

22362

11920

3 Hours / 70 Marks

Seat No.

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- 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) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Answer any FIVE of the following:

10

- a) List physical and chemical impurities present in river water.
- b) Classify fuels based on their physical state. Give example of each.
- c) Write chemical formulae of following inorganic compounds -
 - (i) Sodium hydrosulphite
 - (ii) Sodium carbonate
 - (iii) Ammonium sulphate
 - (iv) Sodium sulphate
- d) Define the term 'Iodine value'.
- e) Define the term 'Surface tensions'. Write mathematical expression for determining surface tension.
- f) List types of titration. State single use of it in textile industry.
- g) Identify primary and secondary valencies in $K_4Fe(CN)_6$ molecule. Indicate it with a suitable diagram.

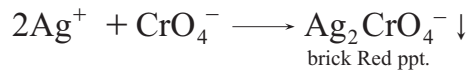
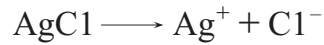
P.T.O.

- 2. Answer any THREE of the following: 12**
- Describe the procedure of determining dissolved oxygen in water. State the formulae for the same.
 - Distinguish between higher and lower calorific value of a fuel.
 - Identify the textile w.e.f processes in which NaOH is used. Explain its role in each one.
 - Differentiate between surface tension and interfacial tension drawing diagram.
- 3. Answer any THREE of the following: 12**
- Classify the techniques of testing chemicals.
 - Explain the factors affecting on stability of complex ions.
 - Explain following terms with their mathematical expressions
 - Accuracy
 - Precision
 - Write representative structure of a triglyceride. Explain hydrogenation of an oil stating process parameters.
- 4. Answer any THREE of the following: 12**
- Explain characteristics of a 'Good fuel'.
 - Distinguish between primary standard and secondary standard. Give examples.
 - 2 gram of fuel sample was taken for finding ash content. Residue left after complete combustion was 0.2 gram. Determine ash content of sample.
 - EDTA is used as chelating agent in determining hardness of water. End point of titration is blue to colourless, when Eriochrome Black T indicator is used. Predict the reason.
 - Explain the postulates of Werner's co-ordination theory with hexaammonium cobalt chloride.

5. Answer any TWO of the following:

12

- a) Consider the following reaction and identify the type of titration carried. Describe procedure for the same.



- b) Observe following sketch and identify the method of water softening. Describe the method process

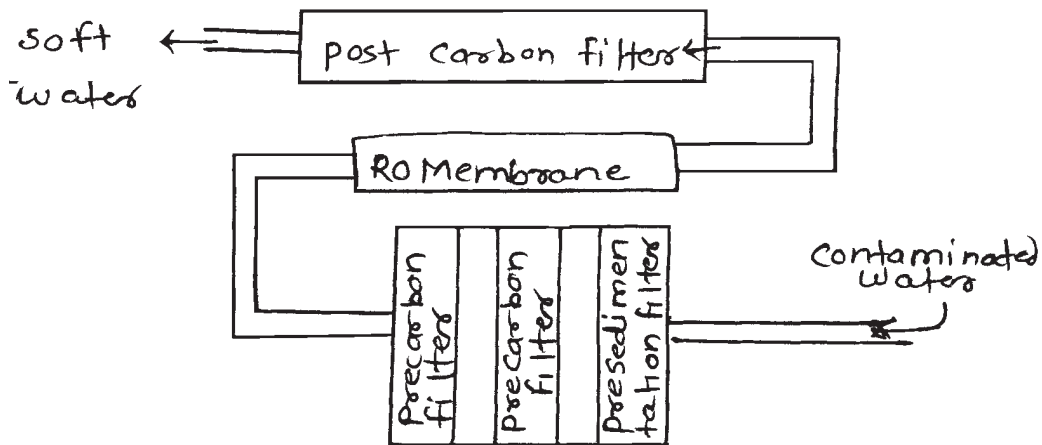
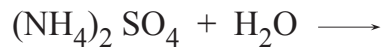
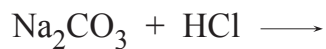


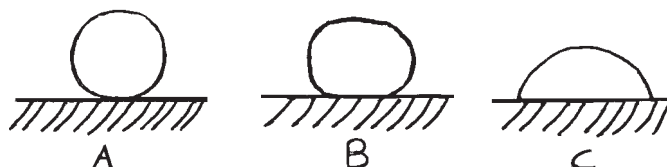
Fig. No. 1

- c) Complete and write balanced equation for



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

- a) (i) Differentiate between temporary and permanent hardness of water
- (ii) Explain formation of scale and sludge in boilers. State their effect.
- b) Consider following Figure and identify species which undergo better wetting. Explain the reason on the basis of wetting angle.

**Fig. No. 2**

- c) Bleaching of cotton fibre is carried using universal bleaching agent. Identify this reagent and reaction conditions at which bleaching is carried. Give the reason for naming the reagent as universal bleaching agent.

OR

Explain chemical properties and uses of sulphuric acid.
