22362

22223

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

(8) Abbreviations used convey usual meaning A.W., H= 1, C = 12, 'O' = 16, K = 39

Marks

1. Attempt any FIVE of the following: **10**

a) Distinguish : Temporary and permanent hardness of water.

b) Name suspended and dissolved 'impurities' in water.

c) Explain importance of anti-content in a fuel.

d) State commercial application of ammonium sulphate.

e) Define :

i) Surface-tension

ii) Interfacial-tension

f) State general precaution to be taken during titration.

g) i) Define sequestering agents

ii) Give two examples

P.T.O.

Marks

2. Attempt any THREE of the following: **12**

a) Explain the terms :

i) B.O.D.

ii) C.O.D. of water

b) Compare liquid and gaseous fuels.

c) Draw a labelled diagram and describe foaming properties of soap.

d) Explain the classifications of testing methods used for chemicals with suitable example.

3. Attempt any THREE of the following: **12**

a) i) Write relationship between p.p.m. and g/lit.

ii) Explain reactions involved in regeneration of anion and cation-exchange resins. Where are they used?

b) i) Write reaction showing action of dilute hydrochloric acid on calcium oxychloride. Write its significance.

ii) Write action of dilute sodium hydroxide on zinc. Name the product formed.

c) i) Define a detergent.

ii) Outline a method to determine wetting characteristic of a detergent for a fabric.

d) Differentiate between : accuracy and precision.

Marks

4. Attempt any THREE of the following: **12**

a) Draw a labelled diagram and outline a method to determine moisture content of a fuel.

b) Write structural formula for:

i) Sodium, carbonate

ii) Sodium hydrosulphite

iii) Caustic soda

iv) Hydrogen peroxide

c) Compare water and alkali-hydrolysis of a oil.

d) Giving an example, describe titration by precipitation method. Write the reaction involved.

e) Explain Werner's theory.

5. Attempt any TWO of the following: **12**

a) Explain the classification of fuels and suggest characteristics of good fuel.

b) i) Define Iodine Value (I.V.) of an oil.

ii) Write the reactions involved and stepwise procedure to determine it.

c) i) Define complex ion.

ii) Explain factors affecting stability of complex ions.

6. Attempt any TWO of the following: **12**

a) With a diagram, explain

i) Scale

ii) Sludge-formation in boilers.

b) i) Define

1) Desizing

2) Scouring

ii) Select relevant chemicals and explain their role in above process.

c) i) Describe stepwise procedure to conduct redox titration.

ii) Name the type of indicator (if used) and specific 'use' of the method.