1. (a) What is catalytic cracking? Give flow diagram of fluidized bed catalytic cracking.
   (b) Write a note on activated charcoal.
   (c) Describe the chemical constitution of coal. Give uses of coke.

   OR

   (a) Explain fractional distillation process of crude–oil with flow diagram.
   (b) Write a note on nitro–cellulose, cellobiose and celluloid.
   (c) Discuss isomerism with illustration.

2. (a) Explain calorific value of coals.
   (b) Write note on Glycerine.
   (c) Write note on manufacture of starch.

   OR

   (a) Write a note on denatured alcohol.
   (b) What is primary solid fuel? Explain origin and formation of coal.
   (c) Give classification of fuels.

3. (a) What are silicates? Discuss the structure of silicates.
   (b) Explain: (1) Roasting.
        (2) Calcination
   (c) Write a difference between graphite and diamond.

   OR

   (a) Give brief account of clays.
   (b) Name different methods for concentrating the ore. Give a brief account of any one of them.
   (c) Explain: Physico–chemical principles of the extraction of metal from sulphide ore.
4.  (a) Write a note on reduction of metals.
    (b) Draw and explain carbon cycle.
    (c) Write a note on technology of roasting.

    OR

    (a) Write a note on different types of furnaces.
    (b) Give a brief account of nitrogen cycle.
    (c) Write a note on “Noise pollution”.

5.  Answer any **three** of the following:
    (1) Give a brief account of pesticide pollution.
    (2) Give a brief account of sewage analysis.
    (3) Write a note on radio-active pollutants.