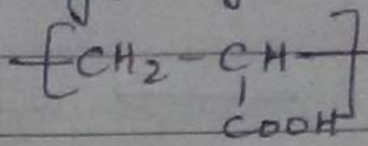
Date: __/__/__

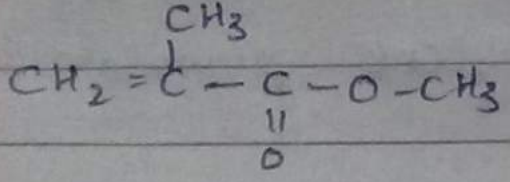
Tutorial - 1

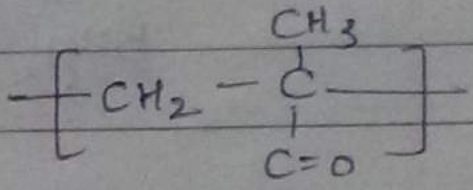
1.1 Repeating Unit & name

a) $CH_2=CH-COOH$

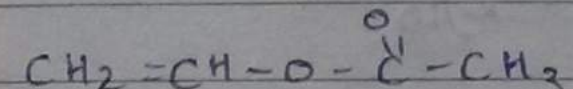


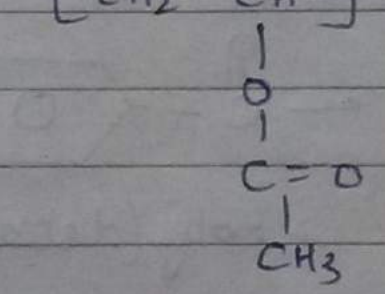
poly(acrylic acid)

b) 



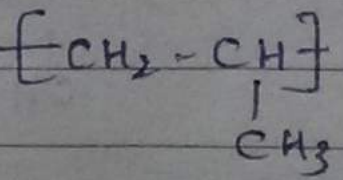
poly(methyl methyl acrylate)

c) 



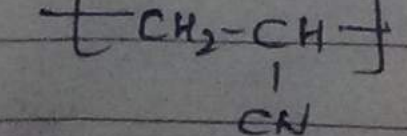
poly(Vinyl acetate)

d) $CH_2=CH-CH_3$



poly propylene

e) $CH_2=CH-CN$



polyacrylonitrate

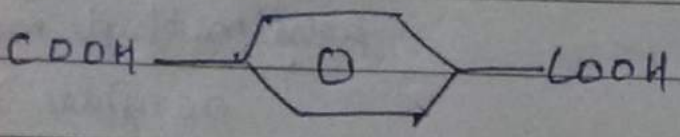
(1.2)

a) $NH_2-(CH_2)_5-NH_2$

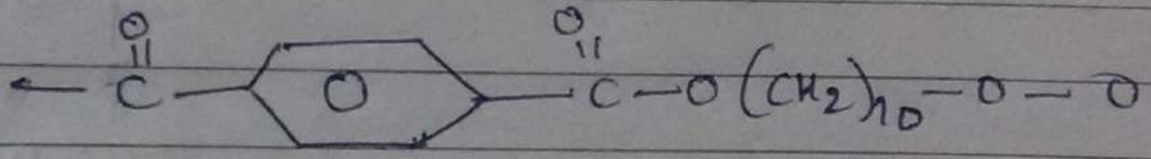
$+ Cl-\overset{O}{\overset{\|}{C}}-(CH_2)_5-\overset{O}{\overset{\|}{C}}-Cl$

$\longrightarrow -\left[\overset{H}{\underset{|}{N}}-(CH_2)_5-\overset{H}{\underset{|}{N}}-\overset{O}{\overset{\|}{C}}-(CH_2)_5-\overset{O}{\overset{\|}{C}}-\right]$

poly(Pentamethylene pimalamide)

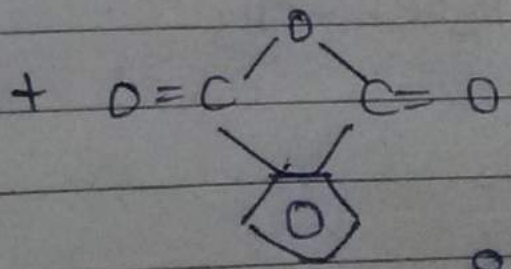
b) 

