MANGALORE UNIVERSITY

Department of Industrial Chemistry

MSc INDUSTRIAL CHEMISTRY

ICE509: AGRICULTURE & HEALTH CARE CHEMICALS

UNIT I: **12 hrs**

Fertilisers: Introduction, Essential plant Nutrients, Classification of Essential Nutrients, Primary Nutrients, Secondary Nutrients, Micronutrients, Macronutrients, Classification of Fertilizers- Straight Fertilizers, Compound/Complex Fertilizers, Fertilizer Mixtures, Feed Stock/ Raw materials- Nitrogenous Fertilizers, Phosphatic Fertilizers, Potassic Fertilizers, Manufacture and general properties of Fertilizer products- Intermediates- Ammonia, Nitric Acid, Sulphuric Acid, Phosphoric Acid, Nitrogenous Fertilizers- Ammonium Sulphate, Ammonium Nitrate, Calcium Ammonium Nitrate, Calcium Nitrate, Ammonium Chloride, Urea, Phosphatic Fertilizers, Ground Rock Phosphate, Single Superphosphate, Triple Superphosphate, Potassic Fertilizers- Potassium Chloride (Muriate of Potash), Potassium Sulphate (Sulphate of Potash), Potassium Nitrate, Complex Fertilizers- Ammonium Phosphate Sulphate, Ammonium Phosphates, Mono Ammonium Phosphate (MAP), Di-Ammonium Phosphate (DAP), Nitrophosphates, Urea Ammonium Phosphates, NPK Complex Fertilizers, Fertilizer mixtures-Physical Mixtures, Granulated Mixtures.

UNIT II **10 hrs**

Insecticides: Introduction, classification, Organochlorine insecticides-BHC, DDT, endosulfan, sevin, Insect pheromones, general introduction and applications in integrated pest management.

Repellents: Survey & synthesis of the repellents-N,N-diethyltoluamide, 2-ethyl-1,3-hexanediol,.

Fungicides: Introduction, Inorganic & organic fungicides, Systemic fungicides-types & examples. Herbicides: Introduction, study of sulfonyl ureas, Mechanism of action and toxicities of insecticides, fungicides and herbicides.

UNIT III **10 hrs**

Perfumery: Introduction, Compounds used in perfumery and their classification, methods of preparation and importance of phenyl ethanol, Yara yara, Ionone musk ketone, musk ambrette, musk xylene, phenyl acetic acid and its esters, benzyl acetate, synthetic musks and jasmine. Essential oils: Source, constituents, isolation & uses.

UNIT IV **10 hrs**

Oils, soaps and Detergents: Refining of edible oils, manufacturing of soaps, detergents-

classification-anionic, cationic, non-ionic and amphoteric detergents, detergent builders and additives, liquid soaps. Manufacturing of fatty acids and glycerol, greases from fatty acids, turkey red oil

Food Analysis: Moisture, ash, crude protein, crude fiber, fat, carbohydrate, calcium, potassium, sodium and phosphates, food adulteration-common adulteration in food, contamination of food stuffs, microscopic examination of food for adulterants, pesticide analysis in food products.

References

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2. Quality management:a process improvement approach,Fryman Mark A, Cengage learning, 2002.
3. Quality Control, Paranthaman D, Tata, McGraw Hill,1987.
4. Gupta R. N. Chemical warfare and casuality management 2011
5. Vyas M. N. Safety and hazards management in chemical industries 2013.Atlantic publication.
6. Dikshith T.S.S Safety evaluation of environmental chemicals. New Age International, 1996.
7. Chemical Safety Matters-IUPAC-IPCS, Cambridge univ. Press, 1992.
8. Environmental Chemistry, A.K. Dey, Wiley Eastern.
9. Environmental Chemistry, S.K.Banerji, Prentice Hall India, 1993.
10. Chemistry of Water Treatment, S.D. Faust and O.M. Aly, Butterworths,1983.
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12. Chemistry for Environmental Engineering, Sawyer and McCarty, McGraw Hill, 1978.
13. Environmental Chemistry, I.Williams, John Wiley, 2001
14. Engineering Chemistry by Jain and Jain.
15. Industrail electrochemistry by Peltcher
16. Modern Electrochemistry, Vol I, IIA & IIB(1998) J.O.M. Bockries and A.K.N.Reddy
17. Chemical Engineers Hand Book, 8th Edn., Robert H. Perry, Mc Graw Hill, 1995.
18. Principles of Industrial Chemistry, C. A. Clausen and G. Matts.