Highway & Traffic Engineering

Learning Activities:
Driver, Vehicle and Road Characteristics

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QUESTION 1

An engineering student is traveling at 700km/hr along a level road when she sees an advance warning sign indicating that there is stop ahead.

i. If the coefficient of longitudinal friction for the road is f = 0.44 and the drivers reaction time,t is 2.5s what is the required Stopping Sight Distance?
ii. If the road was on a 5% downgrade, what would be the effect on SSD?
iii. If the driver’s reaction time was 3.0s what would be the SSD? (Assuming a level road)
iv. If the initial speed of the vehicles was 66km/hr for the level road case and t = 2.5s,what would be the effect on SSD?

Question 2

A bus travelling from Cameron Highland to Kuantan met an accident which took place on a level road at KM15 of the Lebuhraya Pantai Timur expressway. It is learnt that the bus driver lost control of the vehicle before it hit the bridge abutment and overturned several times. Based on the assessment of damage done by Crash Reconstruction Unit of MIROS, estimated that the bus hit the bridge abutment at a speed of 32km/hr. Leading up to the accident location, they observed skid marks of 106m on the dry asphalt pavement and 60m on the grass shoulder before the bus collided with the bridge abutment. The friction on the asphalt and grass was 0.35 and 0.25 respectively. From the data given you are required to:

i. Estimate the speed of the bus at the beginning of the skidding.

ii. Referring to the condition above, identify whether or not excessive speed was the factor of the accident.

Question 3

A car is traveling with the design speed on the rural highway at 100km/hr and overtook a lorry which is traveling at 50km/hr. The acceleration of car is 1.2 m/s^2 and the time taken during traveling, t = 3 seconds.

Using the equation OSD = $V_b + V_bT + 2S + V_tT$, determine the safe overtaking sight distance required.

END OF QUESTION