Unit 5 - Week 3

Assignment 3

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-02-19, 23:39 IST.

1) Consider the following concrete mixes *2 points*

Concrete A – An M30 grade design concrete for a house in Jammu (4 °C and 50% RH).
Concrete B – An M30 grade design concrete for a house in Jammu (4 °C and 100% RH).
Concrete C – An M30 grade design concrete for a house in Chennai (25 °C and 100% RH).
Concrete D – An M30 grade design concrete for a house in Chennai (25 °C and 50% RH).

Which of the following can be inferred at the end of 28 days, provided the cement, fine and coarse aggregates, and the mixing water for all the mixes are of similar properties?

- [ ] Compressive strength of Concrete A > Compressive strength of Concrete B
- [ ] Compressive strength of Concrete B > Compressive strength of Concrete A
- [ ] Compressive strength of Concrete C > Compressive strength of Concretes D and B
- [ ] Compressive strength of Concrete C > Compressive strength of Concrete D

No, the answer is incorrect.
Score: 0

Accepted Answers:
Compressive strength of Concrete B > Compressive strength of Concrete A
Compressive strength of Concrete C > Compressive strength of Concretes D and B
Compressive strength of Concrete C > Compressive strength of Concrete D

2) Match the columns *2 points*

#	Column A	#	Column B
A	Hairline shrinkage cracks	i	Reaction of strained quartz crystals with NaOH present in the pore solution
B	Flexural cracking on concrete	ii	Evaporation of water from the concrete within 24 hours from the time of placing
C	D-Cracking on concrete	iii	Cyclic freezing and thawing of ice trapped inside the concrete pores
D	Alligator cracking in concrete	iv	Increase in the volume of stirrup reinforcement due to corrosion
E	Surface scaling of concrete		
F	Spalling of cover concrete		

- ( ) A – i, B – iii, C – ii, D – iii, F - iv
- ( ) A – i, B – iv, C – iii, D – ii, E – iii
- ( ) A – ii, C – iii, D – i, E – iii, F – iv
- ( ) A – ii, C – iv, D – iii, E – i, F – iv

No, the answer is incorrect.
Score: 0

Accepted Answers:
A – ii, C – iii, D – i, E – iii, F – iv

3) Choose the correct statement(s) *1 point*

- [ ] SCMs contain crystalline silica
- [ ] Pozzolanic reactions produce more C-S-H
- [ ] Pozzolanic reactions can occur without water
- [ ] Use of SCMs enhances the chloride diffusion coefficient of concrete

No, the answer is incorrect.
Score: 0

Accepted Answers:
Pozzolanic reactions produce more C-S-H

4) The compound, which is highly expansive and causes cracking in concrete during the process of sulphate attack is _____ *1 point*

- ( ) Gypsum
- ( ) Monosuphate
- ( ) CSH
- ( ) Ettringite

No, the answer is incorrect.
Score: 0

Accepted Answers:
Ettringite

5) Which of the following are strategies to prevent sulphate attack? *1 point*

- [ ] Maintain low curing temperature
- [ ] Maintain high w/c ratio
- [ ] Use of cement with low C_3A content
- [ ] Use of SCMs

No, the answer is incorrect.
Score: 0

Accepted Answers:
Maintain low curing temperature
Use of cement with low C_3A content
Use of SCMs

6) For the construction of an underground sewer pipe in an industrialized area, which type(s) of cement will you recommend? *2 points*

- [ ] Ordinary portland cement
- [ ] Calcium aluminate cement
- [ ] Low C_3A cement
- [ ] Rapid hardening cement

No, the answer is incorrect.
Score: 0

Accepted Answers:
Calcium aluminate cement
Low C_3A cement

7) Choose the correct statement(s) *2 points*

- [ ] ASR can occur even if moisture is not present
- [ ] In case of ASR, map-crack density is more near rebars
- [ ] Dosage of lithium can influence the degree of ASR mitigation
- [ ] Only moisture and reactive aggregates are needed to cause ASR

No, the answer is incorrect.
Score: 0

Accepted Answers:
In case of ASR, map-crack density is more near rebars
Dosage of lithium can influence the degree of ASR mitigation

8) Choose the correct statement(s) *2 points*

- [ ] Rate of shrinkage decreases rapidly with time
- [ ] Carbonation shrinkage is high at higher relative humidity
- [ ] Addition of fibres can help to prevent moisture loss and reduce plastic shrinkage
- [ ] Addition of fibres prevents shrinkage by crack-bridging action

No, the answer is incorrect.
Score: 0

Accepted Answers:
Rate of shrinkage decreases rapidly with time
Addition of fibres prevents shrinkage by crack-bridging action

9) Effect of shrinkage and creep of hardened concrete is shown in Figure 1. Match the strain responses (A, B, C, and D) with time to the four exposed conditions (i, ii, iii, iv) given below *2 points*

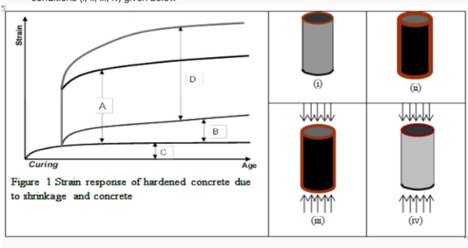

Figure 1 Strain response of hardened concrete due to shrinkage and concrete

- ( ) A – i, B – ii, C – iii, D – iv
- ( ) A – ii, B – i, C – iv, D – iii
- ( ) A – iii, B – i, C – ii, D – iv
- ( ) A – iv, B – ii, C – iii, D – i

No, the answer is incorrect.
Score: 0

Accepted Answers:
A – iii, B – i, C – ii, D – iv