NRJ/KW/17/3192

Bachelor of Science (B.Sc.) Semester—VI (C.B.S.) Examination

ICH—602 : INDUSTRIAL CHEMISTRY (Waste Recycling)

Paper—2

(Industrial Chemistry)

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) All **FIVE** questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

1. (A) Explain the following :

(i) Discrete setting,

(ii) Flocculent setting used with reference to Sedimentation. Describe circular radial flow tank used for Sedimentation. 5

(B) How to eliminate the waste and conversion of waste into useful products with suitable examples ? 5

OR

(C) Explain the needs of waste recycling. 2½

(D) Explain the solid waste disposal. 2½

(E) How to remove the solid contaminants from waste by flocculation method ? 2½

(F) Write a note on "Soil Conditioning". 2½

2. (A) Explain the following :

(i) Biological treatment

(ii) Chemical treatment

in waste treatments. 5

(B) In oil refineries, a large amount of water is used in refinery processes and a big fraction of it comes out as waste after getting polluted by oil, emulsified oil, H_2S, mercaptans, phenols etc. Describe briefly the treatment of refinery waste water (Note : Suspended solid and BOD_5 are 200-400 mg/L and 100-300 mg/L). 5

OR

(C) How to reuse cooling water in power generation plants ? 2½

(D) Explain treatment of waste water in water refinery. 2½

(E) Give the characteristics of industrial waste water from textile industries. 2½

(F) Explain in brief the COD value. 2½

3. (A) Explain the following :

(i) Adsorption

(ii) Evaporation.

How are these methods useful in recovery of materials from wastes ? Explain with suitable examples. 5

(B) Describe different methods for treatment of waste water. 5

OR

(C) Explain electrodialysis with suitable examples. 2½

(D) What is reverse osmosis ? Mention any two important uses of it in recovery of compounds. 2½

(E) Distinguish between distillation and filtration. 2½

(F) Write a note on activated sludge process. 2½

4. (A) Explain the wastes from following industries :

(i) Dyestuff

(ii) Textile

(iii) Soap. 5

(B) What are the characteristics of recovery of waste materials from fertilizer and oil industries ? 5

OR

(C) Write a note on waste of paint industry. 2½

(D) Mention pollutants present in :

(i) Paper

(ii) Thermal power industries. 2½

(E) Give characteristics of waste of sugar industries. Why is BOD of this waste high ? 2½

(F) Explain the waste by product of sugar industry which is used as green fuel. 2½

5. Attempt any **ten** of the following :

(i) What do you understand by the term BOD ?

(ii) Write names of any two agro industrial wastes.

(iii) Give the chemical reagent used for separation of liquid waste.

(iv) Give the function of aerator.

(v) Define screening.

(vi) Name any two processes which affect the DO contents in the water.

(vii) Name any two coagulauts.

(viii) What is filtration ?

(ix) Define electrodialysis.

(x) What is the principle used in removal of colour by activated carbon from waste water ?

(xi) Mention pollutants present in sugar industry.

(xii) Give the characteristics of waste of heavy chemical industry. 10×1=10

NRJ/KW/17/3193

Bachelor of Science (B.Sc.) Semester–VI (C.B.S.) Examination

ICH-604 : POLYMERS

Paper–2

Industrial Chemistry

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) All **FIVE** questions are compulsory and carry equal marks.

(2) Write chemical equations and draw diagrams wherever necessary.

1. (A) Define and explain the following terms :

(i) Plastics

(ii) Elastomers

(iii) Liquid resin

(iv) Shellac

(v) Thermoplastic. 5

(B) Describe addition and condensation polymerization with suitable examples. 5

OR

(C) Explain with an example branched and cross-lined polymers. 2½

(D) What are natural polymers ? How do they differ from synthetic ones ? 2½

(E) Write a short note on suspension polymerization. 2½

(F) Explain initiation and propagation steps in polymerization. 2½

2. (A) Discuss method of production of melamide-formaldehyde resins and mention their important applications. 5

(B) Explain End Group Analysis method used for calculating the number-average molecular weight of polymer. 5

