Transportation Prepatory Quiz

A quiz on transportation topics, similar to FE exam-type questions. Try yhe quiz using only the NCEES supplied reference.

1 Multiple Choice 1 point

A flexible pavement system is to be designed using the AASHTO structural number design method with the following criteria:

Material	Minimum Thickness (in.)	Coefficient of Structural Layer
AC surfacing	2	0.44
Aggregate base	4	0.25
Aggregate subbase	4	0.10
Structural number = 2.50		

If the minium thicknesses of the sufacing and aggregate base are used, the required thickness (in.) of the aggregate subbase is most nearly:

- 5
- 4
- 8.5
- 6.5

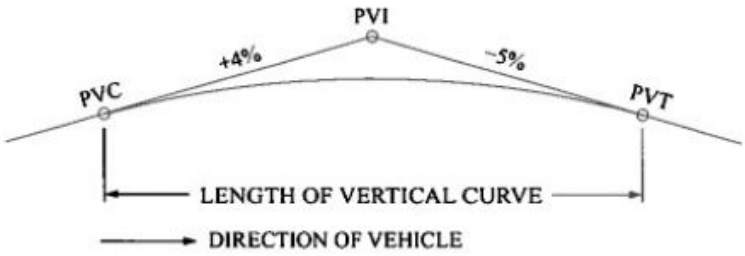
2 Multiple Choice 1 point

A freeway lane has a volume of 1,400 vehicles/hr and an average vehicle speed of 45 mph. The time spacing (sec) between vehicles (center to center) is most nearly:

- 5.2
- 31
- 15
- 2.6

3 Multiple Choice 1 point

A highway profile is shown in the figure. If the design stopping sight distance is 600 ft, the driver's eye height above the roadway surface is 3.50 ft, and the height of an object in the roadway to be avoided by stopping is 1.00 ft, the minimum design length (ft) of the vertical curve is most nearly:



- 1,966
- 1,136
- 1,017
- 3,600

4 Multiple Choice 1 point

An urban intersection is being reconstructed to address safety problems, and it is estimated that the two mutually exlcusive countermeasures have a crash reduction factor of 0.25 and 0.15, respectively. If the expected number of crashes per year is 10 and no signifcant growth in traffic is anticipated, the expected number of average crashes per year after reconstruction is most nealry:

- 4.0
- 3.6
- 6.4
- 6.0

5 Multiple Choice 1 point

At an urban pedestrian crosswalk, the initial WALK signal is displayed for 6.0 seconds, after which a flashing DON'T WALK signal is displayed. The pedestrian walking speed is 3.5 ft/sec, and the street to be crossed is 31.5 ft wide. At the end of the green time, the flashing DON'T WALK signal is terminated. The **minimum** length of time (sec) the green must be displayed is most nearly:

- 12.5
- 6.0
- 9.0
- 15.0

6 Multiple Choice 10 points

At two-way stop-controlled intersections, the sight distance required for minor street movements is determined by:

- ◯ departure sight triangles
- ◯ approach sight triangles
- ◯ stopping sight distance
- ◯ decision sight distance

7 Multiple Choice 1 point

For a given loading, soil conditions, and design life, which of the following pavement types will most likely be the thinnest highway pavement design?

- ◯ Portland cement concrete
- ◯ Composite hot-mix asphalt over Portland cement concrete
- ◯ Hot-mix asphalt
- ◯ Warm-mix asphalt

8 Multiple Choice 1 point

To encourage more carpooling during the peak commute times, a metropolitan area is considering adding HOV lanes to a busy interestate segment. An exisitng transit route has a utility of -0.65, which is unaffected by the proposed change. If the existing non-HOV lanes have a utility of +1.2 and the proposed change introducing a carpool mode has a utility of -0.40, the percentage of trips expected to carpool is most nearly:

- ◯ 0%
- ◯ 17%
- ◯ 74%
- ◯ 15%

9 Multiple Answer 1 point

Which of the following statements about a basic freeway segment are true according to the *Highway Capacity Manual*?

Select **all** that apply.

- ☐ The capacity of a freeway segment with a 75-mph free-flow speed is higher than a similar facility with a 55-mph free-flow speed.
- ☐ Increases in traffic volume lower the estimated operating speed of a freeway segment for both low- and high-volume ranges.
- ☐ The free-flow speed of a freeway segment is impacted by the the amount of lateral clearance on the right side of the roadway.
- ☐ A freeway segment with 13-ft lanes has higher free-flow speeds than a similar facility with 12-ft lanes.
- ☐ Freeway segments with 75-mph free-flow speed experience a reduction in operating speeds at a lower-volume threshold than a freeway segment with a 55-mph free-flow speed.