Assignment No. 7

The due date for submitting this assignment has passed. Due on 2019-09-18, 23:59 IST. As per our records you have not submitted this assignment.

1) Surface modification through techniques such as carburizing/nitriding can lead to

   - Phase transformations
   - Increase in wear resistance
   - Increase in surface hardness
   - All of above

No, the answer is incorrect.
Score: 0
Accepted Answers: All of above

2) For which carbon content in steels, austenite to martensitic transformation will lead to highest hardness (for same cooling rates and chemical composition of other elements)

   - 0.1% C
   - 0.2% C
   - 0.3% C
   - 0.4% C

No, the answer is incorrect.
Score: 0
Accepted Answers: 0.4% C
3) Low carbon steels are austenitized during carburizing due to

- Lower diffusivity of carbon at higher temperature
- Higher solubility of carbon in austenite and facilitate martensite formation later on quenching
- Reduced movement of carbon into the substrate
- All of the above

No, the answer is incorrect.
Score: 0
Accepted Answers: 
*Higher solubility of carbon in austenite and facilitate martensite formation later on quenching*

4) The soaking period in carburizing heat treatment thermal cycle is given by

No, the answer is incorrect.
Score: 0
Accepted Answers: 
t2

5) The variation of depth of carburizing with time for three different temperatures (T1, T2 and T3) is given in Figure below. The relation between T1, T2 and T3 is given by

No, the answer is incorrect.
Score: 0
Accepted Answers: 
*T1=T2=T3*
6) Vacuum carburizing does NOT involve
   - Feeding of gas in the carburizing chamber
   - Oxidation of substrate surface
   - Increase in carbon content at the surface
   - All of above

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   * Oxidation of substrate surface

7) The major constituent in the molten bath during cyaniding is
   - NaCN
   - Na$_2$CO$_3$
   - NaCl
   - All of above are present in equal quantity

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   * NaCN

8) During nitriding, formation of inappropriate nitrides at the surface can cause
   - Increase of friction coefficient
   - Formation soft and ductile nitride phase
   - Increased cracking tendency due to formation of hard and brittle phases
   - All of above

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   * Increased cracking tendency due to formation of hard and brittle phases

9) Conventional carburizing process faces issues such as
   - Long time to complete the process
   - High temperature requirement
   - High cost due to low productivity
   - All of the above

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   * All of the above

10) In vacuum diffusion based surface modification process
    - A thin layer of surface is modified
    - Surface modification is possible up to greater depth (500 µm)
    - Chemical reactions are used for surface modification
    - Both a and c

    No, the answer is incorrect.
    Score: 0
    Accepted Answers:
    * Both a and c