Assignment 6

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

Due on 2020-03-11, 23:59 IST.

1) The stress-strain response of a submerged material and a repairing material is given in the Figure 1(a). Consider a concrete column strengthened using repaired material. The repaired column is subjected to axial load as shown in Figure 1(a). Assume that the axially loaded columns are very stiff. Comment on the stress generated in the column and the repaired material, when the strengthened column experiences an average strain equal to \( \varepsilon_A \).

2) Substrate material will experience more strain than repair material. Repair material will experience more strain than the substrate material. Substrate material will be crushed. Repair material will be crushed. Both substrate and repair material will have the same strain.

No, the answer is incorrect.

Score: 0

Accepted Answers:
- Repair material will experience more strain than the substrate material.
- Substrate material will be crushed.

3) Both shrinkage-compensating and non-shrinking cementitious materials are available in the repair material market. Choose the appropriate statement about shrinkage-compensating cementitious materials.

- They will not shrink, but swell.
- They contain very low cementitous content and resist swelling.
- They prevent shrinkage by reducing the surface tension of water.
- They contain expansive agents.

No, the answer is incorrect.

Score: 0

Accepted Answers:
- They contain expansive agents.

4) Consider two concrete A and B with identical mixture proportion and materials, except the fineness of cement. Both were found to exhibit plastic shrinkage. Cement used in Concrete A has finer fineness than that in Concrete B. Comment on the plastic shrinkage of Concrete A and B at the end of final setting.

- Typically, Concrete B will exhibit more plastic shrinkage than Concrete A.
- Typically, Concrete A will exhibit more plastic shrinkage than Concrete B.
- Typically, Concrete A and Concrete B will exhibit similar plastic shrinkage.
- Possibly, plastic shrinkage in Concrete A will be twice that of plastic shrinkage in Concrete B.

No, the answer is incorrect.

Score: 0

Accepted Answers:
- Typically, Concrete A will exhibit more plastic shrinkage than Concrete B.

5) Simple layouts with less perimeter and corner are recommended for the patch repair to minimize:
- Corrosion and cracking
- Stress concentrations and not cracking
- Shrinkage stress concentration and cracking
- Amount of materials used

No, the answer is incorrect.

Score: 0

Accepted Answers:
- Shrinkage, stress concentration and cracking

6) Based on the understanding from the concrete deterioration mechanisms discussed in previous lectures, select the possible mechanisms involved in the destructive action of water jet method.

- Direct impact, depressurization, and cavitation
- Pressure, abrasion, and vibrations
- Abrasion and erosion only
- Cavitation only
- Erosion and abrasion only

No, the answer is incorrect.

Score: 0

Accepted Answers:
- Direct impact, depressurization, and cavitation

7) As shown in the Figure, steel reinforcement in a reinforced concrete member was severely corroded and exhibited significant cross-sectional loss. Which of the following procedures should be given least preference to avoid steel corrosion in future after repair work?

- Removal of the corrosion products or rust on the steel surface
- Understanding and then providing a realistic environment around the corroded steel
- Providing additional reinforcement with sufficient lay length to transfer the loads
- Providing anti-corrosion agent, rust remover, etc. on the rebars without addressing the rust cause for corrosion
- Providing excellent concrete cover material and adequate cover thickness

No, the answer is incorrect.

Score: 0

Accepted Answers:
- Providing anti-corrosion agent, rust remover, etc. on the rebars without addressing the rust cause for corrosion