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SEMESTER 2nd SECTION - B

Question # 1

Answer

STEPS TO PREVENT FLASH SETTING

Flash setting is an early loss of workability of cement due to dehydration of cement, gypsum in the formation of the cement.

☞ Gypsum is often added to portland-cement to prevent early hardening or flash setting.

☞ Water can also be used for temporary prevention of flash setting of the cement in concrete mixture.

(P.T.O)

(2)

STEPS TO PREVENT FALSE SETTING OF CONCRETE

False setting is the rapid development of rigidity in freshly mixed concrete mixture, without producing much heat, as compare to flash setting, after mixing with water.

☞ Addition or increasing the concentration of gypsum in the components of cement leads to avoid false setting of concrete mixture.

☞ Water can be used thoroughly during mixing the concrete paste after its formation to avoid or prevent false setting of the concrete.

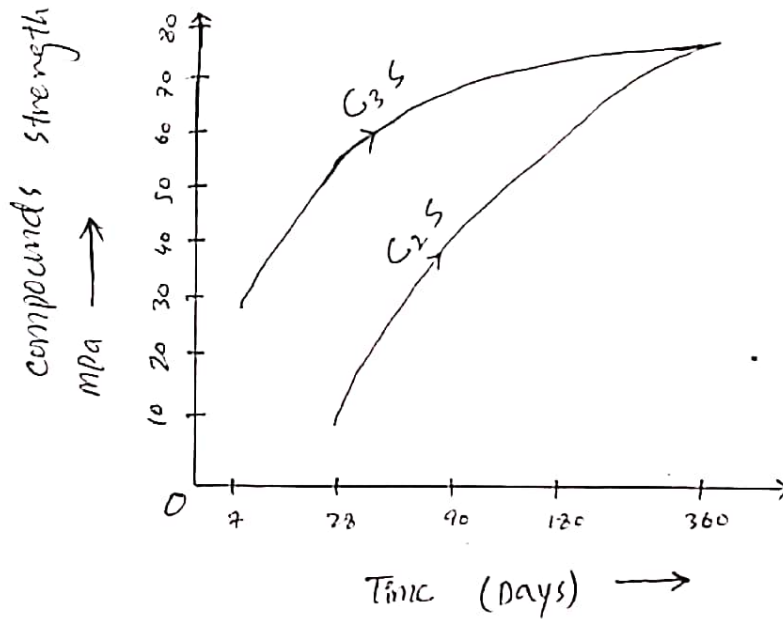


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Question # 2

Answer

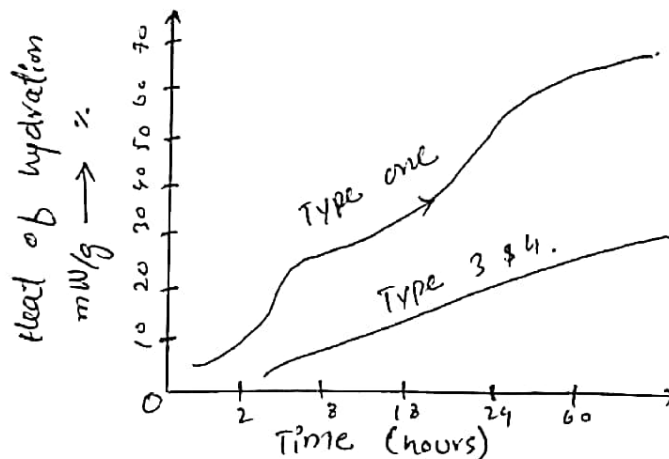
GRAPH SHOWING THE STRENGTH DEVELOPMENT OF PURE COMPOUNDS OF CEMENT:



Question # 3

Answer..

GRAPH SHOWING THE DEVELOPMENT OF HEAT OF HYDRATION OF DIFF CEMENT



(P.T.O)

→ 3- continue... (4)

TYPE (III) CEMENT ARE RAPID HARDENING

Cement of type III are rapid hardening because of these reasons below;

- ☞ They have greater concentration of C_3S .
- ☞ They are more finely cement and grinded.
- ☞ They contain less amount of gypsum. even
- ☞ no amount of gypsum.

TYPE (IV) ARE LOW HEAT PRODUCING

Type IV cement are low heat producing due to the following reasons;

- ☞ They may have less amount of C_3S .
- ☞ They have less amount of C_3A .
- ☞ They are less finely cement.

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Question #4

Answers...