OR

(C) How is phenol-formaldehyde resin obtained ? What are its applications ? 2½

(D) Mention different applications of Epoxy resins. 2½

(E) Give the applications of silicones. 2½

(F) Write short note on molecular weight and molecular weight distribution of polymers. 2½

3. (A) Explain the synthesis and applications of polyesters and Nylon 6,6. 5

(B) Write informative note on polypropylene and SBR. 5

OR

(C) Explain homopolymer and copolymer. 2½

(D) Write preparation and uses of PVC. 2½

(E) Write a short note on polyvinyl acetate. 2½

(F) How is regenerated cellulose synthesized ? Give its applications in textile industries. 2½

4. (A) What do you mean by crystallinity of polymer ? Explain degree of crystallinity. 5

(B) What is vulcanization ? Discuss the process of sulphur vulcanization of rubber. 5

OR

(C) Explain the various factors affecting glass transition temperature. 2½

(D) Discuss in brief optical properties of polymers. 2½

(E) What is the chemical method for determining degradation of polymer ? 2½

(F) Explain compression moulding. 2½

5. Attempt any **ten** questions of the following :

(i) What is cellulose ?

(ii) Write down the structure of typical coordination polymer.

(iii) What is degree of polymerization ?

(iv) What is copolymerization ?

(v) Define the term polydispersity index.

(vi) Write application of polyisoprene.

(vii) What is meant by HDPE and LDPE ?

(viii) Give the different types of cellulosics.

(ix) What is homopolymer ?

(x) What is glassy state of polymers ?

(xi) What is thermofoaming ?

(xii) What is softening point of polymer ? 1×10=10

NRJ/KW/17/3194

Bachelor of Science (B.Sc.) Semester–VI (C.B.S.) Examination

ICH-606 : CLINICAL PHARMACEUTICAL CHEMISTRY

Paper–2

Industrial Chemistry

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Give neat and well labelled diagrams wherever necessary.

1. (A) Explain the significance of drug metabolism in medicinal chemistry. 5

(B) Discuss the method of determination of sugar in serum. 5

OR

(C) Explain the nature of drugs with examples. 2½

(D) How will you detect cholesterol in urine ? 2½

(E) Give the classification of drugs. 2½

(F) Give an account on red cell count. 2½

2. (A) Discuss with examples the disorder of nervous system. 5

(B) What are water borne diseases ? Explain any one of them. 5

OR

(C) Write a note on respiratory diseases and their mode of action. 2½

(D) Discuss disorder of digestive systems. 2½

(E) Explain the various causes of air borne diseases. 2½

(F) What are insect borne diseases ? Explain any one. 2½

3. (A) What are anti-inflammatory agents ? Discuss it with examples. 5

(B) Define haemorrhage. Explain it with examples. 5

OR

(C) Write a note on analgesic agents. 2½

(D) Discuss Cuts and Wounds in short. 2½

(E) How are synthetic analgesics prepared ? 2½

(F) Explain antipyretic agents with example. 2½

4. (A) What is hypoglycemic agent ? Explain its mode of action in diabetes. 5

(B) What are sulphonamides ? Explain various treatments useful for cancer therapy. 5

OR

(C) Explain the role of sulphonyl urea in treatment of diabetes. 2½

(D) Explain chemical structure of insulin. 2½

(E) Write a note on cancer. 2½

(F) Discuss mechanism of action of sulpha drugs. 2½

5. Attempt any **ten** of the following :

(i) Which chemical reagent is used for estimation of Haemoglobin ?

(ii) Give the structure of glucose.

(iii) Give the name of any one common drug.

(iv) What are the main causes of water borne disease ?

(v) What is the main reason of disorder of nervous system ?

(vi) Define respiratory system.

(vii) What is the necessity of first aid ?

(viii) Give the function of antipyretic drugs.

(ix) What is side-effect of anti-inflammatory drug ?

(x) What are sulpha drugs ?

(xi) Give the main causes of cancer.

(xii) Give the structural formula of sulphonyl urea. 1×10=10