Scheme – I

Sample Question Paper

Programme Name : Diploma in Textile Technology

Programme Code : TC

Semester : Third

22362

Course Title : Industrial Chemistry

Marks : 70 **Time: 3 Hrs.**

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1) Attempt any FIVE of the following. **10 Marks**

a) Define the term ‘ hardness of water’
b) Define the term ‘calorific value’ of fuel.
c) Draw the chemical structure of :
   1) Ammonium sulphate 2) Sodium carbonate.
d) Define the term ‘saponification value’ of oil.
e) List the chemical properties of soaps.
f) Define the term ‘volumetric analysis’.
g) Define the term ‘Coordination number’

Q.2) Attempt any THREE of the following. **12 Marks**

a) Distinguish between Scale and Sludge.
b) Select the characteristics of fuel while using it for boiler feed purpose.
c) Explain the following chemical properties of sulphuric acid with relevant chemical reactions. 1) Neutralization 2) Reaction with Zn .
d) Describe foaming property of soap with labeled diagram.

Q.3) Attempt any THREE of the following. **12 Marks**

a) Describe the following types of titration with relevant examples
   1) Acid base titration
   2) Precipitation titration.
b) Explain the factors affecting the stability of complex ion and coordination compounds
c) Differentiate between primary and secondary standards with relevant examples.
d) Two fabric samples A &B are supplied to test the wetting property. Fabric sample A does not undergo wetting while sample B undergo wetting within no time. Suggest the method to improve wetting property of sample A. Predict the reason of better wetting property of sample B .

Q.4) Attempt any THREE of the following. 12 Marks

a) Classify the fuels based on their physical state with relevant examples

b) Constant Burette reading by an expert is 10.5ml.Observed burette reading for the same titration is 10.8 ml. Determine accuracy and precision in the performed titration.

c) A sample of fuel contain C = 60% O = 33% H = 6% S = 0.5% N = 0.3% & Ash =0.3% .Calculate the Higher Calorific Value and Lower Calorific Value of fuel.

d) A water sample contains dissolved salts of Calcium. Suggest the procedure for determining the dissolved calcium salts in water.

e) Describe the role of sodium hexa metaphosphate as a water softener.

Q.5) Attempt any TWO of the following. 12 Marks

a) Show the reactions indicating ion exchange occurring in cationic exchanger and anionic exchanger.

b) Complete following chemical reactions

1. Na_2CO_3 + HCl $\longrightarrow$
2. $H_2O_{2\,(aq)}$ + 2e - $\longrightarrow$
3. $H_2O_{2\,(aq)}$ + $2H^+$ + 2e - $\longrightarrow$

c) Suggest the procedure to determine the purity of acetic acid using following chemicals :1) Oxalic acid 2) Caustic 3) Phenolphthalein

Q.6) Attempt any TWO of the following. 12 Marks

a) Choose relevant chemicals along with their formulae for following wet process

i. Scouring ii. Mercerizing iii. Bleaching.

b) Select the type of titration required for determination of sap value of oil. Describe the procedure of determining saponification value of castor oil.

c) A sample of water contains the following impurities in mg/lit

$Ca(HCO_3)_2$= 4.86 mol.wt =162

$Mg(HCO_3)_2$= 5.8 mol.wt =146

$CaSO_4$ = 6.80 mol.wt =136

$CaCl_2$ = 3.14 mol.wt =111

KCl =10.0 mol.wt =75

$MgSO_4$ = 8.40 mol.wt =120

Calculate the temporary & permanent hardness of water.

Scheme – I

Sample Test Paper - I

Programme Name : Diploma in Textile Technology

Programme Code : TC

Semester : Third

22362

Course Title : Industrial Chemistry

Marks : 20 **Time: 1 Hour**

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR. **08 Marks**

a) List the water quality parameters.

b) Draw a structures of (i) sodium hydrosulphite and (ii) hydrogen peroxide.

c) Define fuel with relevant example.

d) Define the term 'reverse osmosis'.

e) Define' Higher Calorific value' and 'Lower Calorific Value'.

f) State the role of H_2O_2 in textile wet process.

Q.2 Attempt any THREE. **12 Marks**

a) A water sample contains following calcium and magnesium salts. Suggest the method of removing these salts from water.

1) $CaSO_4$ 2) $MgSO_4$ 3) $Ca(HCO_3)_2$ 4) $Mg(HCO_3)_2$ 5) $CaCl_2$

b) Compare solid fuel and liquid fuel.

c) Explain chemical properties of following chemicals.

1) Sulphuric acid 2) Hydrochloric acid

d) A sample of water contains the following impurities in mg/lit

$Ca(HCO_3)_2$=15 mol.wt =162

$Mg(HCO_3)_2$= 10 mol.wt =146

$CaSO_4$ = 10 mol.wt =136

$MgSO_4$ = 12 mol.wt =120

NaCl= 14 mol.wt =58.5

Calculate the temporary & permanent hardness of water.

Scheme – I

Sample Test Paper - II

Programme Name : Diploma in Textile Technology
Programme Code : TC
Semester : Third
Course Title : Industrial Chemistry
Marks : 20

22362

Time: 1 Hour

Instructions:
(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR. **08 Marks**

a) Define co ordination compound with example
b) List the different types of titration.
c) Draw the structure of sodium salt of EDTA
d) Define the term 'iodine value' of oil.
e) Define the terms fat and oil.

Q.2 Attempt any THREE. **12Marks**

a) Describe the process of hydrogenation of oils. Name oils which can be hydrogenated
b) Explain the following properties of soap 1) Soap solution as a colloidal electrolyte 2) Wetting agent.
c) Differentiate between Accuracy and Precision with relevant example
d) Explain the uses of coordinating compounds.