o) outdivoto	ranger (m. 1905). The state of
		(d) all of the above	dia septimb
	(iv)	Which of the following polymerization? (a) methyl methacrylate (b) acrylonitrile (c) methyacrylonitrile (d) butadiene	monomer has the least reactivity towards anionic
•	(v)	The acid catalyzed polye	sterification reaction followorder
		(a) 3 <sup>rd</sup>	रक्ष रेस्टब्स् <b>टी</b> और स्टार्टन विभिन्न केल
		(b) 4 <sup>th</sup> (c) 1 <sup>st</sup>	gada gala makinda dake dada Upa
		$(d) 2^{nd}$	SANAS FRANK CARAGE SEPTIME
(			ation is said to be an ideal copolymerization?
		(b) $r_1 > 1 \& r_2 < 1$	and the state of t
		(c) $r_2 > 1 & r_1 < 1$ (d) $r_1 = r_2 = 1$	

ger i tang tr		following method? (a) solution (b) suspension (c) emulsion (d) bulk	
2.4.1.1875- <sup>1</sup>	(viii)	To make PVC a flexible plastic, the additive used is called  (a) antioxidant  (b) flame retardant  (c) filler  (d) plasticizer	
Q-2	Ancus	er the following (ANY SEVEN)	E1 A)
Q-2	(i)	Define the terms: Mesomer & High Polymer	[14]
	(ii)	Differentiate Macromolecules and Polymer.	
	(iii)	To strike stoichiometric equivalence of -COOH & -OH groups for an esterification reaction between a dicarboxylic acid and trihydric alcohol, the acid & the alcohol should be taken in a molar ration of 3:2 then express the functionality of the system.	·
	(iv)	Justify: Radical polymerization is carried out in nitrogen atmosphere.	
	(v)	Explain the "backbiting" reaction.	
	(vi)	Cations are not usually used in ring opening polymerization of cyclic amides, why?	
	(vii)	Give the salient features of anionic polymerization.	
	(vii)	List out the functions of plasticizers.	
	(ix)	Explain how ionic groups are introduced in the polymer chain?	
Q-3	(a)	What are polymers? Give the basic difference between simple molecules and polymers.	[6]
	(b)	Write about the followings:	[6]
·		<ul><li>(i) Relationship between bonding &amp; temperature</li><li>(ii) Relationship between bonding &amp; the action of solvent</li></ul>	
		OR Commence of the Commence of	
	(b)	State the principle of light scattering technique and according to the Debye equation show that,	[6]

(vii) Autoacceleration occurs in preparing the polymer by which of the



Discuss the mechanism of cationic polymerization of styrene under the	
action of mineral acids.	[6]
OR	
Describe the monometallic mechanism of coordination polymerization using Ziegler-Natta catalysts.	[6]
Derive the relation between the rate constant and the extent of polymerization for the non-catalyzed polyesterification of a dibasic acid with glycol and show that the molecular weight built up in this case is slow compared to acid-catalyzed polycondensation reaction.	[6]
Derive the copolymer equation.	[6]
OR	
Discuss in details about the Q-e scheme proposed by Alfrey & Price.	[6]
Describe the solid and gas phase polymerization techniques.	[6]
Give a brief account on Iononmers.	[6]
OR	
Write about the following additives:	[6]
(i) Plasticizers (ii) Flame retardants	[-]
*************	***
and the second of the second o	•
	Describe the monometallic mechanism of coordination polymerization using Ziegler-Natta catalysts.  Derive the relation between the rate constant and the extent of polymerization for the non-catalyzed polyesterification of a dibasic acid with glycol and show that the molecular weight built up in this case is slow compared to acid-catalyzed polycondensation reaction.  Derive the copolymer equation.  OR  Discuss in details about the Q-e scheme proposed by Alfrey & Price.  Oescribe the solid and gas phase polymerization techniques.  Give a brief account on Iononmers.  OR  Write about the following additives:  (i) Plasticizers

	must be laterife scheme of free radical polymerization and beautishou do neithod of determining the volve of chain transfer constants of solvents.		
	NO		
$[\vec{v}]$	estable to monomental meanings of economiction polymentation		
	Do the retinue between the non-constant and the extract of contractions and the extract of contractions are the non-confidence of a dibasic with always and street that the nesteen her the above weight built up in this case is also company'd to acid colors and polycoardense intractions.	.15)	
	, AU		
	Discuss in details about the Q-e scheme proposed by ATE; & Price.	(d	984
	Describe the solid and gas pleas relymentation recompute.		
	Olive a brief ac pant on longman's		
	Were about the hydrowing additives:	-(11)	
As and	· · · · · · · · · · · · · · · · · · ·		