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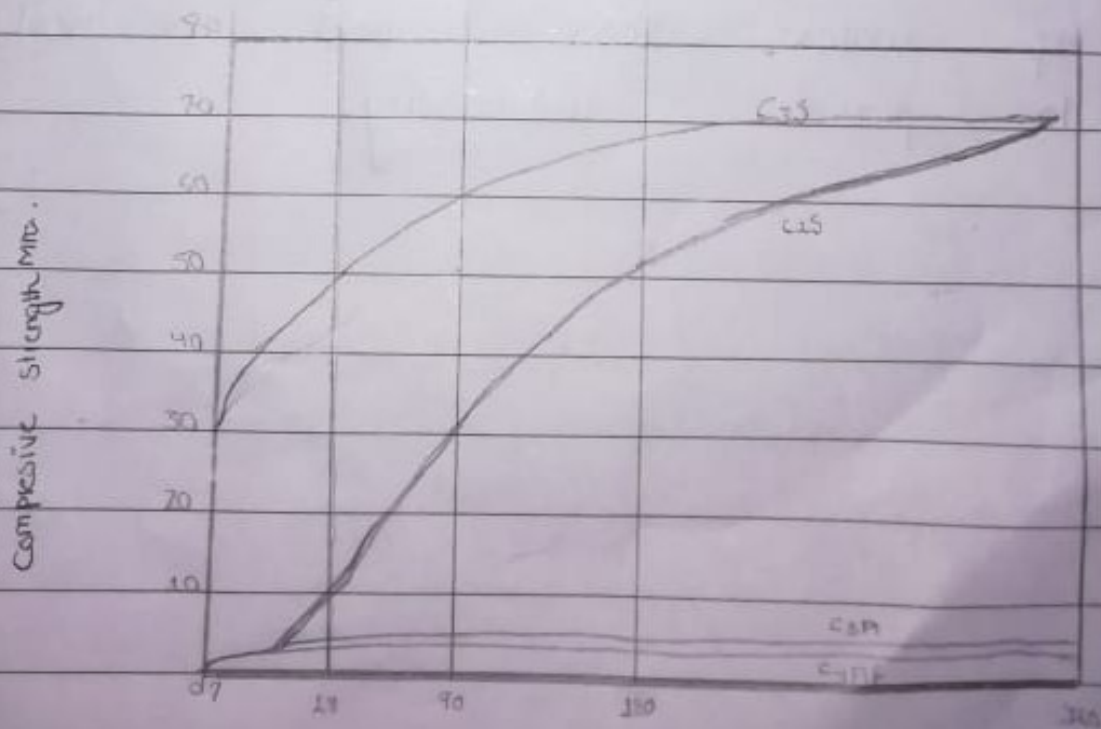
Semester: 2nd

Sec : "A"

∴ CONCRETE Technology ∴

Q.2 Draw a graph showing the strength development of pure compounds of cement ?

DEVELOPMENT STRENGTH OF PURE COMPOUND.



2

Q. Which step is taken to prevent flash setting of cement? Also steps to prevent false setting of concrete?

Ans: Gypsum is added to prevent early hardening or flash setting, allowing a long working time. Gypsum slows down the setting of cement, so that cement adequately hardened. Calcium-hydroxide binds the silicate particles together. Aluminium hydroxide fills the space in the lattice.

PREVENTION OF FALSE SETTING OF CONCRETE:-

A false set is when cement stiffens within a few minutes of being mixed without the much heat. This can be caused by the cement being exposed to humidity during storage. It can be fixed at the job site by vigorously remixing the paste again without addition of water.

Q. Why type III cement is rapid hardening & type IV low heat producing.

ANSWER:

Type IV CEMENT:

