

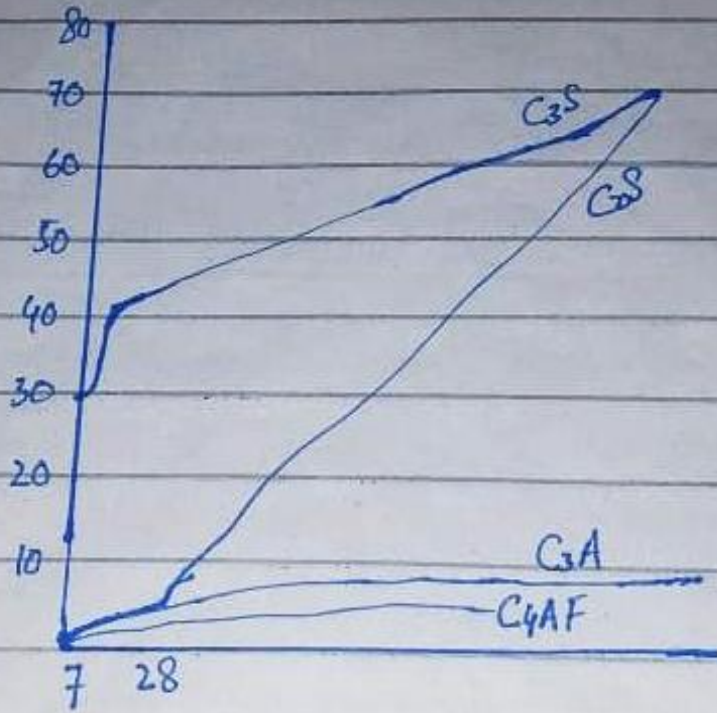
Q no 1.

ANS Calcium Sulfate sources such as gypsum, are intentionally added to portland cement to regulate early hydration reactions to prevent flash setting, improve strength development and reduce drying shrinkage. Sulfate and aluminates are also present in supplementary cementitious materials and admixtures.

Set retarders are also used to increase the pumping time of a cement composition and prevent premature thickening or setting before placement in a subterranean zone to be cemented. Most set retarders act as low-level water reducers and can also be used

Q-NO: 2:

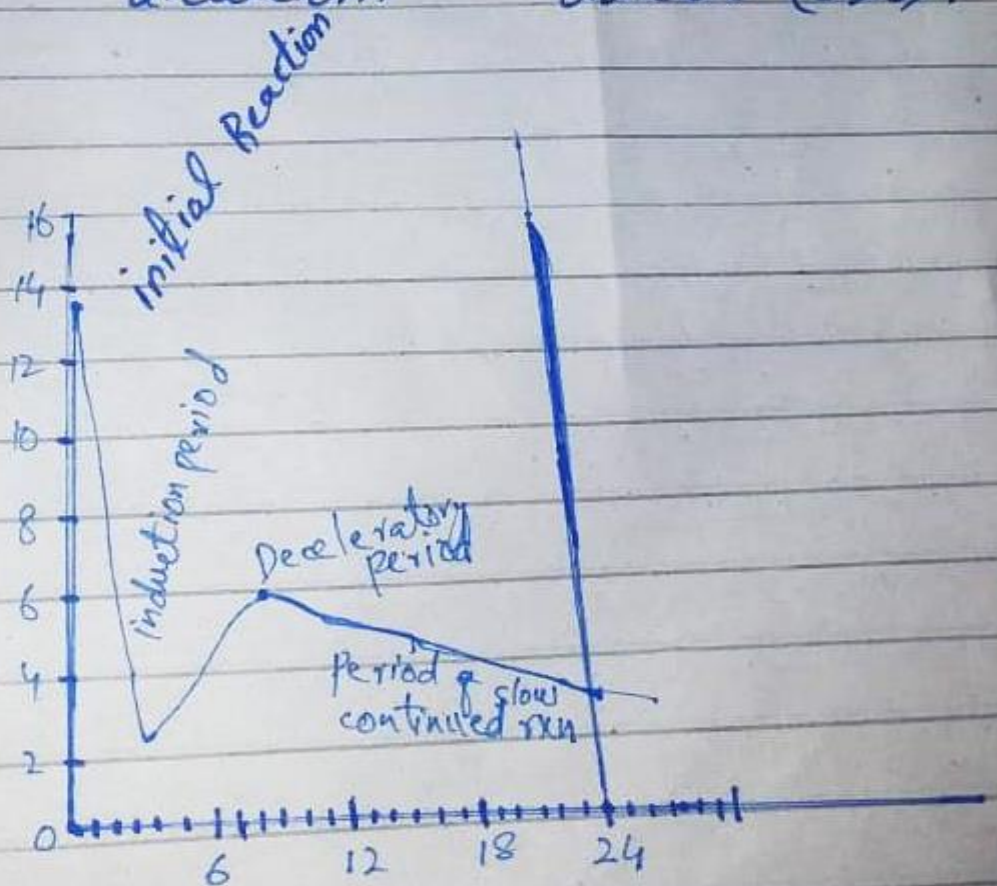
ANS:



Q10 3 :

low heat cement is a special tailored cement which generates low heat of hydration during setting. It is manufactured by modifying the chemical composition of normal portland cement.

