

# Unit 6 - Week 5

## Course outline

### How to access the portal

#### Week 1

#### Week 2

#### Week 3

#### Week 4

#### Week 5

Recycled Aggregate-ITZ and Processing

Classification of Recycled Aggregate: Crushing and Grinding of Aggregates

Crushing and Grinding: Bond's Law+Operational Energy: U-Value

Operational Energy: Thermal Conductivity Models

PDF File

Quiz : Assignment 5

Feedback Form

#### Week 6

#### Week 7

#### Week 8

#### Week 9

#### Week 10

#### Week 11

#### Week 12

#### Solution of Assignment

## Assignment 5

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

**Due on 2019-09-04, 23:59 IST.**

### Q1-Q3) State True/False

1) Recycled aggregates have higher bulk density and specific gravity compared to non-recycled aggregates. 1 point

- True  
 False

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
False

2) Crushing value and abrasion mass loss are higher for recycled aggregates compared to non-recycled aggregates. 1 point

- True  
 False

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
True

3) Concrete mixes prepared from recycled aggregates tend to exhibit better chloride and carbonation resistance compared to those prepared from non-recycled aggregates. 1 point

- True  
 False

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
False

4) The extent of ITZ from the aggregate surface is of the order of ..... 1 point

- 30 nanometers  
 30 microns  
 30 millimeters  
 30 centimeters

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
30 microns

5) Given a brick masonry wall (overall area  $4 \times 5 \text{ m}^2$ ) of thickness 250 mm having 15 mm plasters on both sides, calculate the U value (in  $\text{W/m}^2/\text{K}$ ) of the overall wall, given that thermal conductivities for brick work and plasters are 0.70  $\text{W/m/K}$  and 0.40  $\text{W/m/K}$  respectively.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
(Type: Range) 2.20,2.40

2 points

### Q6 – Q7)are linked

A porous medium comprising of solid material, air and water has a porosity of 40%. Thermal conductivities of the solid material, water and air 2.0  $\text{W/m/K}$ , 0.625  $\text{W/m/K}$  and 0.025  $\text{W/m/K}$  respectively. Answer the following questions based on given information.

6) Lower bound of thermal conductivity (in  $\text{W/m/K}$ ) for the dry medium as per Ohm's law model. 3 points

- 0.025  
 0.062  
 1.06  
 2.45

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
0.062

7) Upper bound of thermal conductivity (in  $\text{W/m/K}$ ) for the saturated medium as per Maxwell's law model. 3 points

- 0.193  
 0.518  
 0.948  
 1.265

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
1.265

8) Power required to crush the aggregate from infinite size to a size having 80% passing through 100 microns is W watts at 1 kg/s rate. If the power required to grind aggregates of size 40 mm (80% passing) to 20 mm (80% passing) at 1 kg/s rate is  $\alpha W$ , what is the value of  $\alpha$  ?

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
(Type: Range) 0.0202,0.0212

3 points