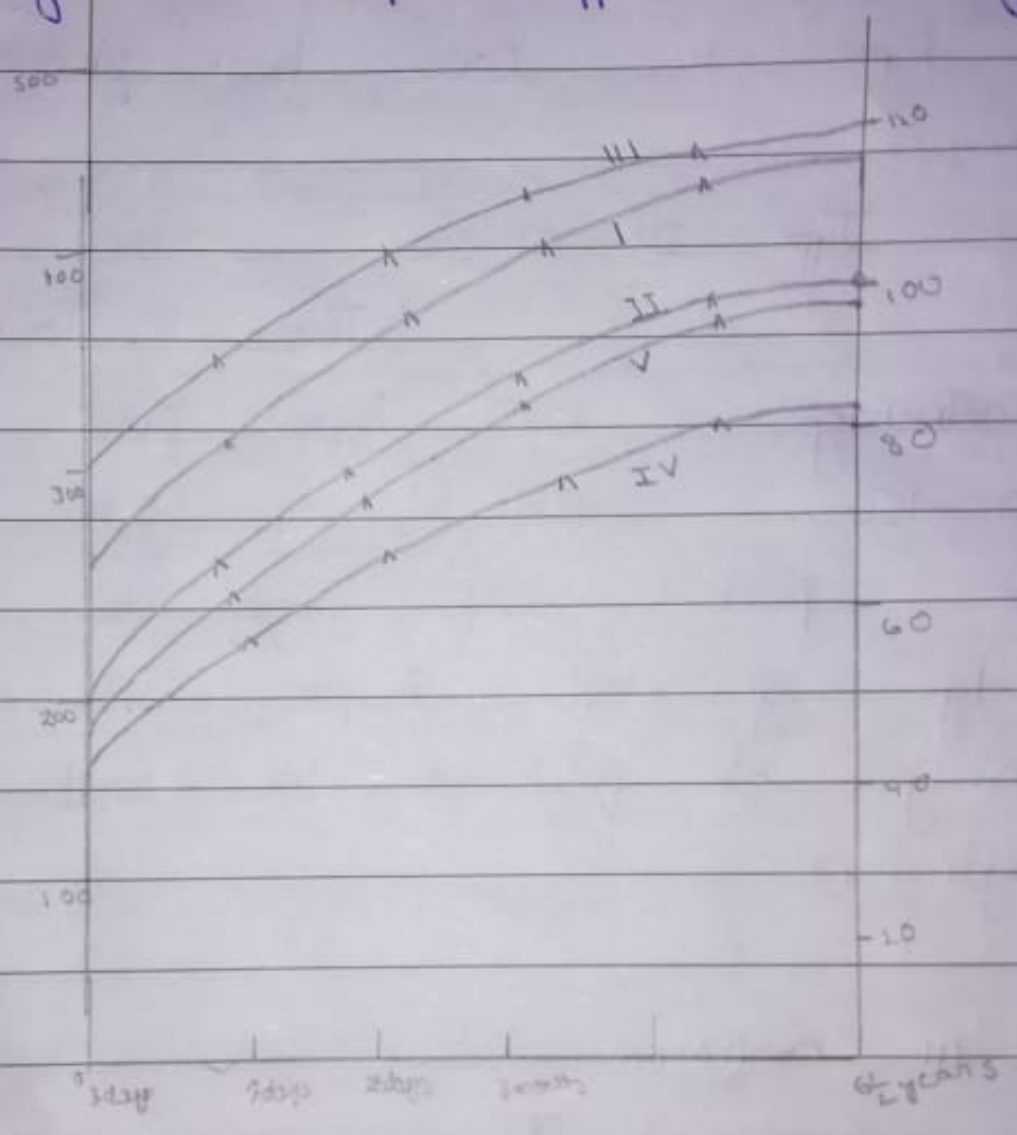
The low heat producing of type IV is due to low content of C_3A & C_3S . The product of type IV are less finely grounded therefore it react slowly & produced low heat of hydration.

TYPE III CEMENT:

Type III cement is rapid hardening because the component of type III is more finely grounded with roller & grander & addition of more C_3A is compared to type IV.

