# Drivetrain development for racing applications

1) **Engine Power, Torque Characteristics and Driving Losses**

   a) Define what is the final gear ratio and what are the influencing factors for it. Explain how it is defined and how it impacts top speed and acceleration.

   b) Explain the different types of driving losses in the drivetrain and how to calculate their impact on vehicle top speed.

2) **Kinematic and Dynamic Top Speed Calculation and Optimization**

   a) Describe methods to calculate the kinematic and dynamic top speed of a vehicle.

   b) Discuss strategies to optimize top speed through gear ratios and minor modifications.

3) **0-100 km/h Acceleration Calculation and Optimization**

   a) Detail the process of calculating the 0-100 km/h acceleration time, considering drivetrain efficiency.

   b) Discuss potential optimization techniques to improve acceleration times.

   c) Introduce the gear sawtooth diagram and tractive force diagram, explaining how they are used to understand vehicle dynamics and gear selection.

4) **Racetrack Performance Analysis**

   a) Illustrate how to calculate and analyze a vehicle's performance on a racetrack.

   b) Focus on acceleration, braking distances, and the influence of drivetrain losses.

5) **Gear Ratio Selection and Impact on Vehicle Dynamics**

   a) Explain the importance of gear ratio selection in a vehicle's drivetrain.

   b) Discuss the effect of gear ratios on acceleration, top speed, and overall driving dynamics.