

CONCRETE TECHNOLOGY

Q.1	Which are the different processes for manufacturing ordinary Portland Cement. Explain any process in detail with flow chart	(10)																				
Q.2	List out the steps of the field tests carried out on cement. Also enlist the various types of laboratory tests to be done on cement. Explain any one in detail	(10)																				
Q.3	Define Heat of Hydration. Explain the Structure of the hydrated cement	(10)																				
Q.4 (a)	Explain the quality of water required for the production of Concrete	(05)																				
Q.4 (b)	Define Standard Consistency of Cement. Explain its uses	(05)																				
Q.5 (a)	Explain the Chemical composition of the Cement. Which are the major compounds formed during the hydration of cement	(05)																				
Q.5 (b)	List out the various types of Cement.	(05)																				
Q.6	Explain the various moisture conditions of the aggregates with appropriate figure. Define Moisture Content and Water Absorption	(10)																				
Q.7	Give the broad classification of aggregates. Explain each classification in detail	(10)																				
Q.8 (a)	How can we assess the strength of the aggregates. What is the need to evaluate the physical strength of the aggregates.	(05)																				
Q.8 (b)	Explain the Aggregate Crushing Value test in detail	(05)																				
Q.9	What is the Soundness of Cement. What makes the cement unsound. Explain the testing procedure to determine the soundness of cement with neat figure.	(10)																				
Q.10	Define Coarse and Fine aggregates. Explain the function of aggregates in fresh concrete and hardened concrete	(10)																				
Q.11	Which are the various raw materials required for making Concrete. List out the steps of concrete manufacturing	(10)																				
Q.12	How do you define a 16 mm aggregate. Explain the test procedure of Sieve Analysis	(10)																				
Q.13	Differentiate between the following: (Any two)																					
	(i) Initial Setting time and Final Setting Time	(05)																				
	(ii) Stiffening and Hardening of Cement	(05)																				
Q.14	Define Fineness Modulus. Find the fineness modulus of the aggregate for the following result of Sieve analysis	(10)																				
	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 10%;">I.S. Sieve</td> <td style="width: 10%;">40</td> <td style="width: 10%;">20</td> <td style="width: 10%;">10</td> <td style="width: 10%;">4.75</td> <td style="width: 10%;">2.36</td> <td style="width: 10%;">1.18</td> <td style="width: 10%;">600</td> <td style="width: 10%;">300</td> <td style="width: 10%;">150</td> </tr> <tr> <td>% Passing</td> <td>100</td> <td>70</td> <td>50</td> <td>40</td> <td>20</td> <td>2</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>	I.S. Sieve	40	20	10	4.75	2.36	1.18	600	300	150	% Passing	100	70	50	40	20	2	0	0	0	
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% Passing	100	70	50	40	20	2	0	0	0													
Q.15	Explain Bulking of Cement in detail.	(10)																				
Q.16	Differentiate Admixture and Additive. Write a short note on any one type of Admixture and its field applications.	(10)																				
Q.17	Define Water/ Cement ratio and Aggregate/cement ratio. Also explain how it affects the strength of the concrete	(10)																				
Q.18	Explain the different methods of transporting and placing of concrete in detail	(10)																				
Q.19	Define Workability. List out the various factors that affect workability of concrete and explain any one factor in detail	(10)																				
Q.20	Which are the various laboratory tests performed on fresh concrete. Explain Compaction Factor test or Slump test in detail with figure.	(10)																				
Q.21	Explain Segregation and Bleeding in detail	(10)																				
Q.22	Define Curing of Concrete. What are the advantages of curing. List the various methods to cure concrete	(10)																				

Q.23	Why do we need to compact the concrete. Explain various methods of compaction.	(10)
Q.24 (a)	Differentiate between Cement and Concrete. What do you mean by 43 grade cement	(05)
Q.24 (b)	Define M20 grade of Concrete. How to you express the mix proportion of any concrete grade.	(05)
Q.25	Differentiate between Weigh batching and Volume batching of concrete	(10)
Q.26	List out the various tests conducted on Hardened Concrete. Mention the sizes of the moulds to be used for these tests.	(10)
Q.27	Explain the test procedure to determine the Compressive Strength of Concrete.	(10)
Q.28	Define (i) Gel- Space ratio (ii) Maturity of Concrete (iii) Duff Abram's Law	(10)
Q.29	Explain the Compressive and tensile strength conducted on Concrete cylinders	(10)
Q.30	Explain the effect of the size of the specimen on the compressive strength of concrete. Compare Cube and Cylinder specimen in this context	(10)
Q.31	What is the need to find the Flexural Strength of Concrete. Explain the test procedure to find the same in laboratory.	(10)
Q.32	Explain the various effects on concrete exposed to aggressive environment. Explain Chloride Attack or Sulphate attack in detail	(10)
Q.33	List down the various types of Special Concrete. Explain any one in detail	(10)
Q.34	Which are various governing principles of Mix design. Explain any two parameters related to Mix Design in detail	(10)
Q.35	Explain Step wise procedure for Design any mix as per the IS methods	(10)
Q.36	Define Durability of Concrete. What care should be taken to ensure a good durable concrete.	(10)
Q.37	Explain why does Concrete crack. Explain Carbonation and corrosion of concrete	(10)
Q.38	Make a list of various Special Concreting techniques. Explain any one technique in detail	(10)
Q.39	What do you mean by Non-Destructive testing of concrete. Explain any one NDT in detail	(10)
Q.40	Define the following: (Any five) (i) Specific Gravity (ii) Bulk Density (iii) Nominal mix and Design Mix (iv) Bound water and Gel water (v) Absolute volume of concrete (vi) Shrinkage and creep (vii) Micro- cracking (viii) 28 day strength of concrete	(10)