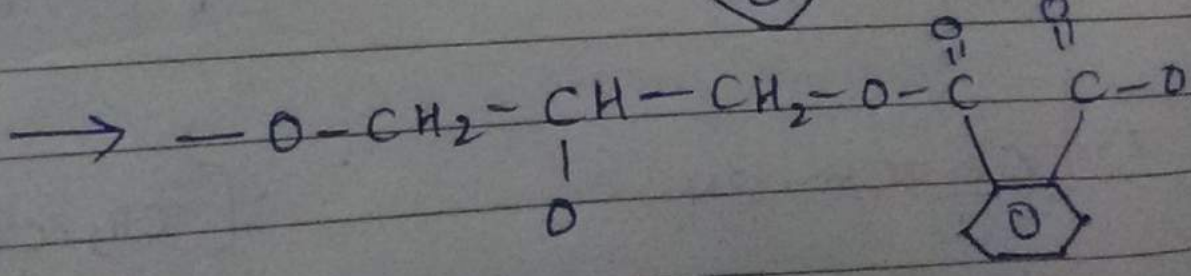
$+ OH-(CH_2)_{10}-OH \longrightarrow$



poly(decamethylene terephthalate)

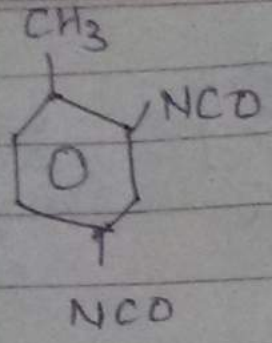
c) $OH-CH_2-\underset{\underset{OH}{|}}{CH}-CH_2-OH$



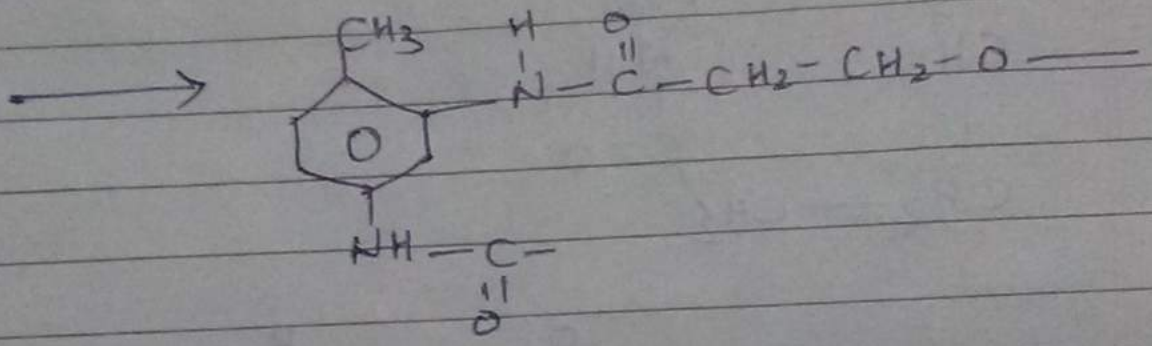


(glyptal)

d)

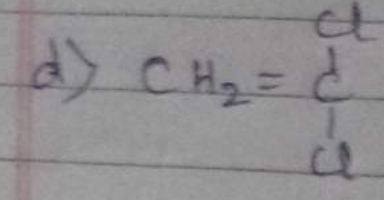


$+ OH - CH_2 - CH_2 - OH$

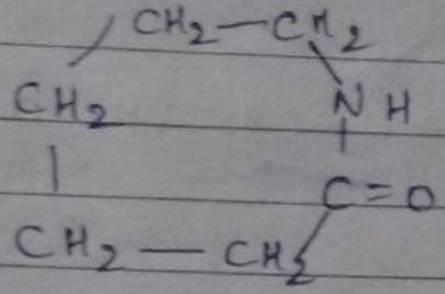


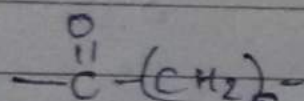
1.3)

Monomer	Repeating unit	Polymer
a) $CH_2=CH-C(=O)-O-CH_2-CH_3$	$-[CH_2-CH(C(=O)-O-CH_2-CH_3)]-$	poly ethyl acrylate
b) $CH_2=C(CH_3)-C_6H_5$	$-[CH_2-C(CH_3)(C_6H_5)]-$	poly (α-methyl Styrene)
c) $CH_2=C(CH_3)-CH_3$	$-[CH_2-C(CH_3)(CH_3)]-$	poly isobutylene

