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Ppt

BSIC

Section

'A'

Paper

= concrete technology

Submitted to =

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QUESTION:- NO 1

Flash setting:-

It is the immediate stiffening of cement paste in a few minutes after mixing with water. It is accompanied by large amount of heat generation upon reaction of C₃A with water.

Steps to prevent flash setting

Gypsum is added in cement

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to prevent flash setting
of cement

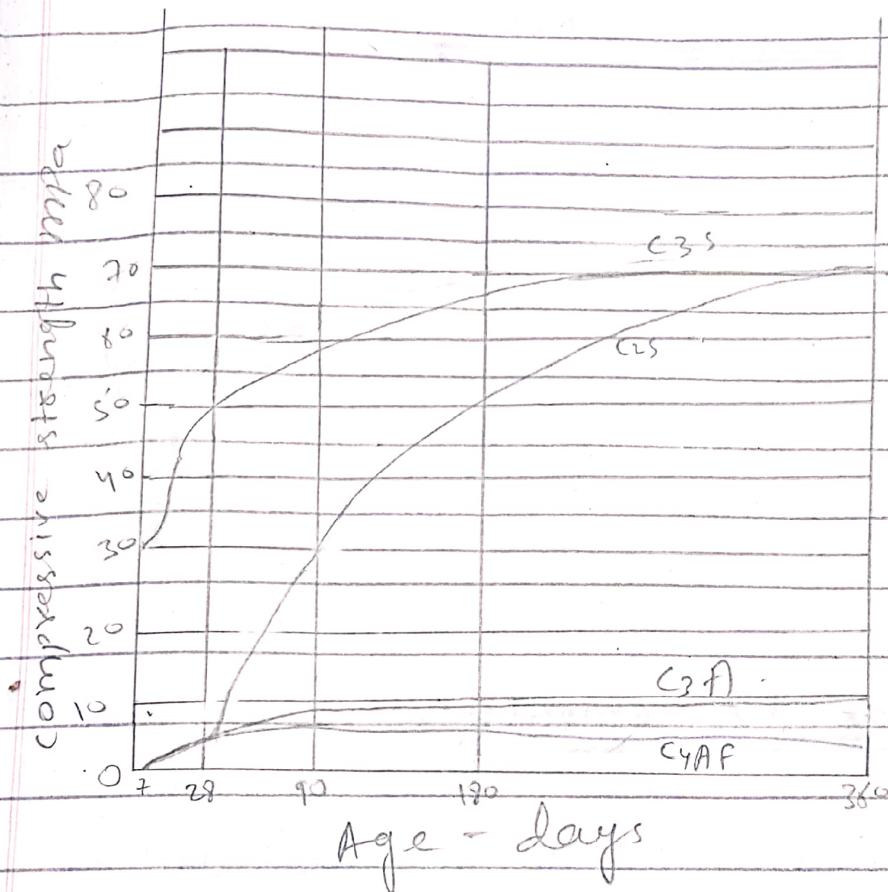
False setting:-

It is a rapid development of rigidity of cement paste without generating of much heat. This rigidity can be overcome & plasticity can be regained by further mixing without addition of water. In this way cement restore its plasticity and set in a normal manner without any loss of strength. It may be due to dehydration of gypsum as a result of contacting hot clinker or due to activation of C₃S by aeration in high humidity.

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QUESTION NO 2

ANSWER:-



Development of strength of pure compounds.

