

Traffic Flow - Quiz

1. Which of the following is NOT a primary traffic stream parameter?
 - A) Speed
 - B) Flow
 - C) Density
 - D) Acceleration
2. Time-mean speed (TMS) is calculated based on:
 - A) Average travel time over a section of roadway
 - B) Spot speeds of vehicles passing a point
 - C) Harmonic mean of speeds
 - D) Spacing between vehicles
3. Space-mean speed (SMS) is:
 - A) Always greater than time-mean speed
 - B) Based on the average time it takes to travel over a section
 - C) Calculated using arithmetic mean of speeds
 - D) Irrelevant for traffic analysis
4. According to Greenshield's model, the relationship between speed and density is:
 - A) Exponential
 - B) Linear
 - C) Parabolic
 - D) Logarithmic
5. The fundamental traffic flow equation is (speed: u ; flow: q ; density k):
 - A) $q = k/u$
 - B) $q = u \times k$
 - C) $u = q \times k$
 - D) $q \times u \times k = 1$
6. A single lane has an average headway of 4.0 seconds. What is the corresponding flow (veh/h/ln)?
 - A) 900
 - B) 1200
 - C) 1800
 - D) 2400

7. For a road segment where the average spacing $\bar{s}$ between vehicles is 100 ft, what is the density k (veh/mi)?
- A) 27
 - B) 53**
 - C) 106
 - D) 150
8. If $q = 1,600$ veh/h/ln and $k = 40$ veh/mi/ln, what is the space-mean speed u in mph?
- A) 25
 - B) 35
 - C) 40**
 - D) 60
9. Using Greenshield's model, if free-flow speed is 60 mph and jam density is 200veh/mi, what is the flow at capacity in veh/hr?
- A) 3,000 veh/hr**
 - B) 4,000 veh/hr
 - C) 6,000 veh/hr
 - D) 12,000 veh/hr
10. Four vehicles traverse a 1-mi segment with travel times (in seconds): 80, 90, 100, 120. What is the space-mean speed (SMS) in mph?
- A) 37 mph**
 - B) 40 mph
 - C) 47 mph
 - D) 27 mph