Assignment 6

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

1) Which of the following factors affect the thermal conductivity of concrete?
   A) Aggregate grade
   B) Mixture content
   C) All above
   D) None of the above
   Accepted Answers: C

2) Choose the correct option that places various brick kilns in the descending order of their specific energy consumptions (SEC).
   * DDK = Dova-Draught kiln, FDBK = Fixed Chamber Buffs Turkish Kiln
   * FDBK, Tundur-Turkish, Zip-Zag, Zip-Zag kiln, DDG
   * Tundur-Turkish, Zip-Zag, Zip-Zag kiln, DDK
   * Zip-Zag, DDK Kiln, FDBK
   Accepted Answers: FDBK, Tundur-Turkish, Zip-Zag, Zip-Zag kiln

3) Match the following stages of firing bricks with temperature ranges.

<table>
<thead>
<tr>
<th>Temperature range</th>
<th>Prevalent pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>T &lt; 300°C</td>
<td>Evaporation of chemically bound water</td>
</tr>
<tr>
<td>400°C &lt; T &lt; 600°C</td>
<td>Decomposition of calcium carbonate et al.</td>
</tr>
<tr>
<td>600°C &lt; T &lt; 900°C</td>
<td>Reduction of uncombined oxygen</td>
</tr>
</tbody>
</table>

4) Strength increases with increase in firing temperature.
   Accepted Answers: True

5) Water absorption increases with increase in firing temperature.
   Accepted Answers: False

6) The process of sintering is called…........
   A) endothermic
   B) exothermic
   Accepted Answers: B

7) Thermal conductivity of brick at dry and saturated states are 0.5 W/mK and 1.5 W/mK respectively, the maximum value of thermal conductivity occurs at degree of saturation equal to... What is the thermal conductivity at 50% saturation? (Hint: Assume quadratic variation for thermal conductivity with degree of saturation)
   Accepted Answers: 0.75 W/mK

Questions (8) on next

The fuel burning rate of a Dova-Draught kiln (DDK) is 2000 kg/h. Brick sampling data collected from the chimney of the kiln is used to estimate the particulate matter emissions. Emission rate of the brick kiln is found to be 3.00 kg/h, when the volumetric flow rate of stack gas is 240 m³/s. Burning 1 kg of feedstock yields 0.95 kg of energy, that is the kiln. Based on the given information, answer the following questions.

8) Determine the concentration of particulate matter in the stack gas (in mg/m³ or as air)
   Accepted Answers: 120

9) Determine the emission factor of the kiln on mass basis (in g/kg fuel)
   Accepted Answers: 0.002

10) Determine the emission factor of the kiln on energy basis (in g/kWh)
    Accepted Answers: 0.002