This special type of cement is same as that of normal portland cement, with some percentage changes in the chemical composition. This cement contains low percentages 5% of tricalcium aluminate (C₃A) and higher percentage 46% of dicalcium silicate (C₂S).



Q no:3:

Ans: The type develops strength more rapidly than ordinary portland cement. The initial strength is higher, but they equalize at 2-3 months.

Setting time for this type is similar to that of ordinary portland cement. The rate of strength gain occurs due to increase of C_3S compound, and due to finer grinding of the cement clinker. Rate of heat evolution is higher than ordinary portland cement due to the increase in C_3S and C_3A , and due to its higher fineness. Chemical composition and soundness requirements are similar to that of ordinary portland cement.

Q no 4:

Ans

Compaction is the process which expels entrapped air from freshly placed concrete and packs the aggregate particles together so as to increase the density of concrete. It increases significantly the ultimate strength of concrete and enhances the bond with reinforcement.

If concrete is not compact sufficiently then:

- (1) Voids
- (2) heavier rocks will sink
- (3) Reinforcement will not be well covered
- (4) If it will need more for the concrete to flow into voids.

This means: that

- Concrete shrinks when it sets (hardens) and cracks will develop between voids.

If rocks are sunk and fine concrete is on top, the material have different strength along its heights.

Q10 5:

Ans:- Gypsum is a mineral is hydrated calcium sulfate in chemical form. Gypsum plays a very important role in controlling the rate of hardening of the cement. During the cement manufacturing process, upon the cooling of clinker a small amount of gypsum is introduced during the final grinding process.

Gypsum is added to control "the setting of cement." If not added, the cement will set immediately after mixing of water leaving no time for concrete placing. That is why gypsum added is limited to only 5%.

Q.10.6.

Ans:-

A particle shape principally affects the m^3/cm by its affect on water demand and amount of paste required for workability of a given mixture. Also the bond with the cement paste may be weakened due to the accumulation of bleed water under the relatively large surface areas of flat particles aggregate.

The smaller the size of aggregates the higher is the strength of the concrete and less will be its workability. It is so because smaller aggregates consequence less attention of stress that causes due to dissimilar elastic module of paste and aggregates, around particles.

Surface texture affects compressive strength by 44% and flexure strength by 26%. Bond strength of aggregates. The resistance developed to shear the aggregates particles form the

Q no 6

The hardened cement paste is called bond strength of aggregate.

Bleeding in concrete may be considered as the physical migration of water towards the top surface. It is not always favorable as it increases finishing time, produces laitance at the surface, decreases strength near resistance and bond strength and causes poor bonds b/w successive lifts.

to entrain some air into
cement compositions.

Q10 7:-

Ans:- When flat are elongated particles are contained in the coarse aggregate, the quantities of sand, cementitious materials and water must be increased. The porosity of an aggregate may also affect workability of concrete. If the aggregate can absorb a great deal of water, less will be available to provide workability.

The general effects of air entrainment are freeze - thaw resistance along with increase workability decrease strength reduce bleeding and segregation. Air entrained concrete is more resistance to weathering cycles than plain concrete.

Grading of Aggregates
Grading of aggregates have the maximum effect on the workability of concrete. A well graded aggregates have all size.

Q: 7

in required percentages. This helps
in reducing the voids in a given
volume of aggregates.
The less volume of voids makes
the cement paste available for
aggregates surfaces to provide better
lubrication to the aggregates.
With less volume of voids, the
aggregates particles slide past each
other and less compacting effort
is required for proper consolidation
of aggregates. Thus low water
cement ratio is sufficient for
properly graded aggregates.

Q108

ANS:- The fineness of cement affects hydration rate, and in turn, the strength. Increasing fineness causes an increasing rate of hydration high strength and high heat generation. Bleeding can be reduced by increasing fineness.

The size of cement particles directly affects the hydration, setting and hardening, strength and of heat generation. The finer the cement particles are the larger the total surface area is and the bigger the area contacting with water is.

When fineness of cement increases beyond a certain particles size, the particles of cement itself starts acting as lubricants in the concrete. Therefore the particles flow and less effort / work is required for compaction of concrete i.e. The water demand decreases to obtain the same degree of workability.

Q No 8

It was reported that cement fineness and water to cement ratio (W/C) affected the heat of hydration and set times. The initial and final set times of coarser cement were found to be late compared to finer cement. It was concluded that the decreased surface area of coarser cement delayed the rate of hydration.

Q: NO : 9 :

ANS : The type of truck which transports concrete is also important as well as when the ~~concrete~~ concrete is combined. Most concrete trucks are of the mixer that continuously rotates the concrete batch. A more less seen concrete truck is of the dry bulk type which mixes the concrete mix when the truck arrives onsite.