

所別：土木工程學系碩士班 己組(一般生) 科目：運輸工程
(學位在職生)

- 一、 Define the following terms. (30%)
 1. Paratransit
 2. Intergreen Interval
 3. Lateral Displacement
 4. Design vehicles
 5. Electronic toll collection

- 二、 A vehicle collided with a beacon erected on the sidewalk and left 7-m skid marks on the dry pavement (with the coefficient of friction about 0.6). Based on the damages sustained, an engineer estimated that the speed at collision was 20 *km/h*. If the roadway had a +3% grade, calculate the speed of the vehicle at the onset of skidding. (20%)

- 三、 Please sketch the cross-section design of a two-lane rural highway with each element marked in the figure. (20%)

- 四、 While taking measurements by the moving-observer method (also known as floating car method), a test vehicle covered a 2-*km* section in 1.8 *min* going against traffic and 3 *min* going with traffic. Given that the traffic flow was 800 *veh/h* and that the test vehicle passed 12 more vehicles than passed it when going with traffic, find (30%)
 - (a) the number of vehicles encountered by the test vehicle while moving against traffic, (5%)
 - (b) the speed of the traffic being measured, (10%)
 - (c) the concentration of the traffic stream, and (10%)
 - (d) whether on its run with traffic the test vehicle was traveling faster or slower than the traffic stream. (5%)