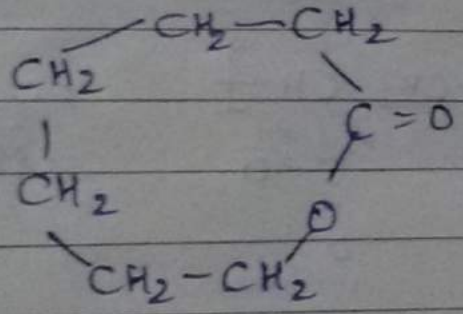
d) 

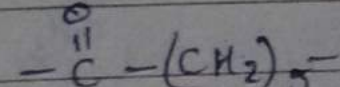
poly (Vinylidene chloride)

e) 

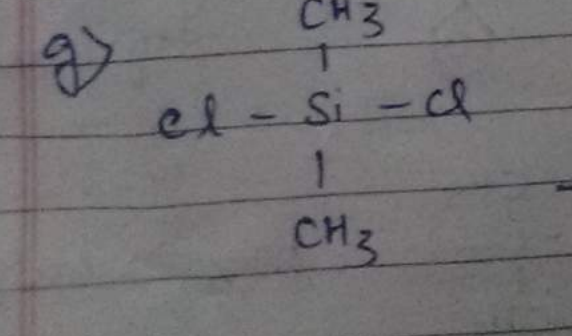


polycapro lactum

f) 

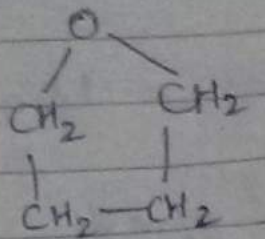


poly caprolactone

g) 

poly (dimethyl Siloxane)

h)



$-O-(CH_2)_4-$

poly(tetra methylene oxide)

1.4)

Polymer

Yes

No

Linear

Branched/ cross linked

a) ✓

b) ✓

c) ✓

d) ✓

e) ✓

f) ✓

g) ✓

h) ✓

i) ✓

j) ✓

k) ✓

1.5)

a) M.W. of repeating unit = 113 g

Total M.W. = 113×10^3 g/mole

b) M.W. of repeating unit = 192 g

Total M.W = 192×10^3 g/mole

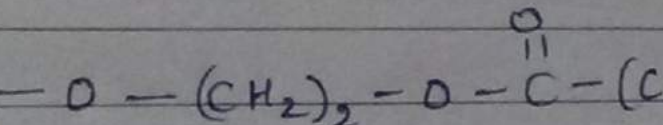
c) M.W. of repeating unit = 118 g

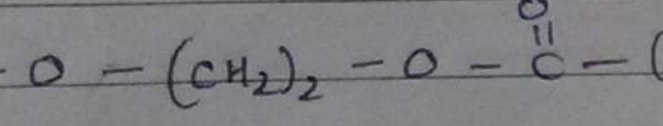
Total M.W. = 118×10^3 g/mole

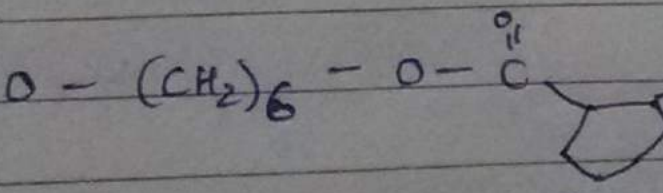
d) M.W. of repeating unit = 254

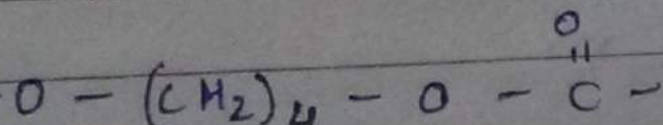
Total M.W. = 254×10^3 g/mole

1.6)

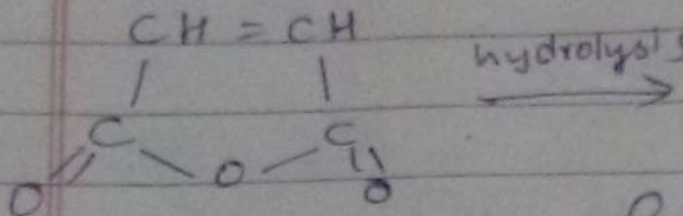
a) 

