NOTE: Please answer five questions only

Q1/ A- Explain the raw ceramic raw material Illite - clay, including:
   1- Properties of illite clay.
   2- Sketch the Crystal Structure of this type of clay.

B- Classify the Cement Admixture and discussion the advantages of two kinds of them? (20 marks)

Q2/ A- Explain the DTA( different thermal analyzer ), including:
   1- Sketch the apparatus.
   2- The mechanism of identification of raw clay (kaolinite).

B- Explain the Fineness of cement particles and the effect of the size on the properties of cement mix? (20 marks)

Q3- A- Describe how the earth soil used for production of building bricks mixed by using pugging (pug mill)? Sketch this mixed?

B – Differentiate between light weight concrete and High density concrete? (20 marks)

Q4/ A- A tunnel dryer is used to dry 5000kg/hr wet building bricks (Mₘ). The quantity of added water is1000 kg/hr . the hot air (Mₐ) intersthe preheater at (tₒ) with Sp humidity (Xₒ) of 0.0139 kg.H₂O/kg dry air and exits the dryer at (t₂) with (X₂) with relative humidity of 80% and Ps of 35.66 torrs. If the total pressure (Pₒ) is 760 torrs, find the quantity of air (Ma) required for this drying process and the quantity of dried bricks (Mₐ ) ?

(20 marks)

Q5/ A- Differentiate between Batch Furnace and Continuous Furnace used for firing process of ordinary building bricks and sketch these Furnaces?

B- Discusse how the Particle shape and surface texture influence the properties of fresh concrete? Give examples for this?

(20 marks)

Q6/ A- Explain the wet process for production of Portland cement and sketch the flow- sheet of this type of the process.?

B- Define the Workability of concrete and the Factors affecting workability?

(20 marks)

----------------GOOD LUCK----------------