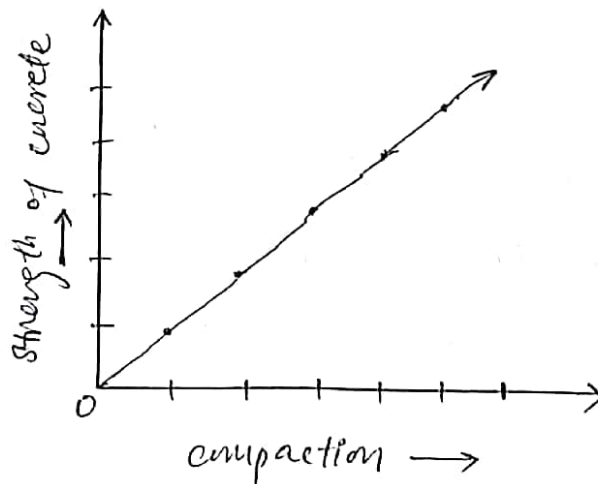
EFFECT OF COMPACTING ON ENTRAPPED AIR OF CONCRETE

Compacting of concrete has great effect on the entrapped air by concrete, in such a way that due to compacting the air inside releases because of agent of the compacting. Compacting leads to minimize the air gaps inside a concrete which is placed.

EFFECT ON STRENGTH OF CONCRETE:

Improper compacting can affect a concrete up to greater extent, like the entrapped air will leads to crack the concrete even and minimize its strength.

GRAPH EXPLANATION



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(6)

Question # 5.

Answer

PERCENTAGE OF GYPSUM IN CEMENT IS 5%. WHY

The percentage of gypsum in cement is limited only upto 5%, because gypsum is that constituent/element of cement which is responsible for setting time of cement, so, therefore if it exceeds the limit it may cause setting problems and strength problems in mortar and concrete pastes, that's why it is limited only upto 5% in cement.

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Question # 9

Answer

STEPS TO PREVENT SEGREGATION IN CONCRETE:

Following step should be used to prevent the segregation in concrete;

- ☞ Concrete should not be poured from a height greater than 1.5 meter.
- ☞ Aggregate should be properly graded.
- ☞ The viscosity of concrete should be improved.
- ☞ A proper mixer should be used for transportation.
- ☞ Concrete should be made in a proper proportions and ratios.

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Question # 6

Answer

EFFECT OF FOLLOWING ON BOND STRENGTH OF CONCRETE

1. SHAPE OF AGGREGATE:-

An aggregate having proper and regular, angular shape will give good strength to the concrete paste or mixture.

2. SIZE OF AGGREGATE:-

The aggregate of smaller size will contribute greater the give proper strength (bond) to concrete, than the aggregate having larger size.

3. TEXTURE OF AGGREGATE:-

That type of aggregate which have rough texture will give well bond strength to the concrete and vice versa.

4. BLEEDING:-

Bleeding in concrete may leads to decreases strength, bond strength, and cause poor bond strength between successive lifts, and vice versa.

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(8)

Question # 7

Answer

EFFECT OF FOLLOWING ON WORKABILITY OF CONCRETE

1. POROSITY AND ABSORPTION:-

Porosity in concrete cause absorption of water which leads to cracks in the concrete structures, and, vice versa.

2. AIR ENTRAINING AGENT:-

more usage of air entraining agent leads to segregation of concrete particle which low down the workability of concrete, and vice versa.

3. COARSE AGGREGATE TO FINE AGGREGATE RATIO:-

The most common and useful ratio in concrete for coarse to fine aggregate is 2:1, if it is disturbed then it leads to loss of workability of concrete.

4. GRADING OF AGGREGATE:-

Grading of aggregate results into equal size of aggregate with the help of sieves which can be helpful and increases the workability of concrete and vice versa.



(9)

Question # 8

Answer

EFFECT OF FOLLOWING ON FINENESS OF CEMENT:-

FINENESS OF CEMENT ON FOLLOWING

1. STRENGTH OF CONCRETE:-

Fineness of cement leads to increase its surface area, which make contact easily and results into increase strength of concrete.

2. RATE OF HEAT EVOLUTION IN HYDRATION:-

Fineness of cement decreases the rate of heat evolution during hydration as compared to less fine cement.

3. TOTAL HEAT OF HYDRATION:-

Fineness of cement leads to increase the heat of hydration, and strength of concrete, and high heat generation.

4. WORKABILITY OF CONCRETE:-

The workability of concrete increases with increasing the fineness of cement and vice versa.

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Completed.