QP Code: RD18001055 Reg. No | | | | | | | | | | | AR 18

GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, December – 2020

(Fifth Semester)

BCEPE5051– CONCRETE TECHNOLOGY

(Civil Engineering)

Time: 2 hrs Maximum: 50 Marks

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions) (1 x 10 = 10 Marks)

Q.1. Answer ***ALL*** questions [CO#] [PO#]

a. In India, the first Portland cement was manufactured in 1904 near ---------- 1 2

(i) Delhi (ii)Porbander

(iii) Madras (iv) None of these

b. During the manufacturing of Portland cement ---------- of gypsum is added 1 2

(i) 2% to 3% (ii) 3% to 5%

(iii) 5% to 7% (iv) 5% to 10%

c. ---------- will influence the performance of super plasticizer 1 2

(i) C_3S (ii) C_2S

(iii) C_3A (iv) C_4AF

d. The slump cone value of the pumpable concrete should not be lesser than 2 4

(i) 50 mm (ii) 75 mm

(iii) 100 mm (iv) 150 mm

e. The hardened concrete attains -------- of strength at 28 days 2 2

(i) 100% (ii) 99%

(iii) 95% (iv) 90%

f. The bond strength of the concrete is the function of 2 2

(i) compressive strength (ii) splitting tensile strength

(iii) flexural strength (iv) None of these

g. The modulus of elasticity commonly used in practise is 3 4

(i) secant modulus (ii) initial tangent modulus

(iii) tangent modulus (iv) none of these

h. The value of the Poisson's ratio of a normal concrete lies in the range 3 4

(i)0 to 0.10 (ii) 0.10 to 0.15

(iii) 1 to 2 (iv) 0.15 to 0.20

i. What is the maximum available water content for concrete mixture proportioning 4 4

(i) 150 kg/m^3 (ii) 175 kg/m^3

(iii) 180 kg/m^3 (iv) 200 kg/m^3

j. The density of high density concrete will be -------- more than conventional concrete 4 4

(i) 25% (ii) 50%

(iii) 75% (iv) None of these

PART – B: (Short Answer Questions) (2 x 5 = 10 Marks)

Q.2. Answer ***ALL*** questions

		[CO#]	[PO#]
a.	Differentiate Chemical and mineral admixtures with examples.	1	2
b.	What are the factors affecting the setting time of concrete?	2	4
c.	Why do we test the compressive strength of concrete at 1, 3, 7, 14, and 28 days?	2	4
d.	Mention the different test methods available in NDT and its uses.	3	4
e.	How do you ensure the quality of concrete on site during construction?	5	4

PART – C: (Long Answer Questions) (6 x 5 = 30 Marks)

Answer ***ANY FIVE*** questions

		Marks	[CO#]	[PO#]
3.	Discuss the different grades of concrete and its application in construction	(6)	1	4
4.	Assume that you are a Site Engineer for a construction of a residential building, the sand is completely wet due to rain, and how will you modify concrete mixture proportion for concreting with the wet sand?	(6)	1	4
5.	Mention the different types of curing methods available in concrete with its application	(6)	2	4
6.	Discuss the list of factors that contributes the strength and durability of concrete.	(6)	2	
7.	Discuss the effects of shrinkage on the properties of concrete? Explain the different types of shrinkage in concrete.	(6)	3	4
8.	Discuss the NDT methods to test quality and compressive strength of concrete with a neat sketch. How will you determine the modulus of elasticity by Non-Destructive Testing method?	(6)	3	4
9.	Design a M30 grade of RC concrete as per IS 10262- 2019 with the following data; Cement type- PPC; Maximum size of aggragegate-20 mm; Exposure condition is severe; workability 75 mm slump;Degree of site control- good;Type of aggregate is crushed angular aggregates; Maximum cement content not including fly ash is 450 kg/m^3. Assume the necessary data. You are requested to use super plasticizer.	(6)	3	4
10.	Mention different types of special concrete that could result in sustainable development in infrastructure.	(6)	4	7

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