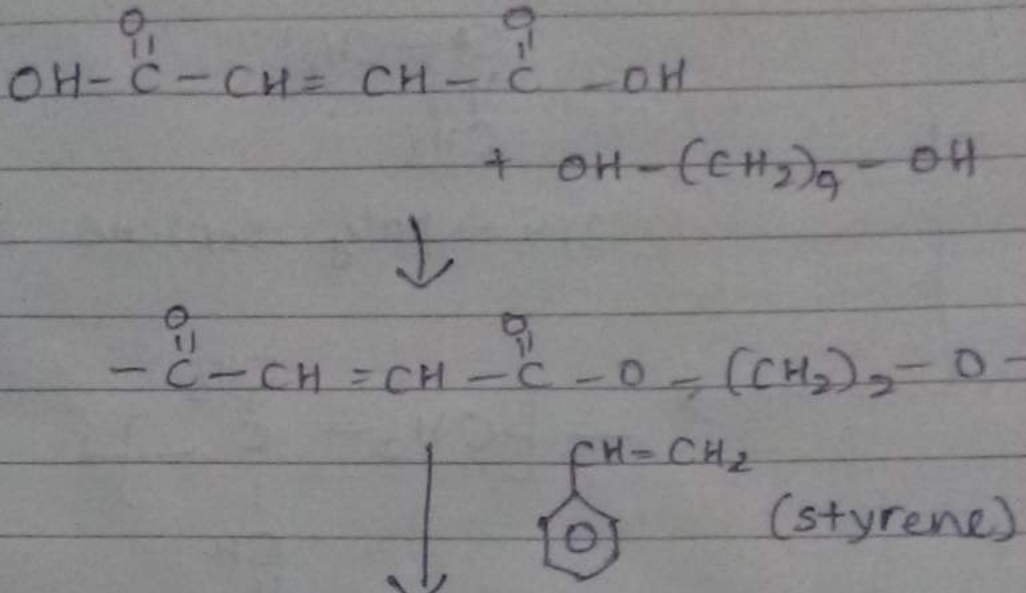
b) 

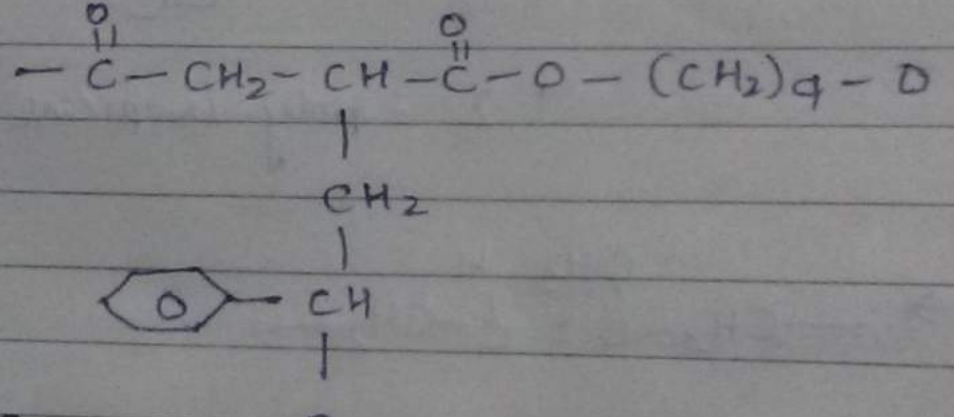
c) 

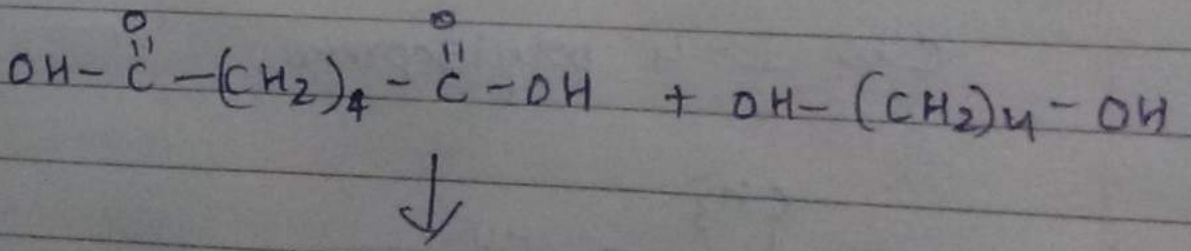
d) 

