ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VII SEMESTER B.Sc. HONOURS CHEMISTRY Time: 2Hrs/Week

Code CH 7254(2) Revised Syllabus Under CBCS 2020-21 Marks: 50

Green Chemistry- Practical Syllabus

I.

Course Objective: To train students in the skill of Green Synthesis and Analysis techniques

Course Outcomes:

By the end of the course students will be able to

1. Synthesize nanoparticles using green methods
2. Prepare biodiesel form waste cooking oil
3. Synthesize inorganic complexes using green methods
4. Synthesize benzo pinacol in the presence of sunlight

II. Practical Syllabus

1. Preparation and characterization of nanoparticles of CuO/ ZnO nanoparticles using plant extracts.
2. Preparation of biodiesel from waste cooking oil and characterization (TLC, pH, Solubility, Combustion Test, Density, Viscosity.
3. Benzoin condensation using Thiamine Hydrochloride as a catalyst instead of cyanide.
4. Solvent free, microwave assisted one pot synthesis of phthalocyanine complex of copper (II).
5. Photoreduction of benzophenone to benzo pinacol in the presence of sunlight.
6. Spot tests for qualitative inorganic analysis for cations and anions, and qualitative organic analysis for preliminary test and functional group analysis.

III. Co-Curricular Activities:

Mandatory: (Lab/field training of students by teacher :(lab:10+field:05):

1.
    a. **For Teacher**: Training of students by the teacher in laboratory and field for not less than 15 hours on the field techniques/skills of green methodologies in place of polluting solvents/chemicals

b. **For Students**: Student shall visit a related industry/chemistry laboratory in universities/research organizations/private sector facility and observes the green synthetic

2. methods adopted in the industry. Write their observations and submit a hand written fieldwork/project work report not exceeding 10 pages in the given format to the teacher.
3. Max. Marks for Fieldwork/project work Report: 05.
4. Suggested Format for Fieldwork/project work**:** *Title page, student details, index page, details of place visited, observations, findings, and acknowledgements.*
5. Unit tests (IE).

IV References:

1. Wealth from Waste: A green method to produce biodiesel from waste cooking oil and generation of useful products from waste further generated. Indu Tucker Sidhwaniet al. University of Delhi, Journal of Undergraduate Research and Innovation, Volume 1, Issue 1, February 2015, ISSN: 2395-2334.
2. Sidhwani, Tucker I.; Chowdhury, S. Greener alternatives to Qualitative Analysis for Cations without H2S and other sulfur containing compounds, J. Chem. Educ. 2008, 85, 1099.
3. Sidhwani, Tucker I.; Chowdhury, S. et al., DU Journal of Undergraduate Research and Innovation,2016, Volume 2, Issue 2, 70-79.
4. Dhingra, S., ;Angrish, C. Qualitative organic analysis: An efficient, safer, and economical approach to preliminary tests and functional group analysis. *Journal of Chemical Education*,2011, *88*(5), 649-651.