

20)

Given data.

Matured concrete is found to be 40mpa.

concrete age at the age = 7 days.

$$t_1 = 20^\circ\text{C} \quad t_2 = 10^\circ\text{C}$$

$$A = 32, \quad B = 54.$$

$$\begin{aligned} \text{maturity of the concrete} &= E (\text{time} \times \text{temperature}) \\ &= 7 \times 12 (20 - (-1)) + 7 \times 12 (10 - (-1)) \\ &= 7 \times 12 \times 21 + 7 \times 12 (10 - (-1)) \\ &= 7 \times 12 \times 21 + 7 \times 12 \times 21 \\ &= 4368 \text{ Ch} \end{aligned}$$

The strength of the concrete range is falls in
zone III

$$\begin{aligned} \text{Maturity} &= A + B \log_{10} \left[\frac{\text{maturity}}{1000} \right] \\ &= 32 + 54 \log_{10} \left[\frac{4368}{1000} \right] \\ &= 66.56 \end{aligned}$$

$$\text{Matured concrete at a age 7 day} = \frac{40}{100} \times \frac{66.56}{100} = 26.62 \text{ mpa}$$

1)

Factors affect the strength of concrete

- 1) water cement ratio.
- 2) Gel-space ratio.
- 3) Aggregates cement ratio.
- 4) Age of Test
- 5) cement content
- 6) Rat of loading.
- 7) compaction and curing.

1) water cement ratio:- In this process of the water cement ratio of will desired the strength of will be the limit of reduction is water cement ratio.

2) Gel-space ratio:- In this process of the Gel-space ratio the strength of the Gel-space ratio will desired of the space of Gel strength is Gel-space ratio.

3) Aggregates cement ratio:- In this process of the Aggregates cement ratio which that the desired aggregates and cement ratio strength.

4) Age of Test :- In this process of the Age of Test of concrete testing the maturity of by the 28 days.

5) cement content :- In this process of the cement content the desired of the strength of the cement content.

6) Rate of loading :- In this process of the Rate of loading the desired of the strength with which mean the strength of the loading.

7) compaction and curing :- In this process of the compaction and curing desired of strength of complete strength is more and curing have to be the property in concrete.

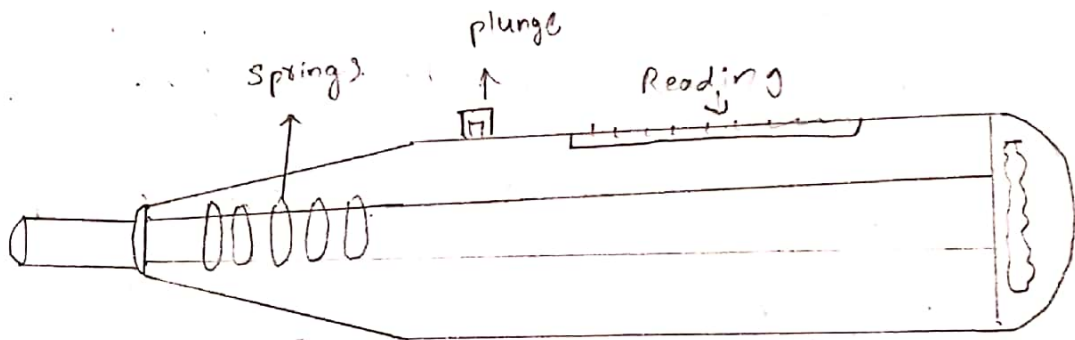
3)

Non-destructive Test

- 1) Rebound Hammer Test
- 2) Ultra sonic Impulse velocity Test.
- 3) Ingredient Analysis Test.

1) Rebound Hammer Test

In this consist of the having the Rebound Hammer machine to execute the test In this the test is the executing by the structure work is finished or constructed building to check the use the Rebound Hammer Test



In this Rebound hammer test have the to apply the load to the pluge the finger and compaction the a machine of hammer until that store the energy by the spring and hit the the hammer to the -structure or a material is and Reading and using that Reading and also the graph give by the machine according the which direction on horizontal there is a different reading or in a graph

and in according to the vertically there is a upwards ~~are~~ or downwards there a reading in a graphic and that this ~~in~~ number of test of calculate the mean of the or average of all the reading and calculate and get the Result.

① The creep is defined as the "time dependent deformation under the constant load" and it also know as time yield ~~is~~ know as creep.