4

Development of heat of Hydration of different cement types



5

MOTOWOTOFOSO

H/WO-C/WO

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QUESTION NO # 04

Effect of compaction on entrapped air concrete :-

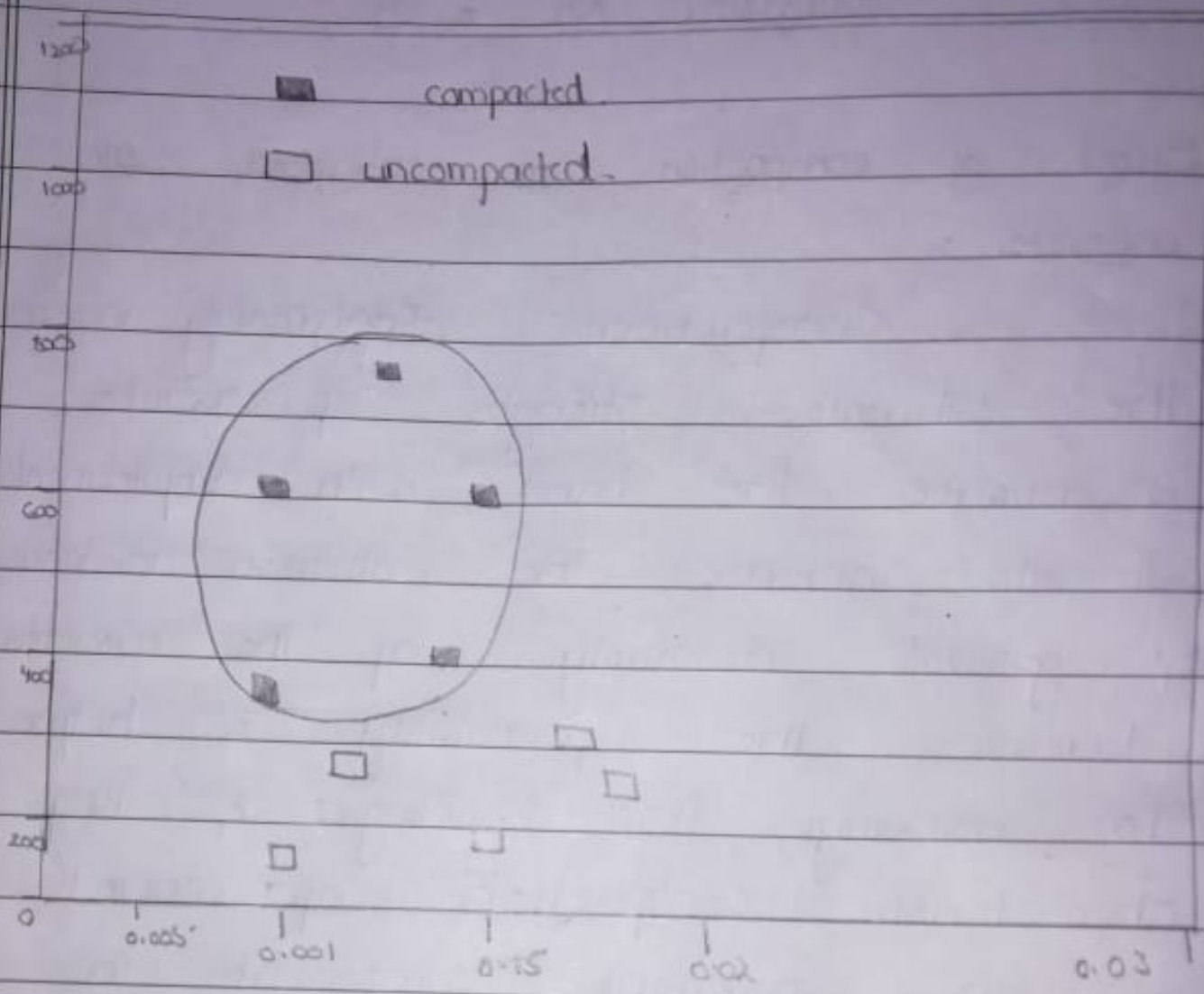
Compaction significantly increases the ultimate strength of concrete & enhance the bond with reinforcement. It also increase the absorption resistance & general durability of the concrete, decrease the permeability & helps to minimize its shrinkage. & keep characteristic. Compaction of concrete as an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

6

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CaCO₃ content (g/g)

Q.5 - Why is the percentage of gypsum added to cement limited only to 5% ?

Ans: Gypsum is added in cement upto 4% during the manufacturing of cement to control flash set.

→ If we increase its limit more than 5% it is harmful & it will effect harmful.

⇒ If we have high amount of C_3A the it will react with extra sulphates and ettringite.

⇒ Expansion in volume of ettringite may cause cracks in plaster.

(8)

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H/WO-CAN

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Q# What is the effect of the following on the bond strength of concrete?

Ans: SHAPE OF AGGREGATE:

The shape & texture of aggregate affect the property of fresh concrete more than hardened concrete.

The aggregate smooth surface can improve workability. & a rough surface creates a stronger bond strength between the paste & the aggregate creating a higher strength.

Size of aggregate:

Maximum aggregate size is critical for bond strength when smaller aggregates are used.

TEXTURE OF AGGREGATE:

A smooth surface can improve workability & a rough

9

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H/W-C/W

Date:...../...../20.....

Surface aggregate create a strong bond blw the paste & aggregate.

BLEEDING IN CONCRETE:

Bleeding in concrete may be considered as the physical movement of water towards the top surface, not towards as it increase finishing time, decrease strength where resistance and bond strength cause poor bonds between successive lifts.

Q: What is the effect of the following on the workability of aggregate.

Porosity & Absorption:

Porosity & absorption of aggregate affect water/cement ratio & also its workability.

It will also affect the bond between cement & paste.

Air Entrapment:

Air entrapment affects workability & compressive strength of concrete. It increases the workability of concrete without increase in water cement ratio.

Finer Particles:

Finer particles have ^{longer} ~~range~~ surface area & it requires more water to make it workable. Bigger particles have less surface area which require less water for wetting purpose & required less past

11

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Date:...../...../20.....

for lubricating.

Graded AGGREGATES.

Well graded aggregate tend to fill up spaces & easily workable. Less amount of water can make it workable. In better grading there will be few voids & excess paste will be available to give better lubricating effect.

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H/WO-C/WO

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Q. What is the effect of fineness of concrete?

