Assignment-7

The due date for submitting this assignment has passed. Due on 2019-03-20, 23:59 IST.

As per our records you have not submitted this assignment.

1) Identify the TRUE statement with regards to the portland cement based paste systems (PCBPS)

- As per IS 12600, both initial and final setting time of low heat cement are higher than the ordinary portland cement
- Low heat cement has higher C2S content than any other types of portland cement
- Sulfate resistance cement has higher C3A content than the ordinary portland cement
- High early strength cement has larger average particle size than the ordinary portland cement

No, the answer is incorrect.
Score: 0

Accepted Answers:
Low heat cement has higher C2S content than any other types of portland cement

2) Identify the TRUE statement with regards to the mercury intrusion porosimetry and its use in porosity related studies of cement paste and concrete

- As the age of concrete increases, the threshold diameter of pores decreases
- The total intrusion volume data cannot be used to obtain the differential intrusion volume data
- Mercury is preferred for use because it wets the surface of the pore walls
- The 'critical diameter' indicates the average size of pores at which the onset of permeation of mercury into the sample occurs

No, the answer is incorrect.
Score: 0

Accepted Answers:
As the age of concrete increases, the threshold diameter of pores decreases

3) Identify the TRUE statement with regards to the porosity studies of cementitious materials

- If two different cement paste samples have same porosity (in terms of grams per cc), it implies that the pore size distribution of the two samples should also be identical
- Porosity is directly related to the amount of capillary pores in the system
- A higher range of pore size in portland cement based paste systems (PCBPSs) can be observed with the increase in the curing period
- Porosity and permeability can be related to each other when the pore connectivity in the pore system is low

No, the answer is incorrect.
Score: 0

Accepted Answers:
Porosity is directly related to the amount of capillary pores in the system
The addition of fly ash results in the refinement of porosity and pore size distribution of portland cement based paste systems (PCBPSs).

When comparing cement pastes of same porosity, the paste with lower volume of larger pores will have higher strength.

At early curing periods, the porosity is low because the capillary pores have lesser connectivity.

The refinement of pore structure of PCBPS is the result of the continued hydration.

No, the answer is incorrect.
Score: 0

Accepted Answers:
At early curing periods, the porosity is low because the capillary pores have lesser connectivity.

5) Identify the FALSE statement with regard to the permeability of concrete

- The strength of concrete increases as its permeability decreases
- The macropores and large mesopores both affect the permeability of concrete
- Inter connected pores allow more transport of deleterious materials in concrete during the service life of the structure.
- At early curing periods, the permeability is low because the capillary pores have lower connectivity.

No, the answer is incorrect.
Score: 0

Accepted Answers:
At early curing periods, the permeability is low because the capillary pores have lower connectivity.

6) Identify the TRUE statement with regard to the rapid chloride permeability test used for concrete

- Classification of concrete based on the rapid chloride permeability test is based on charge passed expressed in ‘Coulombs’
- Reservoirs used in the test are filled with 0.3M NaCl and 0.3M NaOH solutions
- The method for carrying out the test is given in ASTM C1201
- In the test, a potential difference of 60V is applied across the two faces of concrete disc for a 3-hour period.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Classification of concrete based on the rapid chloride permeability test is based on charge passed expressed in ‘Coulombs’

7) Identify the FALSE statement with regard to the salt ponding test used for concrete

- The ponding in the test is carried out for a period of 90 days
- A 3% NaCl solution is used for ponding the surface
- Specimens are moist cured for 14 days and then stored in drying room at 100% relative humidity for 50 days before testing
- The method for carrying out the test is given in AASHTO T259

No, the answer is incorrect.
Score: 0

Accepted Answers:
Specimens are moist cured for 14 days and then stored in drying room at 100% relative humidity for 50 days before testing.

8) Identify the FALSE statement with regard to the determination of water permeability of concrete

- The method is mostly suited for concrete with high permeability
- In modified water permeability test method, the test is carried out on concrete disc
- In modified water permeability test, the depth of penetration is taken as a measure of permeability
- The test is carried out by applying pressure on water to accelerate and facilitate penetration of water into the concrete.

No, the answer is incorrect.
Score: 0
9) Consider the information given in the following table regarding the different types of cement as per ASTM standards, and properties or use of the cement.

<table>
<thead>
<tr>
<th>Type of cement</th>
<th>ASTM C150 Classification of cement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Type I</td>
<td>A Low heat of hydration cement</td>
</tr>
<tr>
<td>2 Type II</td>
<td>B High early strength cement</td>
</tr>
<tr>
<td>3 Type III</td>
<td>C High sulfate resistance cement</td>
</tr>
<tr>
<td>4 Type IV</td>
<td>D General purpose cement</td>
</tr>
<tr>
<td>5 Type V</td>
<td>E Moderate heat of hydration cement</td>
</tr>
</tbody>
</table>

Which of the following correctly matches the types and the properties of the cement?

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
1-D, 2-E, 3-B, 4-A, 5-C

10) Consider the following table giving the constituents of concrete in one column and approximate range of volume occupied by different constituents.

<table>
<thead>
<tr>
<th>Type of cement</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Cement</td>
<td>A 31-50 %</td>
</tr>
<tr>
<td>2 Water</td>
<td>B 0.5-6 %</td>
</tr>
<tr>
<td>3 Coarse aggregates</td>
<td>C 14-21 %</td>
</tr>
<tr>
<td>4 Fine aggregates</td>
<td>D 7-15 %</td>
</tr>
<tr>
<td>5 Air</td>
<td>E 24-30 %</td>
</tr>
</tbody>
</table>

Which of the following correctly matches the different constituents and their volume fractions in normal concrete?

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

No, the answer is incorrect.
Score: 0

Accepted Answers:
1-D, 2-C, 3-A, 4-E, 5-B