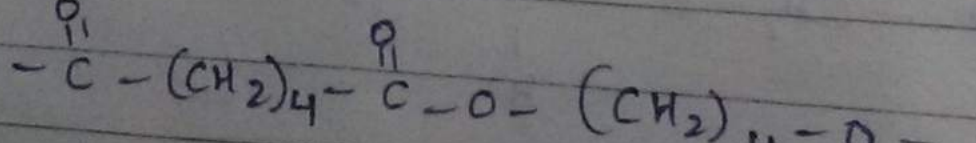
1.7)





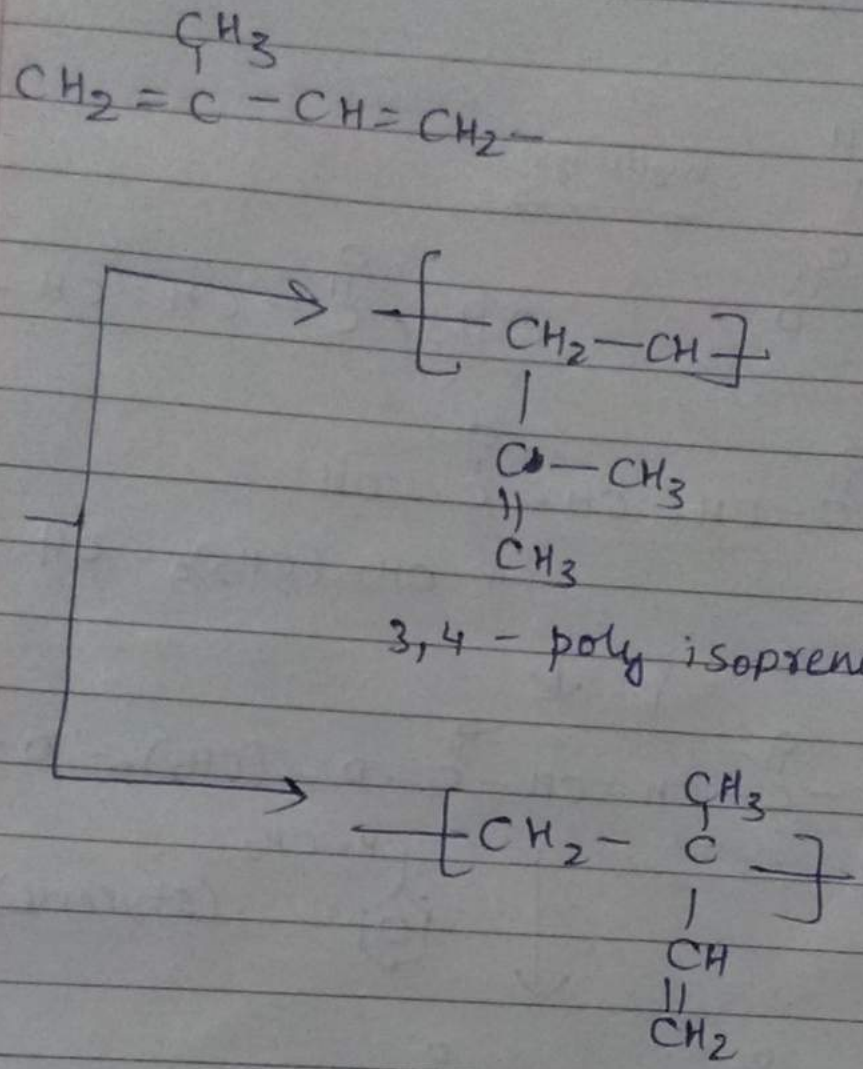






This is a poly ester without a possibility with styrene since there are no residual double bonds.

1.8)



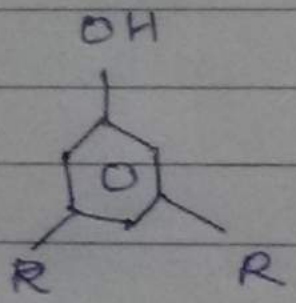
Vulcanisation is permited by the

residual double bond in the main chain

1.9) For being a good adhesive, cross linked structure must be formed by the reactants

$$HCHO \longrightarrow OH-CH_2-OH$$

So to form cross-linked structure with HCHO, phenolic compound must be trifunctional



1.10) Name of Amine — functionality

Di-ethylene triamine	5
Tri ethylene tetramine	6
Tetra-ethylene pentamine	7
Penta ethylene hexamine	8