Week 2 Assignment 2

1. The probe current of an electron beam in an SEM depends on ________ (fill in the blank).
   a. Spherical aberration coefficient
   b. Probe distance
   c. Brightness
   d. All of the above

2. When an electron beam hits the sample, the focused interaction volume increases with _______ (fill in the blank) and _______ (fill in the blank) atomic number. (Fill in the blanks)
   a. 
   b. 
   c. 
   d. 

3. The SEI signal in an SEM analysis is generated from _______ (fill in the blank).
   a. Primary electron beam
   b. BSE
   c. SEI
   d. SE2

4. Which electron signal will be your choice if you want to generate an atomic number contrast in your SEM analysis?
   a. SEI
   b. SE2
   c. BSE
   d. BSE

5. The bias voltage applied to the E-T detector in SEM is _______ (fill in the blank).
   a. 10 kV
   b. 1 kV
   c. 3 kV
   d. 10 kV

6. To increase the secondary electron yield from the backscattered electrons, _______ (fill in the blank) beam is used with the target. (Fill in the blank)
   a. MeV
   b. keV
   c. 20k
   d. 20

7. Which of the following should not be done to reduce charging-up phenomenon in SEM?
   a. Reduce the accelerating voltage
   b. Low vacuum
   c. Reduce the sample insulating current
   d. Low scan rate

8. For a high-resolution electron image, which will be your choice of accelerating voltage from the following?
   a. 15 kV
   b. 1 kV
   c. 25 kV
   d. 10 kV

9. Which type of sample cannot be directly examined in an SEM?
   a. Powder sample
   b. Inorganic samples
   c. Wet samples
   d. Thin films

10. Which of the following electron gun is best suited to achieve the highest resolution?
    a. Thermionic gun
    b. Laue gun
    c. Field emission gun
    d. Schottky emission gun