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Paper Code: MCHDCE-305
Paper Title: Catalysis & Green Chemistry

Time 2.5 hours **Maximum Marks 60**

Abbreviations Used
CLO- Course Outcome, PLO- Program Outcome, BTL- Bloom Taxonomy Level: BT level 1-Remember; BT leve 2-Understand; BT level 3-Apply; BT level 4-Analyse; BT level 5-Evaluate, BT level 6-Create

Section A

Very Short Type Questions (10x1.5=15 Marks)

Q. No	Question	Marks	BTL	CLO	PLO
1.	Name three green solvent?	2	1	1	1
2.	Name Green starting materials for synthesis?	2	2	2	1
3.	What operating frequency of Microwave reactor?	2	2	3	1
4.	How green chemistry make a reaction of energy efficient?	2	2	4	1
5.	What is frequency of ultrasonicator?	2	1	4	1
6.	How green chemistry help in designing of safer products?	2	2	4	1
7.	What is the main application of zeo-silicate?	2	2	2	1
8.	How green chemistry help in prevention of Chemical waste?	2	2	3	1
9.	What is the critical parameter of carbon dioxide?	2	2	3	1
10.	How green chemistry help in prevention of side-products?	2	2	4	1

Section B

Long Type question (Attempt any two out four) (10x2=20)

Q. No	Question	Marks	BTL	CLO	PLO
1.	Calculate the atom economy of rearrangement reaction, addition reaction, substitution reaction and elimination reaction.	10	6	1	3
2	Explain how designing of manufacturing plants, advance analytical technique and no use of protecting group result in greener products?	10	5	2	3
3.	What is SFE? What are applications of SFE?	10	5	2	3
4	What are the applications of Microwave?	10	6	3	3

PTO

Section C

Short Type questions .(Attempt all questions) (5x5=25)

Q.NO	Questions	Marks	BTL	CLO	PLO
1.	What are the primary industrial processes that use solid acid catalysts? OR What role do solid acid catalysts play in green chemistry and sustainable processes?	4	3	1	2
2.	What are the different types of ion exchange resins? OR What factors influence the ion exchange capacity of a resin?	4	4	2	2
3	What are enantioselective zeolites, and how do they differ from conventional zeolites? OR How does the pore size and geometry of a zeolite influence its enantioselective properties?	4	3	3	2
4	What are pillared clays, and how do they differ from natural clays? OR What are the common methods for synthesizing pillared clays?	4	3	4	2
5	What are the key physical and chemical properties of sulfated zirconia? OR What are the common methods for synthesizing sulfated zirconia	4	4	4	2

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