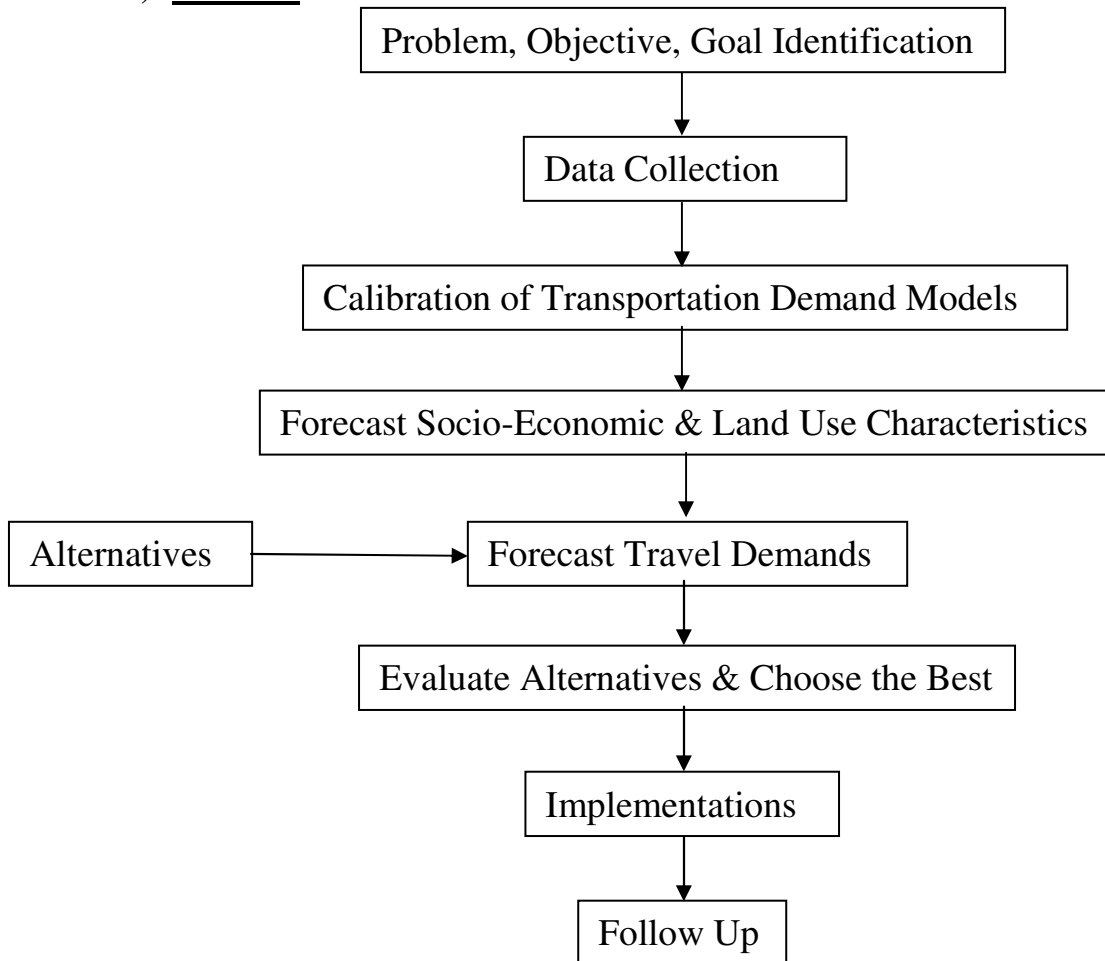


2. a) **3 Points**



2. b) **2 Points**

1. Function classification of the highway being designed
2. Expected Traffic volume and vehicle mix
3. Design speed
4. Topography of the area in which the highway will be located
5. Level of service to be provided
6. Available funds
7. Safety
8. Social and environmental factors

2. c) **5 Points**

$$ADT_{2007} = 3500 * (0.15 * 2.5 + 0.85) = 4288 \text{ pcu's/day}$$

$$ADT_{\text{due to normal growth}} = 4288 * (1 + 0.05)^{20} = 11377 \text{ pcu's/ day}$$

$$DHV_{2027} = 0.15 * 11376 + 600 = 2306 \text{ pcu's/ hr}$$

$$DDHV_{2027} = 0.7 * 2306 = 1614 \text{ pcu's/ hr}$$

$$N_{\text{one dir.}} = \frac{1614}{600} = 3 \text{ lanes}$$

$$\text{Total Pavement width} = 2 * 3 * 3.75 = 22.5 \text{ m}$$

Dr. Ghada S. Moussa