STRENGTH OF CONCRETE:-

The 28 days compressive strength of concrete, with or without entrained air increases with an increase in cement fineness.

RATE OF HEAT EVALUATION:-

Finer cement offers a great surface area of hydration & hence rate of heat evaluation during hydration increases with fineness of cement.

Total heat of hydration:-

The size of cement particles directly affects heat of hydration.

WORKABILITY OF CONCRETE:-

The workability of non air entrained concrete is increased by increasing the cement fineness.

Qn 9: What Steps should be taken during transportation & placement of concrete to prevent Segregation of concrete?

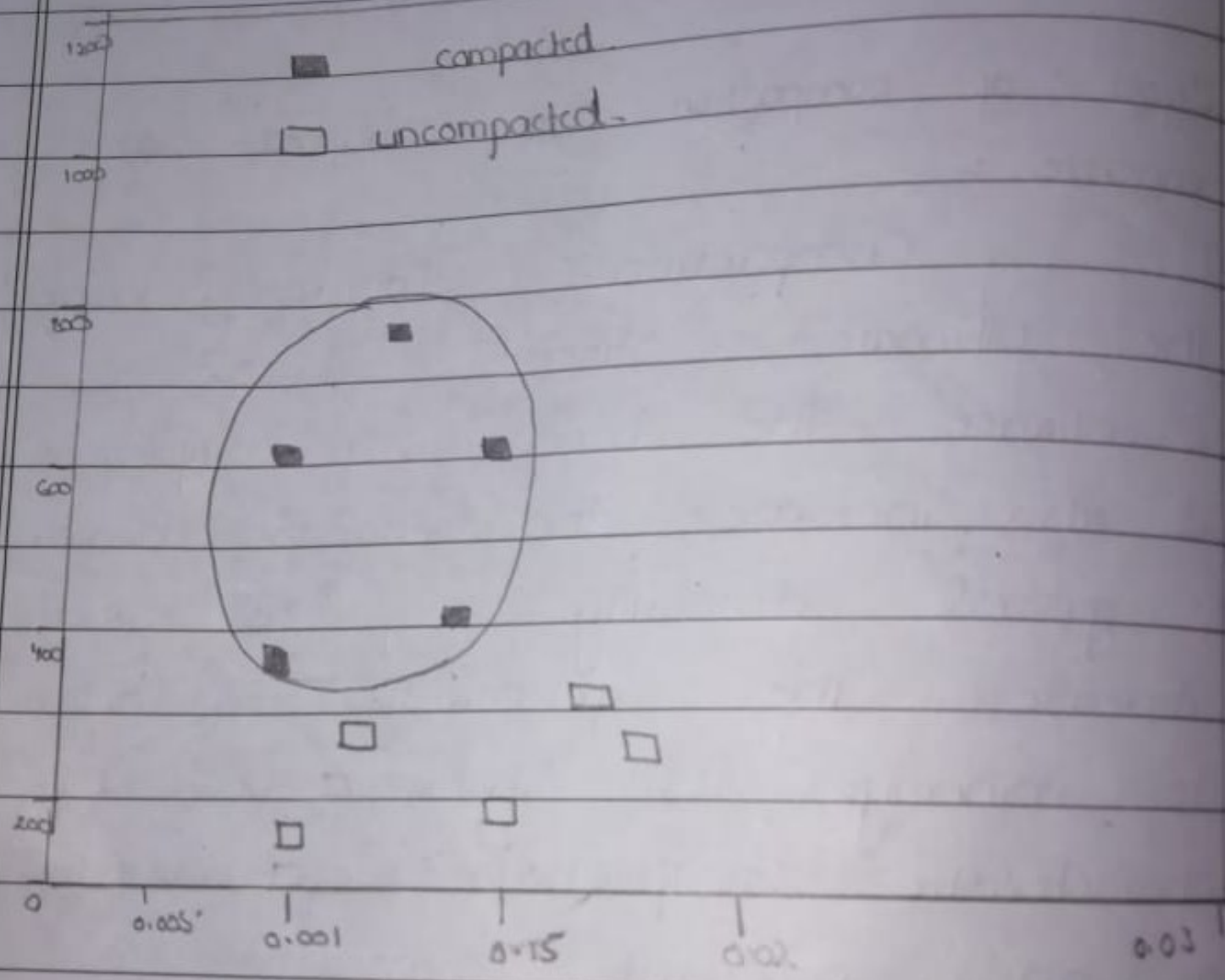
Ans: Steps to Prevent Segregation:-

(1) Use of air entraining agents.

(2) Use of admixture.

(3) Pozzolani materials can be used.

(4) Care should be taken while transporting concrete. It should be mixed continuously while transporting to a far off area in transit mixture depending on the circumstances to prevent segregation.



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ANSWER:

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