BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – B.Tech.(CE)]-2021
Course Name – Concrete Technology
Course Code - PEC-CE602C
(Semester VI)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Identify the laboratory test that measures the particle size of cement particles:

a) Fineness test b) Standard consistency test
c) Setting time test d) Compressive strength test

(ii) Identify the test that examines the ability of cement to retain its volume without significant expansion upon curing:

a) Fineness test b) Standard consistency test
c) Setting time test d) Soundness test

(iii) Identify the test that evaluates the soundness of cement by subjecting it to autoclave pressure and temperature:

a) Fineness test b) Standard consistency test
c) Setting time test d) Autoclave test

(iv) Identify the compressive strength testing age typically used for assessing cement mortar or concrete:

a) 1 day b) 3 days
c) 7 days d) 28 days

(v) Identify the exposure condition that corresponds to Severe exposure as per IS 456:2000:

a) Exposure to mild industrial environment b) Exposure to coastal areas with saltwater
c) Exposure to freezing and thawing cycles d) Exposure to rain only

(vi) Identify the type of deterioration in concrete that results from the expansion and cracking due to freeze-thaw cycles:

a) Efflorescence b) Carbonation
c) Alkali-silica reaction d) Frost action

(vii) Identify the property of hardened concrete that reflects its ability to resist the passage of water and aggressive chemicals:

a) Strength b) Durability

c) Impermeability
d) Workability

(viii) Identify the test commonly used to assess the permeability of concrete by measuring the flow of water through the specimen:

a) Slump test
b) Chloride ion penetration test
c) Water absorption test
d) Permeability test

(ix) Identify the term that describes the process by which water penetrates concrete, reacting with calcium hydroxide to form calcium carbonate:

a) Carbonation
b) Efflorescence
c) Leaching
d) Sulfate attack

(x) Identify the method used to reduce the permeability of concrete by filling pores with a material that blocks the passage of water and other substances:

a) Waterproofing
b) Sealing
c) Curing
d) Acid etching

(xi) Choose the reason why proper curing is particularly important in cold weather concreting:

a) To accelerate setting time
b) To reduce concrete strength
c) To prevent freezing and maintain hydration
d) To decrease the use of admixtures

(xii) Choose the common practice to protect freshly placed concrete in cold weather conditions:

a) Adding more water to the mix
b) Using rapid-setting cement
c) Covering with insulating blankets or straw
d) Increasing the air content

(xiii) Choose the primary challenge of hot weather concreting that can lead to reduced workability and increased water demand:

a) Rapid setting time
b) Accelerated curing
c) High evaporation rate
d) Increased slump

(xiv) Choose the method used to control concrete temperature during hot weather concreting:

a) Increasing the water-cement ratio
b) Adding ice to the mix
c) Reducing the cement content
d) Using cooling admixtures or chilled water

(xv) Choose the practice that helps mitigate the effects of high temperatures during hot weather concreting:

a) Increasing the air content
b) Reducing curing time
c) Using a concrete vibrator
d) Providing shade and windbreaks

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Write down the function of temperature control in hot weather concrete and cold weather concrete. (3)
3. Define the term flexural strength. (3)
4. Define the term shear strength. (3)
5. Discuss the benefits of mineral admixture. (3)
6. Illustrate the term steam curing. (3)

OR

Illustrate the term Membrane Curing. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Conclude the function of mix proportioning in concrete mix design. (5)
8. Illustrate the importance of placing and transporting concrete in the field. (5)
9. Explain the term ready-mix concrete. (5)

10. Discuss the term water-reducing admixtures. (5)
11. Describe the term aggregate-cement interface. (5)
12. Express the main purpose of retarding admixtures and how does it work. (5)

OR

Express the water-reducing admixtures affect the strength of concrete. (5)

****