Practice questions for Transformers and Diodes

1. Primary voltage of a transformer is 65V, and the number of turns in the primary and secondary windings are 60 and 90 respectively. Calculate the voltage across the secondary winding of the transformer. [Ans: 97.5V]
2. Calculate the number of turns required in the primary winding of a transformer, if the primary voltage is 25V, secondary voltage is 90V. There are 36 turns in the secondary winding. [Ans: 10]
3. Secondary voltage of a transformer was 100V when the primary voltage was 30V. Calculate the primary voltage required to obtain a secondary voltage of 225V.
   [Ans: 67.5V]
4. Primary voltage of a transformer is given by $325 \angle 0°$. An RL load is connected at the secondary side - $|V_R|$=6V, $|V_L|$=8V. Calculate the turns ratio of the transformer.
   [Ans: N_P/N_S=32.5]
5. How would you construct a half-wave rectifier, i.e. a rectifier that rectifies only half cycle of the source waveform? Sketch the circuit diagram of the half-wave rectifier consisting of the AC source waveform, transformer, diode(s) and load resistor. Also, sketch the output waveform.
6. What kind of output waveform would we obtain if we connected a filter capacitor in parallel with the load resistor, in a half-wave rectifier?
7. A full-wave rectifier is connected to a resistive load of R = 100Ω, with an average voltage of 9V. The ac source has a frequency of 100π rad/s. Assume the diodes are ideal with no voltage drop. If a 1.5mF capacitor is connected as a filter, calculate the voltage ripple. [Ans: ΔV = 0.6V]