Factor Affecting the creep of concrete

- 1) More is the strength of material it will reduce the effect of the creep.
- 2) High aggregate fraction will leads less creep
- 3) High the humidity of the temperature the it will less exchange in moisture ~~and~~ or in the chemical composition in surrounding environment
- 4) ~~other that type of~~
- 4) In the increasing of the both temperature rate of creep and ultimate of creep will increase.

5) other type of cement like blast furnace have the more creep in as compared to the ordinary portland cement

6) The Reinforcement of concrete while pores have the more of creep have compact the completely

5) Shrinkage is the process of decrease in the length or either length or volume of the material by resulting in exchange of the moisture to the chemical to the environment is known as shrinkage

Types of Shrinkage

- 1) Plastic shrinkage
- 2) Drying shrinkage
- 3) Autogenous shrinkage
- 4) Carbonation shrinkage

1) plastic shrinkage

In this process of the plastic shrinkage having the in freshy concrete while pouring

the freshly concrete having the evaporation of the water during the pouring the concrete to the any object escape of water from the top of the freshly concrete or the water content of the concrete which will affect the shrinkage of the concrete and also it will affect the structural it will not withstand the longer duration of the concrete after the construction.

2) Dry shrinkage

In this process of the dry shrinkage the after the initial setting time starts and the concrete will get hardening the concrete it will escape the water or evaporation of the final setting of the by the we don't do the moisture the of water to the concrete it will leads to by the dry shrinkage of the concrete and that will affect to the concrete by the less in the strength of the concrete and less in duration of the concrete and withstand of the the concrete is dry shrinkage.

6

Types of Fibres

- 1) steel Fibres.
- 2) Mineral Fibres
- 3) carbon Fibres
- 4) Galvan Fibres
- 5) Nylon Fibres

Advantage of FRC.

- 1) It will gives the more tensile strength to the concrete other than the ordinary portland cement
- 2) It will Improves the by the weathering condition like freezing and thawing the concrete
- 3) It will Increase the strength of the concrete as compared than the Non-FRC concrete.
- 4) It will increase the strength of the duration of concrete.

5) It will reduce the crack on the concrete and it will gain more than than Non Fibre Reinforced concrete.

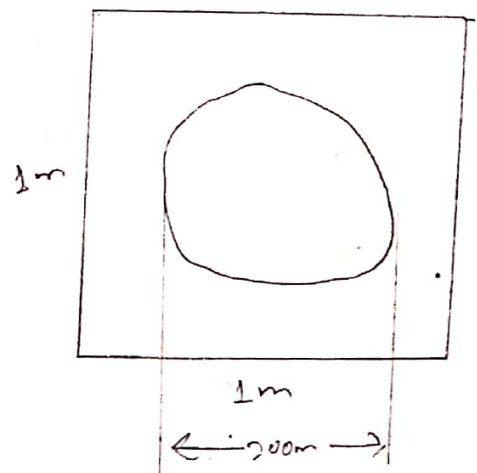
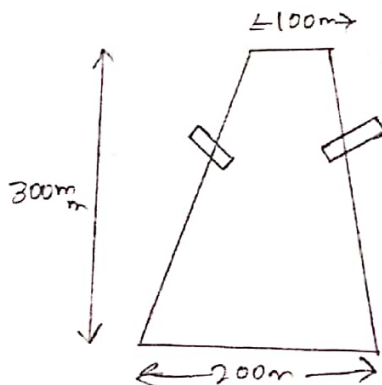
78)

Types of Laboratory Test SCC

- 1) Slump Flow Test
- 2) J-Ring Test
- 3) V-Funnel Test
- 4) U-Box Test
- 5) L-Box Test
- 6) Fill-Box Test

1) Slump Flow Test

In this process of slump flow test the IS consist of (100mm dia at top, 200mm dia at the bottom and 300mm height of slump cone).



In this test have the ~~mix~~ preparation of the concrete the aggregate have the $> 20\text{mm}$ of size and the around 450 ml of water and the 400 cement ~~is~~ mix it properly.

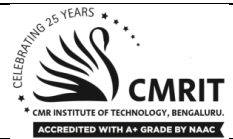
and insert the slump cone in the base plate and fill it with concrete of mix one and without striking and ~~it~~ compacting of the concrete and the like the concrete vertically and allow to flow the concrete and then take the perpendicular (\perp) dia of by the horizontal and the vertically ~~or~~ more than that and calculate the means ~~or~~ average of the cone and (H_2/H_1) get the flowability of the concrete. It is the least of the 650mm and it will not take more the time to flow. This shows the the flowability of the concrete very easy to construct it without any air voids and super finished surface.

