

**Midterm exam for the academic year 2012-2013**

**Question 1**

For the following, write true or false with correcting the false ones by changing one or two words at most.

1. The HCM equation is suitable for usage in Egypt
2. Traffic composition means the number of vehicle in each direction
3. The LOS for all facilities depends on the facility density.
4. Each level of service represents a certain value for each operating condition
5. Speed is a better measure for the level of service of the multilane highway
6. The service flow rate for LOS F is the value that corresponds to the capacity.
7. In level of service A you can drive with your desired speed.
8. According to AASHTO, the design level of service for the freeway in urban area is D.
9. Free flow speed can be measured at flow 1000 veh/hr
10. If the lane width of a freeway is 9 ft then the correction factor will be 6.6
11. If there is an interchange every 2.2mile on a free way then  $F_{ID}$  will be 0.0
12. Multilane highway has no signalized intersection

**Question 2**

An urban freeway is to be designed using the following information:

AADT: 60,000 veh/day,  $K = 0.10$

Directional distribution is 55:45 in the peak hour

The traffic volume contains 7% truck, 5% buses, PHF: 0.95, Lane width: 11 ft, Shoulder width: 3 ft

Interchange density: 0.5 interchange /mile, Terrain: rolling, Design speed: 70 mile / hr

Determine the number of lanes required to provide LOS C.

---

**Question 3**

A Highway section is being designed as a six-lane facility (three in each direction). Determine the peak hour LOS.

Directional design hourly volume: 3600 veh/h, PHF: 0.94

Assumed base free flow speed: 55 mi/h

Urban setting, rolling terrain, Lane width: 10 ft, Shoulder widths: 7 ft (right side) and 5 ft (left side)

Average access point spacing: 12 points per mile on each side

***Best wishes.....Dr Ibrahim Ramadan***