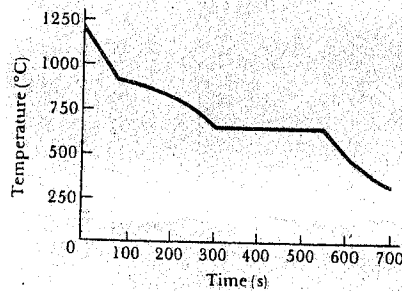
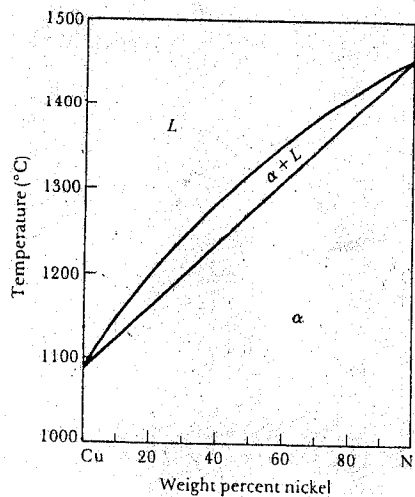


- (15) 1. Please draw a typical creep curve to show the strain produced as a function of time at constant stress and constant temperature, and explain what properties of materials can be obtained from a creep curve. In addition, please show the effect of temperature or applied stress on the creep curves by drawings.
- (10) 2. Explain: (a) Screw dislocation (b) Schottky defect (c) Cold working (d) Strain hardening (e) Recrystallization temperature
- (15) 3. A cooling curve is shown in the following figure; please determine (a) the pouring temperature, (b) the superheat, (c) the liquidus temperature, (d) the eutectic temperature, (e) the freezing range, (f) the total solidification time, and (g) the local solidification time.



- (10) 4. Determine the composition of each phase in a Cu-40% Ni alloy at 1300°C, 1270°C, 1250°C, and 1200°C. Please refer to the following Figure.



注意：背面有試題

- (20) 5. (a) Please draw the diagram of simple hexagonal and hexagonal close-packed structure.
- (b) Please draw the body-centered cubic structure and calculate its packing factor (volume of atoms/volume of unit cell)
- (15) 6. Please describe and derive the Bragg's law in diffraction
- (15) 7. Please use the band model to describe
- (a) Insulator, semiconductor, and metal.
- (b) Intrinsic semiconductor and extrinsic semiconductor