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QUESTION No 3

ANSWER:-

Type III cement:-

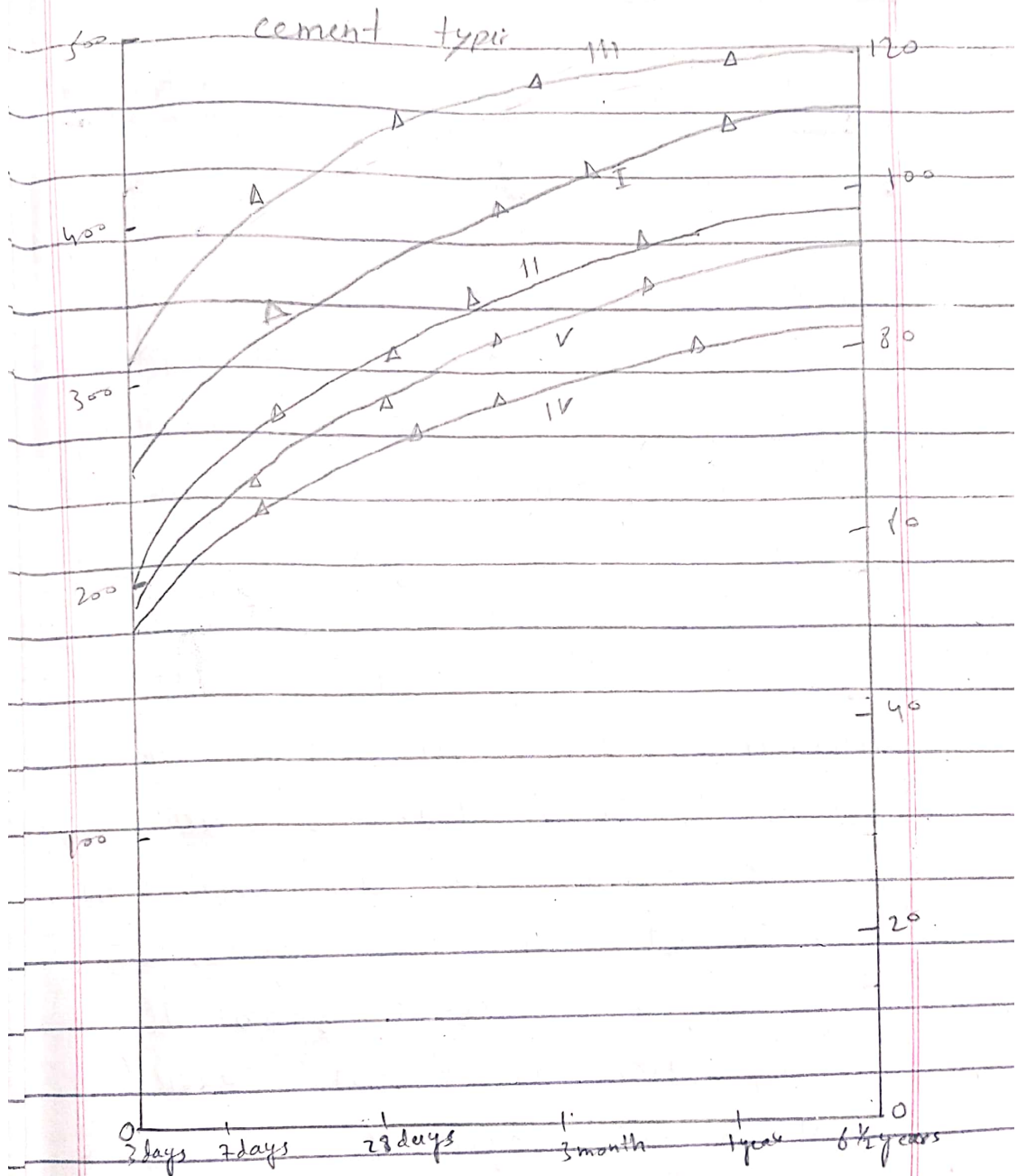
Type III cement is rapid hardening because the component of type III is more finely grounded with smaller and greater and addition of more C_3A as compared to type IV.

Type IV cements:-

The low heat producing of type IV is due to the low content of C_3A and C_3S . The product of type IV are less finely grounded therefore the content react slowly and produce low heat of hydration.

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Development of heat of Hydration of different cement types



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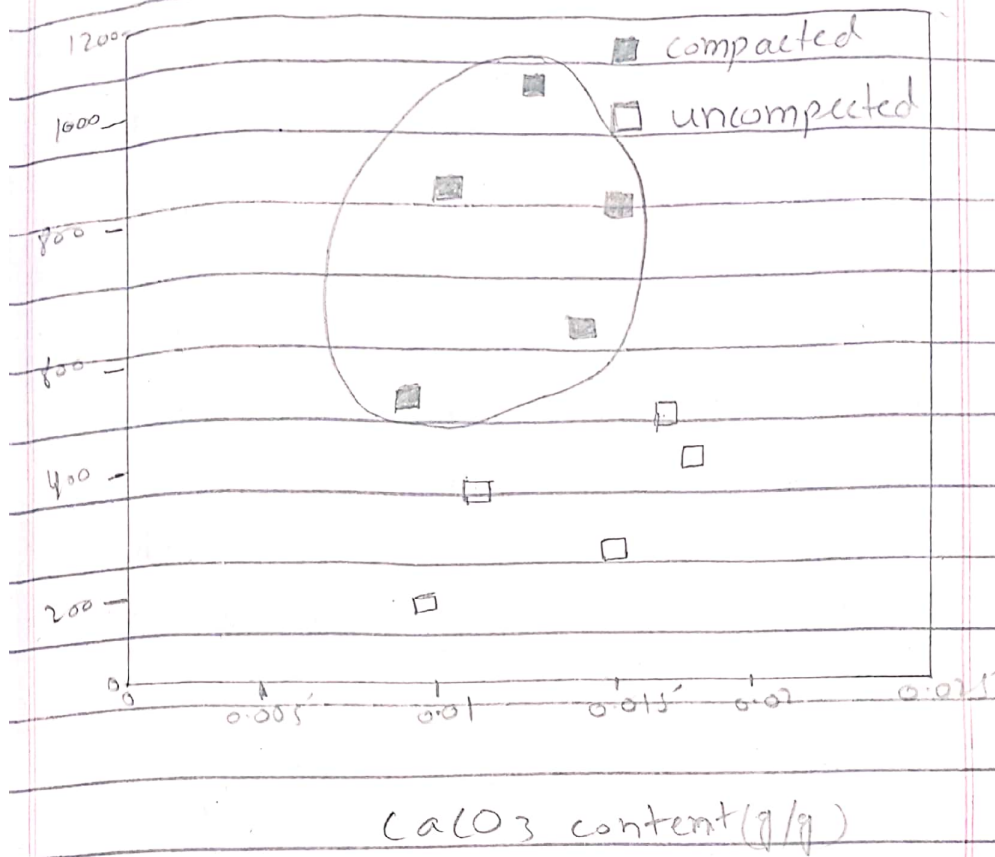
QUESTION No 4

