

Q1. Answer with a (✓) if it is a true statement and with (x) if it is a false one, and correct the false one: (12 Mark)

1. ____ The core test is the most used nondestructive method for evaluating the concrete compressive strength.
2. ____ A major disadvantage of column jacketing is that it improves the lateral load capacity of the building in a reasonably uniform and distributed way.
3. ____ Plasticizers which include sand, cement, calcium carbonate silica, asbestos, etc. may be added to polymers to reduce their cost and to increase their strengths.
4. ____ Polymer concrete contains filling materials such as aggregates.
5. ____ Plastic shrinkage cracks will reduce the durability of the concrete element.
6. ____ Plastic Shrinkage is caused also by evaporation of cement paste water after setting.
7. ____ Aggregates may contain reactive silica that reacts with alkalis contained in cement.
8. ____ Polymer concrete has high compressive strength exceeding 200 MPa.
9. ____ Resin concrete is also called polymer concrete in which cement replaces resin.
10. ____ Rebound hardness test is used in order to overcome some of the is advantages of the destructive tests.
11. ____ Foundations need strengthening in the case of applying additional loads.
12. ____ Construction debris accounts for 1/4 of all solid waste.

Q2: Rearrange the following steps of repairing concrete beams by the method of beam jacketing in the correct order. (5 Mark)

1. Applying bonding agent to bond new concrete with old concrete.
2. Cleaning the reinforcement and coating it with a primer.
3. Pouring the new concrete with required thickness of concrete cover.
4. Removing concrete cover and any deteriorated concrete.
5. Adding and anchorage of the required stirrups and reinforcement.

In Correct	1	2	3	4	5
Correct					

Q3: Fill in the blanks with the appropriate terms based on your knowledge. (10 Mark)

1. _____ device is used to determine the concrete cover to reinforcing bars and location of reinforcing bars.
2. _____ are added to concrete to modify its properties to make it suitable for repair works.
3. _____ comprise a combination of a single molecule called "monomer" which has a heavy molecular weight.
4. _____ occur at elements subjected to bending moments.
5. _____ of concrete is the most important property for evaluating the strength of reinforced concrete members in existing structures.
6. _____ is a bonding agent to bond new concrete with old concrete.
7. _____ in this test the pulse velocity through a known thickness of concrete is measured using special apparatus.
8. _____ will also enhance resistance to chemicals, reduce permeability and enhance workability.
9. _____ may cause the structure to be tilted or twisted.
10. _____ aims to assess the safety factor concerning the carrying capacity of a structure or part of the structure.

Q4:

(18 Mark)

1. Explain the process of strengthening isolated footings and draw schematics showing the steps involved.

2. Briefly explain the purpose procedure of repairing concrete slabs by adding a new layer of concrete. Draw schematics to support your answer.

3. Define jacketing of columns, mention the methods of column jacketing and draw schematics of column jacketing.

Q5. Write briefly about the project (research) you have prepared in the Restoration and Rehabilitation of Buildings course. (5 Mark)