NKT/KS/17/5225

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

ICH–602 : INDUSTRIAL CHEMISTRY

(Waste Recycling)

Paper—2

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) Explain the following terms :
   (i) Coagulation
   (ii) Flocculation. 5

   (B) What is Sedimentation ? Draw well labelled diagrams of :
   (i) Rectangular horizontal flow
   (ii) Circular radial flow sedimentation tanks. 5

OR

   (C) Write a note on quantification of domestic waste. 2½

   (D) Explain the incineration. 2½

   (E) Give the procedure for quantification of dissolved oxygen by Winkler method. 2½

   (F) How do you arrive at feasibility of recycling in an industry ? 2½

2. (A) Explain the physico chemical methods of waste water treatment for a typical thermal power station. 5

   (B) Give and explain the differences in industrial and domestic waste water. 5

OR

   (C) COD (Chemical Oxygen Demand) gives a measure of the total oxidizable organic material in the waste water sample. How is COD of waste water sample determined ? 2½

   (D) Explain the reuse of cooling water in power generation plants. 2½

   (E) Write a note on chemical treatment in waste treatment. 2½

   (F) Explain the treatment of water refineries. 2½

3. (A) Adsorption on activated carbon provides a good method for removal and recovery of soluble organics from waste water. Describe a method of adsorption on activated charcoal. 5

   (B) Describe microbial degradation process for waste water treatment. What are its merits and demerits ? 5

OR

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

   (D) What is filtration ? Give the advantages and disadvantages of slow sand gravity filter. 2½

   (E) Write a note on ion exchange process. 2½

   (F) Explain the biological process for the treatment of waste water. 2½

4. (A) Give the characteristics of industrial waste water from textile and fertilizer industries. 5

(B) Explain the recovery of materials from wastes of sugar and oil industries. 5

OR

(C) What are the main pollutants from steel plant wastes ? 2½

(D) Write briefly characteristics of Soap industries. 2½

(E) Explain recoverable materials from slaughter houses. 2½

(F) Work out the economics of recycling of waste in a paper industry. 2½

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

(i) What is fuel palletization ?

(ii) What will not be removed from sedimentation ?

(iii) Define soil conditioning.

(iv) What is screening ?

(v) Give any two functions of Aerators.

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

(vii) What is coagulation ?

(viii) Name any two commonly used coagulants.

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

(x) What are oils and fats ?

(xi) Give any two pollutants present in Dye industry.

(xii) Name the important compounds present in tanneries waste. 1×10=10

NKT/KS/17/5226

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

ICH–604 : POLYMERS

(Industrial Chemistry)

Paper—2

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) Write short notes on :
   (i) Bulk polymerization
   (ii) Suspension polymerization. 5

   (B) Explain initiation, propagation, termination and chain transfer steps in polymerisation. 5

OR

   (C) Differentiate between thermoplastics and thermosetting resins. 2½

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

   (E) Describe addition polymerization with suitable examples. 2½

   (F) Differentiate between linear and branched chain polymers. 2½

2. (A) What are epoxy polymers ? Give their method of preparation with proper reactions. 5

   (B) Describe viscosity method of determining the molecular weight of polymer. 5

OR

   (C) Discuss the preparation of phenol-formaldehyde resins. 2½

   (D) Discuss preparation, properties and applications of neoprene rubber. 2½

   (E) Explain Block and Graft polymers. 2½

   (F) Give the applications of polycarbonates. 2½

3. (A) Explain the synthesis, properties and uses of Regenerated celluloses and polyvinyl chloride. 5

   (B) Write informate notes on Nylon 66 and Polystyrene. 5

OR

   (C) How is HDPE manufactured ? Describe its processes. 2½

   (D) Write preparation and uses of polyvinylacetate. 2½

   (E) How is Teflon prepared ? Give applications of teflon. 2½

   (F) Write a short note on PVA. 2½

4. (A) What is glass transition temperature ? Explain briefly the factors affecting glass transition temperature. 5

(B) Write a short note on moulding. 5

OR

(C) With the help of a schematic diagram show the variation of viscosity with difference in solubility parameters of polymer. 2½

(D) Discuss in brief electrical behaviour of polymers. 2½

(E) What are the different types of degradation of polymers ? 2½

(F) What is moulding of plastics ? Draw schematic diagram for injection moulding. 2½

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

(i) What is Shellac ?

(ii) Write a chemical formula for a repeat unit of cellulose.

(iii) What is degree of polymerization ?

(iv) What is curing process ?

(v) What do you mean by Silicones ?

(vi) Define the term polydispersity index.

(vii) What is SBR ? Mention its repeat unit.

(viii) What are different types of polypropylenes ?

(ix) What is regenerated cellulose ?

(x) Write the formula for calculation of strain of polymer.

(xi) What is compression moulding ?

(xii) What is glassy state of polymers ? 1×10=10

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

ICH–606 : CLINICAL & PHARMACEUTICAL CHEMISTRY

(Industrial Chemistry)

Paper—2

Time : Three Hours] [Maximum Marks : 50

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

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

1. (A) Discuss the determination of sugar in serum. 5

(B) Give the mechanism of drug action with examples. 5

OR

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

(D) Discuss in short detection of diabetes in urine sample. 2½

(E) Give the classification of drugs. 2½

(F) Explain estimation of glucose in urine. 2½

2. (A) Explain in detail diseases of respiratory system. 5

(B) Discuss the disorder of nervous system and what is the treatment on it ? 5

OR

(C) Explain the various causes for water borne diseases. 2½

(D) Write a note on disorder of digestive systems. 2½

(E) What are Insect borne diseases ? Explain any one. 2½

(F) What are diseases ? Give example of one disease. 2½

3. (A) Discuss in detail antipyretic agents. 5

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

OR

(C) Write a note on analgesics agents. 2½

(D) Write a short note on cuts and wounds. 2½

(E) Write in short on anti-inflammatory drugs with examples. 2½

(F) Explain the term “Treatment of shock”. 2½

4. (A) What are sulphonamides ? Explain various treatments useful in cancer therapy. 5

(B) Give the types of diabetes. Discuss any one type with examples. 5

OR

(C) Write note on spread of cancer. 2½

(D) Explain chemical structure of insulin. 2½

(E) Write a note on different types of cancer. 2½

(F) Give application of hypoglycemic agents. 2½

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

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

(ii) What is sugar ?

(iii) Give the names of any common drugs.

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

(v) Define respiratory system.

(vi) Write the names of air borne diseases.

(vii) What are side effect of using morphine ?

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

(ix) Give the chemical structure of sulphaguinadine.

(x) What is chemotherapy ?

(xi) Give the structural formula of sulphonyl urea.

(xii) What are sulpha drugs ? 1×10=10