KNT/KW/16/5225

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

ICH–602 : 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) Explain removal of solid waste from waste water by chemical treatment.   5

(B) Explain the terms :

(i)   Discrete settling, and

(ii) Flocculent settling

used with reference to Sedimentation. Describe circular radial flow tank used for sedimentation.

5

OR

(C) Write a note on Fuel Palletization.   2½

(D) Why is soil conditioning necessary in agriculture ?   2½

(E) Give the procedure for quantification of Dissolved Oxygen (D.O.) by Iodometric method. 2½

(F) Explain the separation of liquid waste.   2½

2. (A) Draw flow diagram of a water treatment plant. What is the purpose of chlorination ? Discuss chlorination using :

(i)   Free Chlorination, and

(ii) Bleaching powder.   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 BODs are 200–400 m/L and 100–300 mg/L).   5

OR

(C) Differentiate between "Anaerobic" and "Aerobic" treatment process.   2½

(D) Write a note on reuse of coaling water.   2½

(E) What is the necessity of water management in an Industry ?   2½

(F) Explain the physical and biological treatment.   2½

3. (A) Explain the terms :
   (i) Ion exchange process, and
   (ii) Reverse osmosis.
   How are these methods useful in recovery of materials from effluents ? Give suitable examples.
   5

   (B) Describe Activated Sludge process for biological treatment. 5

OR

   (C) Draw a sketch of Trickling filters. 2½
   (D) What is Filtration ? What are the objects of filtration ? 2½
   (E) Describe in brief flash evaporation process for water recovery. 2½
   (F) Write a note on anaerobic microbial degradation. 2½

4. (A) Write notes on recovery of materials from :
   (i) Fermentation (distilleries), and
   (ii) Electroplating wastes. 5

   (B) Describe in detail the processes used for treatment of wastes from Steel Plants. 5

OR

   (C) Work out the economics of recycling of waste in a thermal power station. 2½
   (D) Explain recoverable materials from slaughter houses. 2½
   (E) The spent pickling of tannery waste contains chromium salts. How will you recover chromium from this waste ? 2½
   (F) Write brief characteristics of Dye Industries. 2½

5. Attempt any **TEN** of the following :
   (i) Give any two solid waste disposal.
   (ii) Define Incineration.
   (iii) Mention any two organic soil conditioner.
   (iv) What do you mean by BODs ?
   (v) Give any two functions of Aerators.
   (vi) What is meant by chemical treatment ?
   (vii) Explain, why a portion of activated sludge is recycled to aeration tank and rest is wasted.
   (viii) What is Electrodialysis ?
   (ix) What are the chemicals which can be removed by ion-exchange process from waste water ?
   (x) Give the characteristic of waste of heavy chemical industry.
   (xi) Give any two pollutants present in Sugar Industry.
   (xii) What are the characteristics of Textile Industries ? $1 \times 10 = 10$

NVM—5450

KNT/KW/16/5226

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

ICH-604 : INDUSTRIAL CHEMISTRY ((Polymers)

Optional 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 and

(ii) Suspension polymerization. 5

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

OR

(C) Describe addition polymerization with suitable examples. 2½

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

(E) How will you differentiate silk from polystyrene ? 2½

(F) Explain the terms :

(i) Elastomers and

(ii) Fibres. 2½

2. (A) What are Amino resins and Epoxy resins ? Write their important industrial applications. 5

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

OR

(C) Write the preparation of phenol-formaldehyde resin. 2½

(D) Write applications of polycarbonates and silicones. 2½

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

(F) How is M-F resin prepared ? Give its applications. 2½

3. (A) Explain the synthesis and applications of the following :—

    (i) Teflon and

    (ii) Polystyrene.   5

  (B) Write informate notes on the following :—

    (i) Regenerated celluloses and

    (ii) Polyamides.   5

OR

  (C) Explain homopolymer and copolymer.   2½

  (D) Mention different applications of ABS.   2½

  (E) Write preparation and uses of polyvinylchloride.   2½

  (F) How is polyethylene terephthalate prepared ? Give its industrial applications.   2½

4. (A) Discuss in brief the factors affecting crystallinity of polymer.   5

  (B) Write a short note on moulding.   5

OR

  (C) Write a note on thermal degradation of polymers.   2½

  (D) With the help of schematic diagram show the variation of viscosity with difference in solubility parameters of polymers.   2½

  (E) Discuss in brief optical properties of polymer.   2½

  (F) Write a note on vulcanization of elastomers.   2½

5. Attempt any **TEN** questions out of the following :—

  (i) What is shellac ?

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

  (iii) Give any two examples of natural polymers.

  (iv) What is curing process ?

  (v) Explain graft polymers.

  (vi) What is polydispersity index ?

  (vii) What is meant by HDPE and LDPE ?

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

  (ix) Give the different types of cellulosics.

  (x) What is thermofoaming ?

  (xi) What is softening point of polymer ?

  (xii) What is glassy state of polymers ? $1 \times 10 = 10$

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

ICH-606 : INDUSTRIAL CHEMISTRY (Clinical & Pharmaceutical Chemistry)

Optional Paper–2

Time : Three Hours]   [Maximum Marks : 50

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

(2) Draw diagrams wherever necessary.

1. (A) What is drug ? Discuss the nomenclature of drugs. Explain the drug metabolism.   5

(B) Write notes on following :

(i)   Estimation of haemoglobin, and

(ii) Estimation of sugar in urine.   5

OR

(C) How will you differentiate pharmaceutical and clinical chemistry ?   2½

(D) What are the different sources of drugs ? Give its mechanism.   2½

(E) Define clinical chemistry. Explain its importance.   2½

(F) What are the causes of high level and low level sugar in serum ?   2½

2. (A) Give the various causes of insect borne diseases. Explain their prevention.   5

(B) Explain air borne diseases. What are their consequences ?   5

OR

(C) Write a note on disorder of digestive system.   2½

(D) Explain various causes of water borne diseases.   2½

(E) Explain the disorder of nervous system. What are their side effects on human health ?   2½

(F) What are different types of diseases of respiratory system ? Explain any one in detail.   2½

3. (A) What are antipyretic drugs ? Explain its mode of action and importance.   5

(B) What is first aid ? Explain basic first aid treatment of shock and haemorrhage.   5

OR

(C) Explain the general synthetic anaesthetic agents.   2½

(D) Explain first aid treatment of cuts and wounds.   2½

(E) Discuss the mode of action of morphine.   2½

(F) Write a note on anti-inflammatory drug.   2½

4. (A) What are sulpha drugs ? How are sulpha drugs classified on the basis of their action ? 5

   (B) Define diabetics. How to control diabetics naturally ? 5

OR

   (C) Explain the role of biquanides in treatment of diabetics. 2½

   (D) Write a note on sulphonamides. 2½

   (E) Explain oral hypoglycaemic agent. 2½

   (F) Discuss the common causes of cancer. 2½

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

   (i) Give any two names of common drug.

   (ii) How many organs are involved in drug metabolism ?

   (iii) Which is the chemical reagent used for detection of diabetics ?

   (iv) Give the names of air borne diseases.

   (v) What is the main reason for insect borne diseases ?

   (vi) Define respiratory diseases.

   (vii) What is meant by local anaesthetic agent ?

   (viii) Give any two first aid treatment of burns.

   (ix) Give the side effect of anti-inflammatory drug.

   (x) Write the structural formula of sulphonyl urea.

   (xi) What is the role of sulphonamide drugs in human physiology?

   (xii) Give the chemical name of insulin. $1 \times 10 = 10$

NVM—5452