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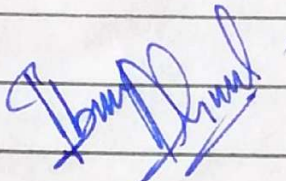
ID : 16188

Sec : 8

Sub : Concrete Technology

Teacher : Sir Usama

Date : 17/04/2020

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QUESTION NO 1.

→ what step is taken to prevent the flash setting of cement? Also write steps to prevent false setting of concrete?

→ Prevention of 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 L3A with water. If less amount of gypsum are added to the cement flash set can be occur so, fair amount of Gypsum is added in cement to prevent flash set.

→ Prevention of False Setting:

False set of concrete occurs when too much of a Gypsum dehydrates in the cement. Therefore Gypsum is reduce to 3 to 5 percent. In order to get rid of the false set of concrete. It is the opposite phenomena. †

False set can be eliminated by continuous mixing or by re-working and may not be notice on jobs supplied by truck mixers or with central mixed concrete that is agitated during delivery by to the ~~site~~ site.

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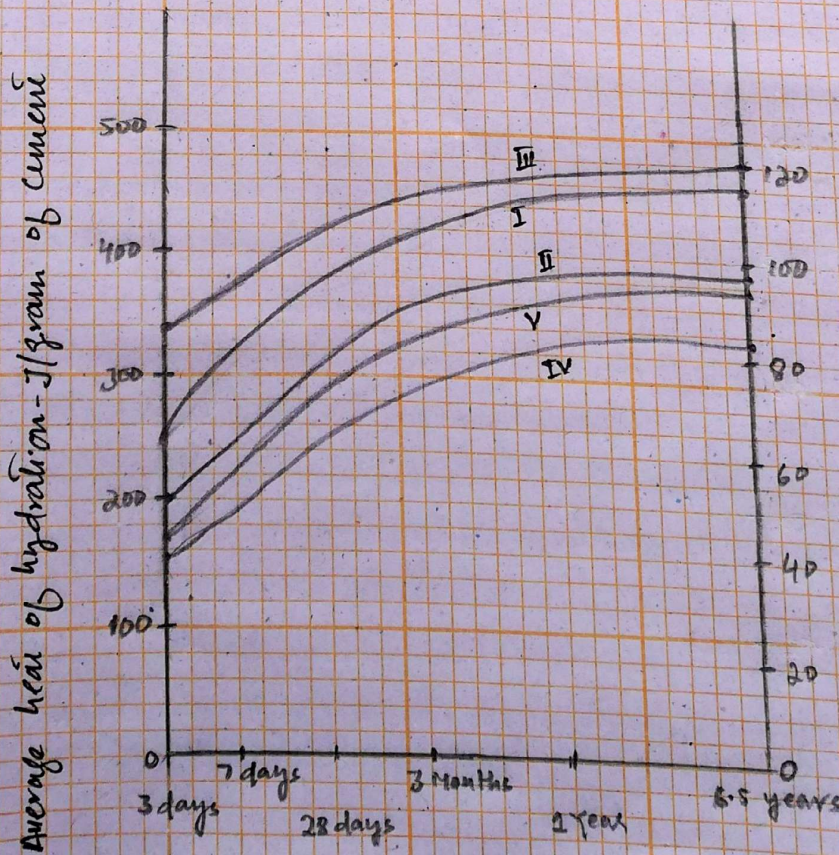
why **Question NO 3.**
 write a type III cement is rapid hardening and type IV low heat producing? Draw a graph showing the development of heat of hydration of different cement types?

Answer:

Type III cement is rapid hardening due to the increase of tricalcium silicate (C_3S) and due to the finer grinding of the cement clinker. while type IV cement is low heat producing because they have lesser amount of (C_3S) to reduce the heat formed.

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Graph of Heat of Hydration of different types of Cements



Question No 5.

→ why is the percentage of gypsum added to cement limited only to 5%?

Answer:

The gypsum affects the reaction of tricalcium aluminate (C_3A) and the cement to moderate adding an extra amount of gypsum i.e more than 5% can produce false set. Also excess of gypsum leads to expansion.

Question No 9.

→ what steps can be taken during transportation and placement of concrete to prevent segregation of concrete?

→ Prevention From Segregation During Transportation:

In order to prevent the concrete from segregation while transporting the concrete we should transport the concrete via a shortest possible route. The transporting vehicle should be driven carefully

to avoid jerks and vibrations which is harmful for the concrete to be segregated.

→ Prevention of Segregation During Placing:

Following ^{are the} steps for prevention of segregation concrete while placing.

- Concrete should be placed in its final position as soon as possible to avoid segregation.
- Never pour concrete from higher heights. The maximum height should be four feet or less.
- The formworks for the concrete should be well and sound.
- Good workmanship.

Question No 4:

→ what is the effect of compaction on entrapped air of concrete?
→ what will be the effect on strength if concrete is not compacted sufficiently? Explain with graph?

