

U.G. 6th Semester Examination - 2021

CHEMISTRY

Course Code : BCEMDSHC5

Course Title : Green Chemistry

Full Marks : 30

Time : 2 Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

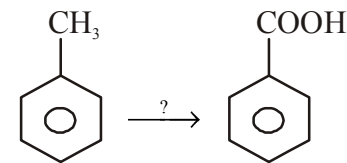
1. Answer any **ten** questions from the following:

1×10=10

- Write the chemical name of carbyl.
- Define E-factor.
- Give an example of salt which acts as a piezoelectric material.
- Rate of hydrolysis of 2,5-dinitrophenyl phosphate dianion is 25 times faster in the presence of cationic surfactant CTAB than in water alone– Explain.
- The rate of oxidation of PhCH₂OH to PhCHO with O₂ gas in presence of catalyst in scCO₂ is

accelerated by the addition of small amount of toluene– why?

- What is the difference between fats and oils?
- What type of solvent is suitable for a reaction with non-polar reactants and polar products?
- Organic compounds are more soluble in D₂O than in H₂O– why?
- Which chemical was responsible for Bhopal disaster?
- What is molecular radiator in MW heating?
- What is susceptors in MW-induced reaction?
- Write chemical structure of DCOI present in Sea-Nine 211 as an active ingredient.
- What do you mean by Hue angle?
- What are the differences between 'thermoplastic' and 'thermosetting' polymers? (any **two**).
- Supply the reagent and condition in the following reaction:

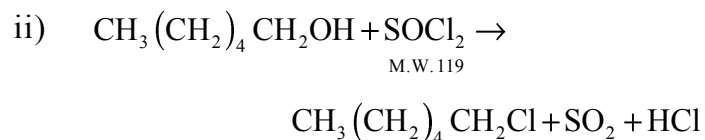
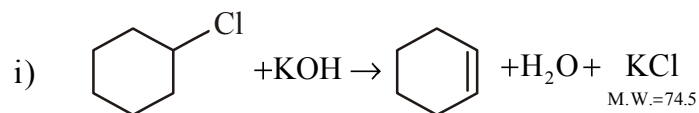


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2. Answer any **five** questions from the following:

2×5=10

- Establish the relationship between Mass Intensity and E-factor.
- Define the term 'Cradle to Cradle'. Give an example where it is applied.
- Calculate the atom-economy (in %) for the following reactions:



- Explain the term 'dielectric loss' in case of MW heating.
- Reaction between cyclopentadiene and methylvinyl ketone shows rate enhancement on changing the solvent from MeOH to water by a factor 28– Explain.
- Why the glycerides having unsaturated fatty acids go rancid faster than the saturated analogue?

g) Give an example of MW assisted Diels-Alder reaction.

h) What are the merits of EIE over CIE in case of interesterification of glycerides?

3. Answer any **two** questions from the following:

5×2=10

- Give the flow chart for the formation of PLA from starch. 2
 - Give a schematic presentation of hydroformylation of $\text{RCH}=\text{CH}_2$ in fluoruous biphasic solvent using suitable catalyst. How fluoruous biphasic solvent works in this reaction? 3
- What are the characteristics of a 'Rightfit pigments'? $2\frac{1}{2}$
 - Give an example of 'on water' reaction with showing necessary reagents and conditions. $2\frac{1}{2}$
- What are the advantages of using Olefin instead of vinyl chloride in 'PO-back-nylon-face' carpet? 2
 - Why ionic liquids (IL) can replace the conventional solvents? 3