

## Unit 4 - Week 2

### Course outline

How does an NPTEL online course work?

#### Prerequisite Assignment

#### Week 1

#### Week 2

Corrosion of embedded metal; Types of reinforcement – Bare steels

TM - Ring Test For Assessing The Quality of TMT / QST Steel Rebars

Corrosion of embedded metal; Types of reinforcement – Metallic and non metallic coated rebars

Corrosion in prestressed concrete

Quiz : Assignment 2

Maintenance and Repair of Concrete Structures : Week 2 Feedback Form

Lecture Materials

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#### Week 4

#### Week 5

#### Week 6

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#### Week 8

#### Week 9

#### Week 10

#### Week 11

#### Week 12

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## Assignment 2

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

**Due on 2020-02-12, 23:59 IST.**

1) Which of the following is true regarding CTD rebars?

0 points

- Manufactured using hot-working and cold-working techniques
- Tensile strength increases with the amount of cold work
- Ductility increases with the amount of cold working
- Cold-twisting results in strain hardening
- CTD rebars are easier to weld than TMT rebars

No, the answer is incorrect.

Score: 0

Accepted Answers:

Tensile strength increases with the amount of cold work

Cold-twisting results in strain hardening

2) Cold working decreases the corrosion resistance of the metal

1 point

- True
- False

No, the answer is incorrect.

Score: 0

Accepted Answers:

True

3) In case of TMT/QST steel rebars, the quenching and self-tempering results in a more ductile core and more hard & strong periphery

1 point

- True
- False

No, the answer is incorrect.

Score: 0

Accepted Answers:

True

4) As per the lecture, the chloride threshold of bare steel is higher than that of galvanized steel with no surface damage.

1 point

- True
- False

No, the answer is incorrect.

Score: 0

Accepted Answers:

False

5) Choose the wrong statement/statements regarding galvanized steel rebars

1 point

- Zinc corrosion products are more voluminous than iron/steel corrosion products
- Hot dip galvanizing, produces an extremely tough and abrasion resistant coating
- There can be possible hydrogen evolution
- Addition of chromates in the coating can prevent bond loss and enhance the bond strength

No, the answer is incorrect.

Score: 0

Accepted Answers:

Zinc corrosion products are more voluminous than iron/steel corrosion products

6) Zinc passivates at a pH > 13

1 point

- True
- False

No, the answer is incorrect.

Score: 0

Accepted Answers:

False

7) Which of the following is the appropriate order-of-practice to be followed while using FBEC steel rebars for construction?

2 points

- Fusion-bonded epoxy coating of steel rebars in the factory
- Cutting and bending of rebars in the site
- Transporting FBEC rebars to the site
- Cutting and bending of rebars in the factory
- Holiday inspection on the coating
- Reject the rebars with damage/cracks/holidays, if any

- 1 → 3 → 2 → 5
- 1 → 6 → 3 → 2 → 5
- 4 → 1 → 5 → 3
- 4 → 1 → 5 → 3 → 6

No, the answer is incorrect.

Score: 0

Accepted Answers:

4 → 1 → 5 → 3 → 6

8) Exposure of FBEC rebars to UV radiation can result in cracking of epoxy coating followed by under-film corrosion, even without the presence of chlorides

1 point

- True
- False

No, the answer is incorrect.

Score: 0

Accepted Answers:

True

9) What are the mechanisms of corrosion prevention in a CPC coated steel rebars (when coating is applied on sand-blasted steel surfaces) ?

2 points

- Helps in the formation of passive film
- Acts as a sacrificing layer for the steel
- Helps in the reduction of oxygen supply
- Eliminates direct physical contact between metal and electrolyte

No, the answer is incorrect.

Score: 0

Accepted Answers:

Helps in the formation of passive film

Helps in the reduction of oxygen supply

Eliminates direct physical contact between metal and electrolyte

10) Match the columns with best choices

2 points

A	Chloride attack in pre-tensioned concrete systems	1	Strands are stressed before the concrete is cast and hardened	
B	Corrosion products from 7-wire strands	2	Strands are stressed after the concrete is hardened	
C	Pre-tensioning	3	Ingress through the concrete cover	
D	Deformed bars	4	Delayed expansive stresses onto the surrounding concrete	
		5	Early expansive stresses onto surrounding concrete	

- A-4, B-2, C-1, D-3
- A-5, B-1, C-2, D-4
- A-4, B-1, C-2, D-3
- A-3, B-4, C-1, D-5

No, the answer is incorrect.

Score: 0

Accepted Answers:

A-3, B-4, C-1, D-5

11) Choose the correct statement/statements

1 point

- Ducts should not be filled with water before grouting
- Formation of soft grout should be avoided
- High bleed grouts are preferred
- Metallic caps are the best protective measure for the end anchor zones

No, the answer is incorrect.

Score: 0

Accepted Answers:

Ducts should not be filled with water before grouting

Formation of soft grout should be avoided

Metallic caps are the best protective measure for the end anchor zones

12) Grout injection in a post-tensioning duct should be from lowest point of the tendon

1 point

- True
- False

No, the answer is incorrect.

Score: 0

Accepted Answers:

True