



DBL-003-2015023

Seat No. _____

B. Sc. (Sem. V) (CBCS) Examination

June - 2022

IC-503 : Heavy & Fine Chemicals

Faculty Code : 003

Subject Code : 2015023

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :**
- (1) Question paper carries total 10 questions.
 - (2) All questions have general option and carry 14 marks each.
 - (3) Answer any 5 questions out of total 10 questions.
 - (4) Draw labelled diagram wherever necessary and assume suitable data.

- 1** (a) Answer the following questions : **4**
- (1) Which catalyst is used in Bosch and Haber process ?
 - (2) 90% ammonia is used in _____ industry.
 - (3) Write formula of triple superphosphate.
 - (4) Ammonium Phosphate is used in fertilizer industry. True or False
- (b) Answer in brief : **2**
Enlist any four uses of ammonia.
- (c) Answer in detail : **3**
Explain in brief ammonium phosphate with diagram.
- (d) Write a note on : **5**
Discuss manufacturing of phosphoric acid by electric arc furnace process.
- 2** (a) Answer the following questions : **4**
- (1) In manufacturing of ammonium nitrate, height of prilling tower is _____ ft.
 - (2) Temperature required for converting yellow P_4 to red P_4 is _____ °C.
 - (3) Synthetic graphite contains Hg. True or False.
 - (4) Ostwald's process is used for the production of _____

- (b) Answer in brief : 2
Draw only diagram of Nelson cell.
- (c) Answer in detail : 3
Write a short note on Mercury cathode cell.
- (d) Write a note on : 5
Describe Bosch and Haber process for manufacturing of ammonia in detail.
- 3** (a) Answer the following questions : 4
 (1) NaCl is also known as _____.
 (2) In fluorine cell, which metal is used as cathode?
 (3) _____ catalyst is used in Suzuki Coupling.
 (Palladium / Zinc)
 (4) Titanium dioxide is also known as _____.
- (b) Answer in brief : 2
Write any four uses of HF.
- (c) Answer in detail : 3
Discuss in brief : Manufacturing of bromine from bittern.
- (d) Write a note on : 5
Explain manufacturing of boric acid with diagram in detail.
- 4** (a) Answer the following questions : 4
 (1) Bittern means _____.
 (2) $\text{Na}_2\text{S}_2\text{O}_3$ is used in photography industry. True or False ?
 (3) Raney Nickel is also called _____.
 (4) Write formula of palladium acetate.
- (b) Answer in brief : 2
Give application of Raney nickel catalyst.
- (c) Answer in detail : 3
Write a brief note on Titanium oxide catalyst.
- (d) Write a note on : 5
Discuss in detail : Titanium based catalyst.
- 5** (a) Answer the following questions : 4
 (1) Give full form of HLV.
 (2) Enlist types of emulsion.
 (3) Silica gel is _____ in nature. (Acidic/Basic)
 (4) Surfactants is also known as Surface active agent.
 True or False

- (b) Answer in brief : 2
Write two characteristics of essential oils.
- (c) Answer in detail : 3
Write a short note on isolates.
- (d) Write a note on : 5
Explain manufacturing of Monosodium glutamate with diagram.
- 6 (a) Answer the following questions : 4
(1) Kieselguhr is Neutral in nature. True or False.
(2) The other name of cinnamal is _____.
(3) Write IUPAC name of vanillin.
(4) Peppermint oil can be extracted from _____ (Menthol/Ethanol).
- (b) Answer in brief : 2
What are food additives ? Enlist its two basic types.
- (c) Answer in detail : 3
Discuss production of citronellol in brief.
- (d) Write a note on : 5
Explain emulsion in detail.
- 7 (a) Answer the following questions : 4
(1) _____ is used as useful polymerization inhibitor.
(2) Which base catalyst is used to manufacture tributyl phosphate ?
(3) Carbon tetrachloride is used as fermentation industry. True or False
(4) Give full form of DMF.
- (b) Answer in brief : 2
Write only diagram manufacturing of triphenyl phosphine.
- (c) Answer in detail : 3
Explain manufacturing dimethyl sulfoxide (DMSO) in brief.
- (d) Write a note on : 5
Explain manufacturing of tetra chloro methane with neat diagram in detail.
- 8 (a) Answer the following questions : 4
(1) Phenyl Magnesium Bromide is required for manufacturing of Triphenyl phosphine. True or False.
(2) Which raw material is required for manufacturing of Chloroform ?

- (3) Give a full form of DMSO.
- (4) What is the molar ratio of NH_3 and Ethylene Oxide for Manufacturing of Amino ethanol ?
- (b) Answer in brief : 2
Write any four properties of methylene chloride.
- (c) Answer in detail : 3
Discuss in brief : Manufacturing of 1,4-dioxane.
- (d) Write a note on : 5
Discuss manufacturing of N-alkylated ethanol amines with schematic diagram.
- 9** (a) Answer the following questions : 4
- (1) Which catalyst is used for manufacturing of Fischer and Tropsch process ?
- (2) _____ raw material is used for manufacturing of Sorbitol. (Dextrose/Ethanol).
- (3) O-Xylene is used for manufacturing of Phthalic anhydride. True or False?
- (4) Sodium methoxide is also known as _____
- (b) Answer in brief : 2
Write any four uses of phenol.
- (c) Answer in detail : 3
Explain manufacturing of 2-butane 1,4-diol in brief.
- (d) Write a note on : 5
Describe manufacturing of sorbitol.
- 10** (a) Answer the following questions : 4
- (1) Glycerin is used as drugs and cosmetics. True or False?
- (2) Sodium ethoxide is also known as _____
- (3) _____ is used as a raw material for manufacturing of PVC.
- (4) Which compound is used as best dyeing agent (Acetone/Phenol) ?
- (b) Answer in brief : 2
Write any four properties of phthalic anhydride.
- (c) Answer in detail : 3
Write a note on lithium aluminium hydride.
- (d) Write a note on : 5
Discuss manufacturing of vinyl acetate in detail.
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