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Code No. : 14166 AS N

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD**

*Accredited by NAAC with A++ Grade*

**B.E. (Civil Engg.) IV-Semester Advanced Suppl. Examinations, Aug./Sept.-2023**

**Concrete Technology**

Time: 3 hours

Max. Marks: 60

*Note: Answer all questions from Part-A and any FIVE from Part-B*

*Use of IS 10262 is permitted*

**Part-A (10 × 2 = 20 Marks)**

Q. No.	Stem of the question	M	L	CO	PO
1.	What is Bulking of Sand?	2	1	1	1
2.	What is the necessity of vibrating concrete?	2	1	1	1
3.	State Abram's Law.	2	1	2	1
4.	State the relationship between flexural strength and elastic modulus of concrete in terms of compressive strength.	2	2	2	1
5.	Determine target strength for M-45 grade concrete if standard deviation is 4.0.	2	2	3	1
6.	State the basic considerations in the concrete mix design.	2	1	3	1
7.	State why RMC concrete is preferred over conventional concrete?	2	1	4	1
8.	State the influence of silica fume on concrete.	2	1	4	1
9.	Write any two advantages of light weight concrete.	2	1	5	1
10.	Define the terms 'fibre aspect ratio' and 'fibre shotcrete'	2	1	5	1
<b>Part-B (5 × 8 = 40 Marks)</b>					
11. a)	Explain the physical and mechanical properties of aggregates and their influence on strength of concrete.	4	3	1	2
b)	Define workability and explain various factors affecting the workability of concrete.	4	2	1	2
12. a)	What is curing of concrete, its importance and methods of curing in brief?	4	2	2	2
b)	What is creep? What are the factors influencing the creep of concrete?	4	3	2	6
13. a)	State the basic considerations in the concrete mix design.	4	2	3	2

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b)	Design the concrete mix for M35 grade with IS Code method for the following data. Sp.gr of cement, F.A and C.A. are 3.15, 2.6, 2.7 respectively. F.M. of FA=2.83, Bulk density of C.A = 1600 kg/m <sup>3</sup> , Slump =75mm, quality control is good and exposure in severe, maximum size of Coarse aggregates is 20mm, OPC 53 grade cement, sand is zone 2. The water absorption of coarse aggregate is 1% and free moisture in fine aggregate is 2%. Design the concrete mix using IS code method. Maximum quantity of cement allowed is 450kg/m <sup>3</sup> . Assume any missing data suitably.	4	3	3	6
14. a)	How are the admixtures classified? Describe different mineral admixtures used in concrete.	4	3	4	1
b)	Briefly explain about the utilization of fly ash in concrete. Its advantages and disadvantages in concrete.	4	2	4	2
15. a)	Briefly explain about the Self- compacting concrete - their specialties and applications.	4	2	5	2
b)	Explain in detail the mechanism of fibre reinforced concrete.	4	3	5	2
16. a)	Explain the types of cements and chemical composition of OPC.	4	2	1	2
b)	Explain in detail the short term and long term properties of concrete.	4	2	2	2
17.	Answer any <i>two</i> of the following:				
a)	Differentiate between nominal mix and design mix.	4	2	3	2
b)	Explain the importance of using Recycled aggregate in concrete.	4	3	4	8
c)	What are the constituent materials of high strength concrete? What are the advantages and disadvantages of HSC?	4	2	5	2

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level - 1	20%
ii)	Blooms Taxonomy Level - 2	50%
iii)	Blooms Taxonomy Level - 3 & 4	30%

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