8 principles of LWC

- 1) In this process of the LWC the aggregate are used such as slate, clay, shale which having low density of the LWC and the density of the LWC is 90 to 115 lb/ft^3 as compared than that ordinary portland cement 140 to 150 lb/ft^3
- 2) In this have the air voids in the concrete have low density
- 3) The it not use of fine aggregate in the.

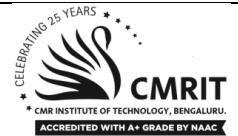
Advantage in LWC

- 1) The density of LWC is low as compared than the ordinary portland cement
- 2) The omitting of sand will have the air less
- 3) It will use in the heavy concrete in the light concrete works
- 4) It having the air bubbles and air voids to to resistance of the LWC.
- 5) It is very easy to carry and transport.

USN 

Internal Assessment Test 3 – SEPT. 2022

Sub:	Concrete Technology				Sub Code:	18CV44	Branch:	Civil Engg		
Date:	27.08.2022	Duration:	90 min's	Max Marks:	50	Sem / Sec:	4 A		OBE	
<u>Answer any Five FULL Questions.</u>								MAR KS	CO	RBT
1 (a)	List and explain the factors which affect the strength of concrete?						[10]	CO5	L2	
2 (a)	The strength of a sample of fully matured concrete is found to be 40Mpa. Find the strength of identical concrete at the age of 7 days when cured at an average temperature during daytime at 20 ⁰ C and night time at 10 ⁰ C. Take A=32, B=54. Use % strength of concrete at maturity =A+B log ₁₀ (maturity/1000).						[10]	CO5	L3	
3 (a)	List the destructive laboratory tests used to assess the strength of concrete and explain any one of them in detail.						[10]	CO5	L2	
4 (a)	Define creep, What are the factors affecting the creep of concrete.						[05]	CO5	L2	
(b)	Explain the concept of shrinkage in concrete and list its different types.						[05]	CO5	L2	
5 (a)	List different type of fibres used to produce fibre reinforced concrete (FRC) and write the advantages of using FRC over conventional type concrete.						[10]	CO6	L3	
6 (a)	List the different laboratory tests conducted on fresh Self compacting concrete (SCC). Briefly discuss any one of them in detail with the help of neat sketch and write a typical mix for SCC.						[10]	CO6	L3	
7 (a)	What are the basic principle used in making of light weight concrete and write the advantages and disadvantages of light weight concrete over conventional type concrete.						[10]	CO6	L4	

USN 

Internal Assessment Test 3 – SEPT. 2022

Sub:	Concrete Technology				Sub Code:	18CV44	Branch:	Civil Engg		
Date:	27.08.2022	Duration:	90 min's	Max Marks:	50	Sem / Sec:	4 A		OBE	
<u>Answer any Five FULL Questions.</u>								MAR KS	CO	RBT
1 (a)	List and explain the factors which affect the strength of concrete?						[10]	CO5	L2	
2 (a)	The strength of a sample of fully matured concrete is found to be 40Mpa. Find the strength of identical concrete at the age of 7 days when cured at an average temperature during daytime at 20 ⁰ C and night time at 10 ⁰ C. Take A=32, B=54. Use % strength of concrete at maturity =A+B log ₁₀ (maturity/1000).						[10]	CO5	L3	
3 (a)	List the destructive laboratory tests used to assess the strength of concrete and explain any one of them in detail.						[10]	CO5	L2	
4 (a)	Define creep, What are the factors affecting the creep of concrete.						[05]	CO5	L2	
(b)	Explain the concept of shrinkage in concrete and list its different types.						[05]	CO5	L2	
5 (a)	List different type of fibres used to produce fibre reinforced concrete (FRC) and write the advantages of using FRC over conventional type concrete.						[10]	CO6	L3	
6 (a)	List the different laboratory tests conducted on fresh Self compacting concrete (SCC). Briefly discuss any one of them in detail with the help of neat sketch and write a typical mix for SCC.						[10]	CO6	L3	
7 (a)	What are the basic principle used in making of light weight concrete and write the advantages and disadvantages of light weight concrete over conventional type concrete.						[10]	CO6	L4	