Multiple Choice Questions – Lecture 4

Only one answer per question is correct!!

1. The role of the annealing process is to:
    a. Relax as much as possible the constraints generated during the forming process
    b. Create a stress profile in the glass article to increase its strength
    c. Re-heat the glass articles to correct their shape after the forming process
    d. Provide a rapid cooling of the glass article for further processing steps

2. The cooling rate to apply in an industrial annealing lehr should be:
    a. Low from the annealing point to room temperature
    b. High between the annealing point and the strain point, then lower until room temperature
    c. The cooling rate in the lehr does not need to be controlled
    d. Low between the annealing point and the strain point, then higher until room temperature

3. The goal of thermal tempering of glass is to increase the mechanical resistance of glass by:
    a. Creating controlled permanent stresses in the glass article
    b. Creating controlled temporary stresses in the glass article
    c. Creating a state of high tension at the surface of the glass article
    d. Removing all stresses from the glass article

4. Which sequence of steps is correct for industrial production of windshields:
    a. Melting, forming, cutting, annealing, tempering
    b. Melting, annealing, forming, tempering, cutting/shaping
    c. Melting, forming, annealing, cutting/shaping, tempering
    d. Melting, forming, cutting/shaping, annealing, tempering

5. The cooling rates involved in the tempering process will be
    a. Similar for all types of articles, regardless the glass composition and the shape of the article
    b. Will be similar for all articles made out of a given glass composition
    c. Will be similar for a given shape of article, regardless the composition of the glass used to produce this article
    d. Will depend both on the composition of the glass and on the shape of the article produced

6. In general, the strength of a given glass will vary according to:
    a. Annealed < Heat Strengthened < Tempered
    b. Annealed < Tempered < Heat Strengthened
    c. Annealed > Heat Strengthened > Tempered

7. Thermal tempering can be applied to articles with:
    a. All types geometries provided that the thickness is not too important
    b. All types of geometries and thicknesses
    c. Simple geometries and very a thickness below 1mm
    d. Simple geometries and a thickness above approx. 2 mm

8. After tempering, the stress profile for a glass plate will be:
    a. Uniform throughout the plate
    b. The surface will be in compression and the core in tension
    c. The surface will be in tension and the core in compression