1. Given the S-N curve, answer the following:
    a.   Is the material brass, aluminum or steel?

    b.   If the intended part will operate at a frequency of 66 Hz and 350 MPa, how many days until it fails? (Hint: Hz are cycles/second.)

2. Define Creep.
3. Sketch three creep strain curves at increasing temperature with Creep strain on the Y axis and time on the X axis. The sketch/plot should make it clear how creep strain rate changes with temperature.
4. Show how increasing applied stress looks in a similar plot.
5. (Challenging problem) Steady-state creep data taken for an iron at a stress level of 135 MPa are given here:

$\dot{\epsilon}_s$ (h^{-1})	T (K)
6.5 x 10^{-4}	1090
9 x 10^{-2}	1210

If it is known that the value of the stress exponent n for this alloy is 8.9, compute the steady-state creep rate at 1310 K and a stress level of 80 MPa.