Assignment-2

The due date for submitting this assignment has passed. Due on 2017-08-09, 23:59 IST.
As per our records you have not submitted this assignment.

1) For solidification, cooling the liquid below its melting point is______ 1 point
   - Sufficient, but not necessary condition
   - Necessary and sufficient condition
   - Neither necessary nor sufficient condition
   - Necessary, but not sufficient condition

   **No, the answer is incorrect.**
   **Score:** 0
   **Accepted Answers:**
   - Necessary, but not sufficient condition

2) Which of the following is true regarding homogeneous nucleation? 1 point
   - With increasing undercooling, nucleation rate decreases
   - With increasing undercooling (lowering of temperature), critical size of the nucleus decreases
   - With increasing undercooling, homogeneous nucleation becomes less and less probable
   - With increasing undercooling, $\Delta G^*$ increases

   **No, the answer is incorrect.**
   **Score:** 0
   **Accepted Answers:**
   - With increasing undercooling (lowering of temperature), critical size of the nucleus decreases

3) Heterogeneous nucleation is much easier to occur because______ 1 point
   - the surface energy term is much smaller during heterogeneous nucleation
   - volume energy term is much higher during heterogeneous nucleation
   - the surface energy term is much higher during heterogeneous nucleation
   - volume energy term is much lower during heterogeneous nucleation

   **No, the answer is incorrect.**
   **Score:** 0
   **Accepted Answers:**
   - the surface energy term is much smaller during heterogeneous nucleation

4) Heterogeneous nucleation rate can be expressed by______ 1 point
   - $N_{het.} = n_1 \exp(\Delta G^*/K.T)$
   - $N_{het.} = f_1 n_1 \exp(-\Delta G^*/R.T)$
   - $N_{het.} = f_1 n_1 \exp(\Delta G^*/T)$
   - $N_{het.} = f_1 n_1 \exp(-\Delta G^*/K.T)$
5) What is the heat balance equation for liquid-solid interface?

- $K_S - K_L = \rho_S HRT$
- $K_S G_S - K_L G_L = \rho_S RT$
- $K_S G_S - K_L G_L = \rho_S HR$
- $K_S G_S - K_L G_L = \rho_S 2RT$

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

- $K_S G_S - K_L G_L = \rho_S HRT$

6) What is the unit of thermal gradient?

- cal/cm².°C
- cal.°C/cm
- cal/cm.°C
- cal.cm.°C

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

- cal/cm.°C

7) During solidification of casting and ingots, total heat that needs to be taken out of the liquid for solidification, includes__________

- Only the heat of fusion
- Heat of fusion + heat given out by solidifying liquid
- Heat of fusion + heat given out by solidifying liquid + extra heat in the liquid (called superheat)
- Heat of fusion + extra heat in the liquid (called superheat)

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

- Heat of fusion + extra heat in the liquid (called superheat)

8) For semi-infinite insulating mold condition, the plot between $S$ and $\sqrt{t}$ is ________

- Parabolic
- Elliptical
- Linear
- Asymptotic

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

- Linear

9) The plot shows temperature versus position for various time. Under what assumption of mold, you will get such cooling curves?s?

- Semi-infinite insulating mold
- Fixed outside temperature of the mold
- Non-insulating mold
- Steady state heat flow

No, the answer is incorrect.
Score: 0
Accepted Answers:
Fixed outside temperature of the mold