GEARS AND GEAR TRAINS

Total Points: 30 | Questions: 3 | Date: March 07, 2026

AI-generated undergraduate-level mechanical assignment. Contains 3 questions covering key concepts.

Question 1 5 points

Determine the gear ratio for the gear train depicted in the diagram below, where the driver gear has 15 teeth and the driven gear has 45 teeth. Provide your answer as a simplified fraction and a decimal.

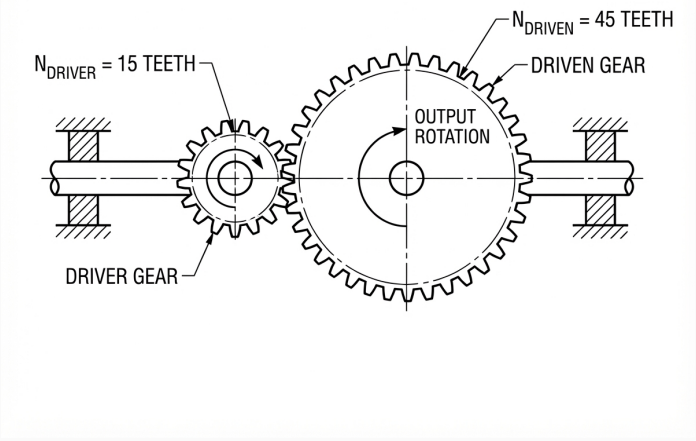

Fig. 1. Circuit diagram for Question 1

Question 2 15 points

Consider the simple planetary gear train shown in the diagram below, with the following specifications: the sun gear has 20 teeth, the planet gears are 10 teeth each, and the ring gear has 60 teeth. Answer the following questions based on this setup.

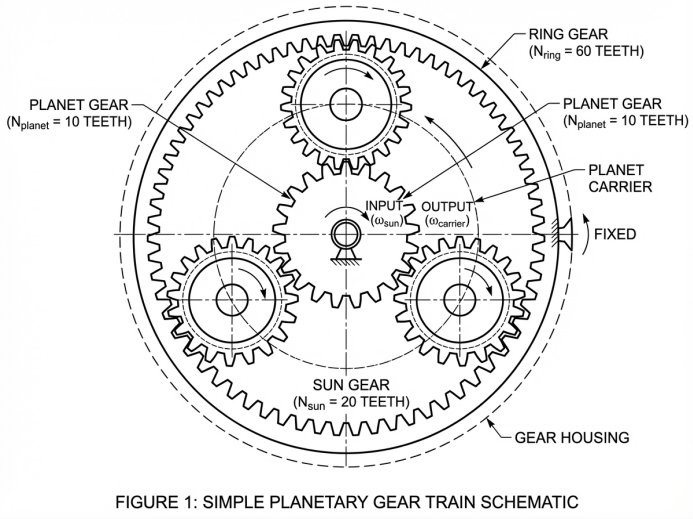

Fig. 2. Circuit diagram for Question 2

Part 2.1 5 points

What is the gear ratio between the sun gear and the ring gear?

Part 2.2 10 points

If the ring gear is held stationary, calculate the angular velocity of the planet carrier, given that the sun gear rotates at 120 RPM clockwise.

Question 3 10 points

Explain the difference between a helical gear and a spur gear in terms of their mechanical advantages and typical applications.