Assignment 7

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

Due on 2020-03-18, 23:59 IST.

1. Select the key features of a good galvanic anode system for applications in concrete structures should have.
   - Large surface area of the anode metal to be able to meet the high current demand.
   - Encapsulating mortar with neutral pH to ensure that the zinc anode will corrode.
   - Highly alkaline encapsulating mortar to ensure that the zinc anode will continue to corrode.
   - Encapsulating mortar with disconnected power.
   - Anode at a wide should be the cast into the concrete.

   No the answer is incorrect. Score: 3

   Accepted Answers:
   - Large surface area of the anode metal to be able to meet the high current demand.
   - Highly alkaline encapsulating mortar to ensure that the zinc anode will continue to corrode.
   - Encapsulating mortar with disconnected power.

2. RC piles of a dry dock in Costa Par are experiencing severe corrosion-induced scaling of cover concrete. The following operations are considered to be the best practice for this problem.
   - Coating the rebar with an alkali silica, which can be an electrochemical inhibitor.
   - Crawford the anode of the system using a selected rebar.
   - Polishing the cover concrete, strengthening, and removing the rust scales on rebar.
   - Providing additional rebar to account for the lost steel cross-section, if required.
   - Placing the repair material in the new rebar.

   Which of the following sequence of operations will be appropriate to protect the piles from further corrosion? Only one choice is correct answer.

   No the answer is incorrect. Score: 3

   Accepted Answers:
   - Coating the rebar with an alkali silica, which can be an electrochemical inhibitor.
   - Crawford the anode of the system using a selected rebar.
   - Polishing the cover concrete, strengthening, and removing the rust scales on rebar.
   - Providing additional rebar to account for the lost steel cross-section, if required.

3. Cathodic protection using galvanic anode or using impressed current techniques will result in the corroded steel cross-section in concrete.
   - True or False?

   No the answer is incorrect. Score: 3

   Accepted Answers:
   - True

4. In impressed current cathodic protection (ICCP) systems, Titanium is widely used as the anode material because of its high corrosion resistance and if possible.

   - Stainless steel
   - Zinc
   - Iron
   - Magnesium
   - Stainless steel

   No the answer is incorrect. Score: 3

   Accepted Answers:
   - Stainless steel

5. Select the appropriate statement(s) about Electrochemical Chloride Extraction (ECE) method.
   - ECE is a long-term treatment, which may reduce the chloride ion concentration in the system.
   - ECE can remove the unreacted cement.
   - ECE is a destructive method.
   - ECE can increase the pH of the cover concrete.
   - ECE can increase the pH of the layer of concrete surrounding the rebar.

   No the answer is incorrect. Score: 3

   Accepted Answers:
   - ECE can remove the unreacted cement.
   - ECE can increase the pH of the layer of concrete surrounding the rebar.

6. Rut data have been collected on the concrete grades of an expressway located above a traffic signal in an urban area. Which strategy would you recommend to extend the residual service life of the concrete. Laboratory test results conducted on concrete samples collected from the grade are given below.

   Climate content = 0.516% by weight of concrete
   Ortega permeability index = 4.1
   Winter 4-grade surface finish = 914.2 cm
   - Cement-based coating and anti-corrosion coating over the grading
   - Surface cleaning and anti-corrosion coating
   - Anti-corrosion coating followed by electrochemical chloride extraction
   - Electrochemical rehydration followed by anti-corrosion coating

   No the answer is incorrect. Score: 3

   Accepted Answers:
   - Cement-based coating and anti-corrosion coating over the grading

7. "Feeding of the mine by present transportation" and "supply of additional water" are considered as two approaches to care concrete. Which of the following are not exclusively representing the former approach?
   - Blending of concrete mixes
   - Raising polystyrene film on concrete surface
   - Pumping and laying
   - Wet surface/oven

   No the answer is incorrect. Score: 3

   Accepted Answers:
   - Raising polystyrene film on concrete surface

8. "Feeding of the mine by present transportation" and "supply of additional water" are considered as two approaches to care concrete. Which of the following are not exclusively representing the former approach?
   - Blending of concrete mixes
   - Raising polystyrene film on concrete surface
   - Pumping and laying
   - Wet surface/oven

   No the answer is incorrect. Score: 3

   Accepted Answers:
   - Raising polystyrene film on concrete surface