Answer ALL questions 3 HOURS

1. Using chemical equations , describe the industrial manufacture and uses of the following
2. Soda ash (4 marks )
3. Caustic soda ( 3 marks )
4. Bleaching powder
5. Aluminum metal ( 4.5 marks )

 2 a) outline the cement manufacturing process (3.5 marks)

 b) List the principle manufacturing steps in pesticide manufacturing (4marks)

 c) Write the structure and state one use of the following pesticides

1. Chlorophenoxy acid (2marks )
2. Baygon (2 marks )
3. Lindane ( 2 marks )
4. Aldrin ( 2 marks )
5. Parathion ( 2 marks )

3 a) state the four properties of high quality desirable oil (4 marks)

 b) Give one use of each of the following fuels (3 marks)

 i) Gasoline

 ii) Kerosene

 iii) Fuel oil

 c) Classify the following fuels by numbers 1-5 and color. Kerosene, residual oil, very light residual oil, light residual oil, distillate (5 marks)

 d) Name ant three areas in Kenya where deposits of oil have been discovered (3 marks)

 e) Briefly explain how the secondary and tertiary enhanced oil recovery works (2.5 marks)

4 a) outline the unit operations in pharmaceutical manufacturing (5 marks)

 b) Outline the steps and conditions necessary for the industrial production of

i) Sulphuric acid (3 marks)

ii) Nitric acid (3 marks)

 c) Write brief notes on the following

i) Vulcanization of rubber (2 marks)

ii) Industrial manufacture of ethanol (2 marks)

iii) Wood chemicals (2.5 marks)