

(Industrial Chemistry)

1. (a) Discuss the importance of patents in R & D. 7
 OR
 Discuss the difference between batch versus continuous operation.
- (b) Write a note on "GLP" and "GMP". 7
 OR
 Write a note on safety rules of fire and handling of hazardous chemicals.
2. (a) Write a note on halogenation. Give importance chlorination for preparation of intermediates. 7
 OR
 Discuss sulphonation of Naphthalene, α -Naphthol and β -Naphthol at various concentration of H_2SO_4 and temperature.
- (b) Various methods for preparation of dyes intermediate by nitration. 7
 OR
 Discuss amination by ammonolysis of Sulphonation.
3. (a) Write a note on O-alkylation and N-alkylation. 7
 OR
 Write a brief note on 12 principle of green chemistry.
- (b) Write a note on green catalysts and solvents with suitable examples. 7
 OR
 Discuss Michael and Wurtz reaction on the basis of green chemistry.
4. (a) Discuss various types of distillation in brief. 7
 OR
 Write a note on weedicides and fungicides.
- (b) Discuss various types of filtration. 7
 OR
 Write a note on plant nutrients and plant hormones.

5. Answer the following: (Each carry one mark).

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- (i) Define unit process.
- (ii) What is extraction ?
- (iii) Why grinding is required in industry ?
- (iv) Define agrochemicals.
- (v) Why iodination is reversible ?
- (vi) Bromination of acetanilide at below 10°C will give which isomer as major product ?
- (vii) What is Oleum ?
- (viii) What is Hydroxylation ?
- (ix) What is ionic liquid ?
- (x) What is aqueous phase reaction ?
- (xi) Which major isomer will form if F.C. acetylation of toluene is carried out by CH_3Cl in presence of AlCl_3 ?
- (xii) Define exothermic reaction with one example.
- (xiii) Define unit operation.
- (xiv) Which product will form when acetone react with excess of I_2 in presence of NaOH ?