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SARDAR PATEL UNIVERSITY

M. Sc. -Chemistry (Fourth Semester) EXAMINATION

Industrial Polymer chemistry (IPC)

PS04CIPC02: Manufacture, Properties and Applications of Thermoplastics 12 th April, 2018, Thursday, Time: 2.00 pm to 5.00 pm			
Note: Fi	gure to the right in brackets indicates the full marks Total marks:	/0	
QUE.1	Answer the following questions by selecting the most appropriate option.	(8)	
a.	does not exist in free state, as it produces its tautomer, acetaldehyde. H ₃ C-C-OH HO-C-OH H ₃ C-C-H H ₂ C=CH (i) O (ii) O (iii) O (iv) OH		
b	The process using a "high yield stereo specific or high selectivity catalyst is called (i) FGC process (ii) SGC Process (iii) TGC Process (iv) 4GC Process		
c.	2CO +		
	(i) H ₂ O (ii) HC≡CH (iii) 4H ₂ (iv) 2H ₂		
d.	Over dehydrogenation of ethyl benzene forms: (i) ethynyl benzene (ii) phenyl acetylene (iii) phthalic acid (iv) polystyrene		
e.	H ₃ C-HC O-C-CH ₃ H ₂ SO ₄ ? Acetic anhydride 136°C		
	(i) 40% Vinyl acetate, 25% acetic acid, 15% acetic anhydride, 8% ethylidene diacetate, 4% acetaldehyde		
	(ii) 40% Vinyl acetate, 20% acetic acid, 20% acetic anhydride,4% ethylidene diacetate, 8% acetaldehyde		
	(iii) 40% Vinyl acetate, 20% acetic acid, 15% acetic anhydride, 9% ethylidene diacetate, 8% acetaldehyde		
	(iv) 45% Vinyl acetate, 15% acetic acid, 20% acetic anhydride,4% ethylidene diacetate, 8% acetaldehyde		
f.	The rigid sheet of PMMA is also known as (i) cobalt glass (ii) silica glass (iii) Plexiglas (iv) plastic glass		

Cellulose is the main constituent of the _____ of plants.

The polymer of Tedlar film is _____.

(i) polyvinylfluoride (ii) polyvinylidenefluoride (iii) polytetrafluoroethylene

(i) root (ii) leaves (iii) cell walls (iv) trunk

(iv) polychlorotrifluoroethylene.

QUE.2	Answer the following questions in short. (Any seven).	(14)
i	Why plastics are used in an enormous and expanding range of products?	
ii	Classify the various processes of polymerization of ethylene monomer.	
iii	Write 'one stage process' for preparation of vinyl acetate monomer.	
iv	Mention the reaction route of hexamethylenediamine manufacture.	
V	What is telomerization?	
vi	Name the different types of acrylic polymer.	
vii	Describe preparation of polycarbonate by phosgenation process.	
viii	What is the role of UV-stabilizer in plastics?	
ix	Mention the properties of Teflon.	
QUE.3		
A	Write a note on the Phillips and Ziegler process for the manufacturing of HDPE by low pressure process.	(6)
В	Describe the optical isomerism in polypropylene and discuss the properties of PP.	(6)
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В	Discuss the Hercules slurry process for the manufacturing of polypropylene by continuous polymerization process with its limitations.	
QUE.4		
A	How is styrene monomer prepared commercially with ethyl alcohol as one of the	(6)
В	starting material? Explain the process in detail. Give the details of bulk polymerization process as practiced commercially to	(6)
	produce polystyrene.	
_	OR	
В	Describe briefly Poly(vinyl formal), poly(vinyl butyral) and poly(vinyl acetals).	•
QUE.5		
A	Elaborate the manufacturing process of adipic acid and hexamethylene diamine.	(6)
В	Using the necessary schematic diagram describe the manufacturing process of Nylon,6 with its characteristics.	(6)
	OR	
В	Discuss the manufacturing process of polyethyleneterephthalate (PET).	
QUE.6		
A	What is the role of additives in plastics? Discuss briefly about plasticizers and fillers as an additives.	(6)
В	Write a short note on fluoropolymers.	(6)
	OR	
В	Discuss the recycling process of plastics.	