ANSWER:-

Effect of compaction on entrapped air of concrete-

compaction significantly increases the ultimate strength of concrete and enhances the bond with reinforcement. It also increases the abrasion resistance and general durability of the concrete, decrease the permeability and helps to minimize its shrinkage and keep characteristics. Compaction of concrete is an important component in the process of laying a concrete slab. If compaction is not carried out as required, a series of defect may become apparent and the concrete slab will suffer from significant loss of strength.

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QUESTION NO 5

ANSWER:-

During the cement manufacturing process when the clinker form and then cool, a small percentage or amount of gypsum is introduced during the final stage in ~~good~~

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grinding process. Gypsum is added to control the setting time of cement. If not added, the cement will set immediately after mixing of water, leaving no time for concrete placing. If we exceed the percentage of gypsum then the setting time of cement will also exceed which we cannot want. So adding of 5% cement gypsum to cement is a fixed ratio.

QUESTION No 8

ANSWER No 10

The shape and texture of aggregate affect the property of fresh concrete more than hardened concrete. The aggregate have smooth surface can improve

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workability and a rougher surface generates a stronger bond between the paste and the aggregate creating a higher strength.

ANSWER No ii)

Several factors including chemical adhesion, roughness and reinforcements with concrete. therefore maximum aggregate size is critical for bond strength when smaller size aggregates are used.

ANSWER No (iii)

The texture of aggregate also affect the properties of fresh concrete.

A smooth surface can improve workability thus a rougher surface aggregate create a strong bond b/w the paste and aggregates.

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ANSWER NO (IV)

Bleeding in concrete may be considered as the physical movement of water towards the top surface.

It is not always favorable as it increases finishing time, decreases strength, wear resistance and bond strength and causes poor bonds between successive lifts.

Question No "7"

Answer No (i)

Porosity and absorption of aggregate will affect water/cement ratio and hence the workability of concrete as well as the bond between it and cement paste.

ANSWER NO (ii):-

Air entrainment

(ii)

affects compressive strength of concrete and its workability. It increases the workability of concrete without much increase in water cement ratio.

ANSWER NO (iii)

Finer particles require more water for a longer surface, hence aggregate with finer particles need more water make it workable. On the other hand, bigger particles have less surface area, demand less water for wetting surface and require less amount of paste for lubricating.

ANSWER NO (iv)

Well graded aggregates tend to fill up voids and easily workability. Smaller amount of water can

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make it workable if grading is better, there will be fewer voids and excess paste will be available to give better lubricating effect.

Question No 8

Answer No (i)

strength of concrete increasing fineness causes an increased rate of hydration, high strength and high heat generation. Bleeding can be reduced by increasing fineness.

Answer No (ii)

Rate of heat of evolution during hydration

The fineness of cement has an important bearing on

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on the rate of hydration and hence on the rate of gain of strength and also on the rate of evolution of heat. Finer cement offers a greater surface area for hydration and hence faster the development of strength.

ANSWER NO (ii)

Total heat of hydration

The size of cement particles directly affects the hydration setting and hardening strength and heat of hydration.

The finer the cement particles are, the longer the total surface area is and the ~~bigger~~ bigger the area contacting with water is.

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ANSWER NO (14)

workability of concrete

The workability of non air-entrained concrete is increased by increasing the cement fineness. In air-entrained concrete the effect of fineness of cement on workability is very much less pronounced. The 28 day compressive strength of concrete, with or without entrained air, increases with an increase in cement fineness.

QUESTION NO 9

ANSWER:-

Segregation of concrete can be prevented by correctly proportioning the mix and using the recommended water cement ratio so as to prevent

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using excess water care
should be taken while
handling transporting, compacting
and also at finishing
stages.