

Section-4

Ans 1 Puzzolana :- It is finely ground siliceous material which by itself does not possess any cementing property but in presence of water it reacts with calcium hydroxide i.e., lime at normal conditions and form compound of low solubility having cementation properties.

Types of Puzzolana :- It occurs in two forms

* Natural Puzzolana :

- (i) It occurs as natural material as volcanic tuffs, pumicite, diatomaceous earth, shales
- (ii) Natural clay and shales before used are required to be calcined at about 425°C to 1100°C to make them active puzzolana.

* Artificial Puzzolana :

- (i) It is produced as by products for example fly ash, slag, surkhi etc.

Puzzolanic Materials : These are various types of puzzolanic materials used in construction. Some of these are as follow

- 1) Fly Ash :
- (i) Fly ash is finely divided residue produced in large quantities at various thermal power plants in India.
- (ii) It is a puzzolana material which consists of small spheres of glassy phase

- of complex chemical composition.
- (iii) It can be used for:-
- (a) Brick manufacture
 - (b) For concrete mix as replacement of cement.
 - (c) As part replacement of cement in cement concrete.
 - (d) It reduces the amount of air entrained by a given quantity of air entraining agent.

2.) Surkhi :-

- (i) This material was very much used in India for economic construction work.
- (ii) When mixed with cement to react with lime liberated during the setting and hardening of cement it makes, dense, compact and impermeable concrete.

3.) Rice Husk Ash :-

- (i) The combustion of agricultural residues volatilises the organic matter and a silica-rich ash is produced.
- (ii) Rice husk ash when mixed with lime, gives black cement.
- (iii) Rice husk ash cement containing not more than 20% of lime are acid resisting.
- (iv) Concrete produced with rice husk ash has low permeability and no bleeding at all.