Answer:

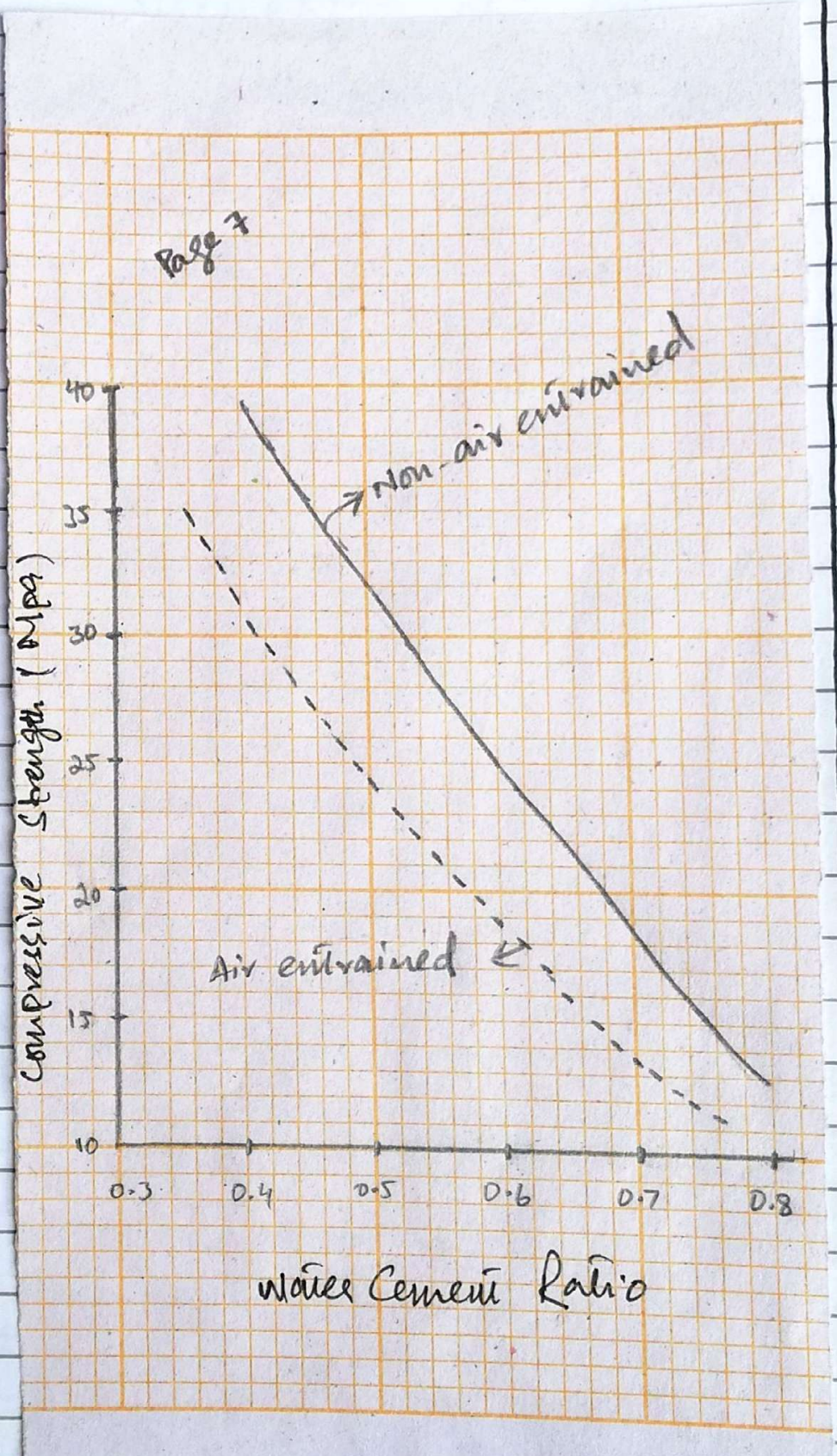
Compaction is the process which expels entrapped air from freshly placed concrete. Compaction packs the aggregate particles together so as to increase the density of concrete. It increases significantly the ultimate strength of concrete and enhances the bond with reinforcement. Compaction also increases the abrasion resistance and durability, decreases the permeability and helps to minimize its shrinkage and creep characteristics.

→ If concrete is not compacted sufficiently we might not achieve the desired strength from concrete. Also the concrete may not

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enhance the bond with reinforcement.

Graph:



Question NO 6.

→ What is the effect of following on the strength of concrete?

→ Answer:

(i) Shape of Aggregate:

using elongated or flaky aggregates could create honey-combing in the hardened concrete.

(ii) Size of Aggregate:

using smaller sized coarse aggregate increases the flexural strength of the concrete.

(iii) Texture of Aggregate:

A smooth texture can provide better strength to the concrete.

(iv) Bleeding:

Bleeding in concrete increases finishing time and produces laitance at surface,

Hence decreases the strength of concrete.

→ Question No 7,

→ what is the effect of following on workability of aggregate?

→ Porosity And Absorption:

The porosity of aggregate may also affect the workability of concrete. If the aggregate can absorb a great deal of water, less will be available to provide workability, compressive / tensile strength ratio decreases with increase in porosity. The aggregate absorption affects the time dependent rheology of the concrete mix.

→ Air Entraining Agent:

The air entrainment affects compressive strength of concrete and its workability. It increases the workability of concrete without

much increase in water-cement ratio. In this case air entraining admixture is added to increase the workability of concrete without adding water.

→ Coarse Aggregate To Fine Aggregate Ratio:

If we increase the ratio of coarse aggregate, lesser will be the surface area and hence less amount of water will be required for wetting the surface and less paste is required for lubricating the surface to reduce internal friction. For given quantity of water and paste bigger size of aggregates will provide higher workability.

→ Grading Of Aggregate:

Grading is the factor which will have the maximum influence on workability of concrete. A well graded aggregate is the

one which has least amount of voids in a given volume, better the grading lesser is the void content and higher is the workability.

QUESTION NO 8:

→ what is the effect of fineness of cement on the following:

→ Strength of Concrete:

More the fineness of the cement is, more rapid is the development of strength of concrete.

→ Rate of Heat Evolution During Hydration:

Increasing fineness of cement causes an increased rate of hydration and high heat generation.

→ Total Heat of Hydration:

The fineness of cement can cause increment in the rate of total heat of hydration.

→ Workability of Concrete:

The more fines
the cement is, the more
workable the concrete will be.

Page No 13 - Graph of Strength Development of Pure Compounds of Cement
 Question No #2

