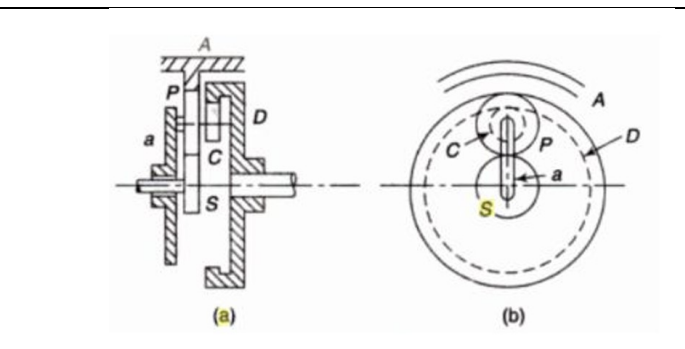
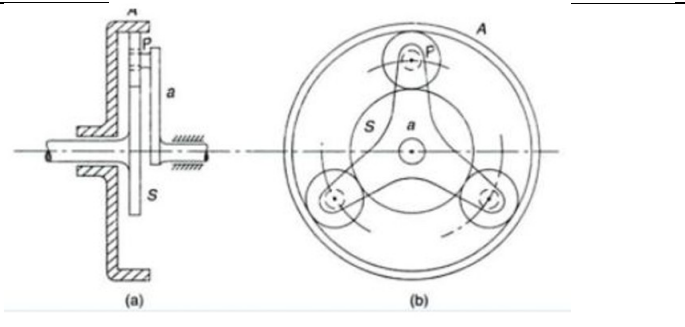


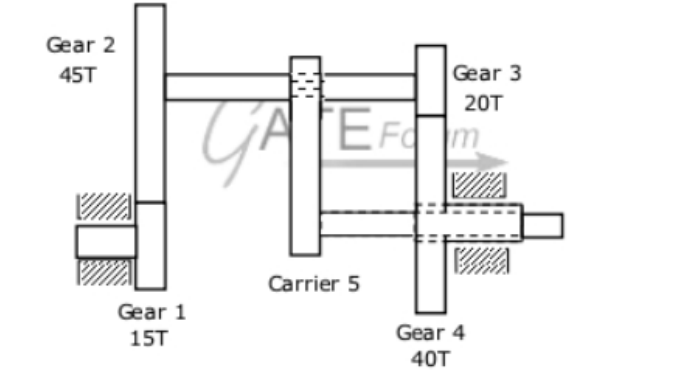
1. In a reduction gear shown in Figure below, the input S has 24 teeth. P and C constitute a compound planet a compound planet having 30 and 18 teeth respectively. If all the gears are of the same pitch, find the ratio of the reduction of gear. Assume A to be fixed



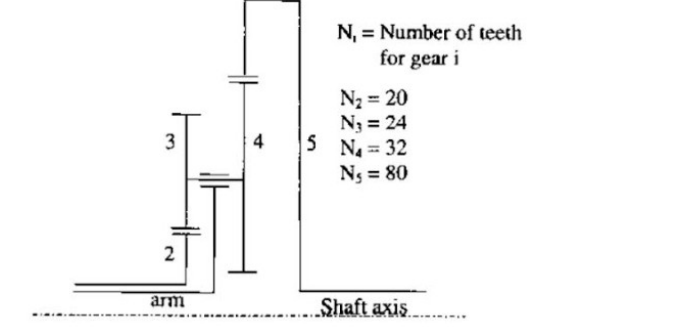
2. The annulus A in the gear shown in the figure. rotates at 300 rpm about the axis of the fixed wheel S which has 80 teeth. The three-armed spider (only one arm a is shown in figure) is driven at 180 rpm. Determine the number of teeth required on the wheel P.



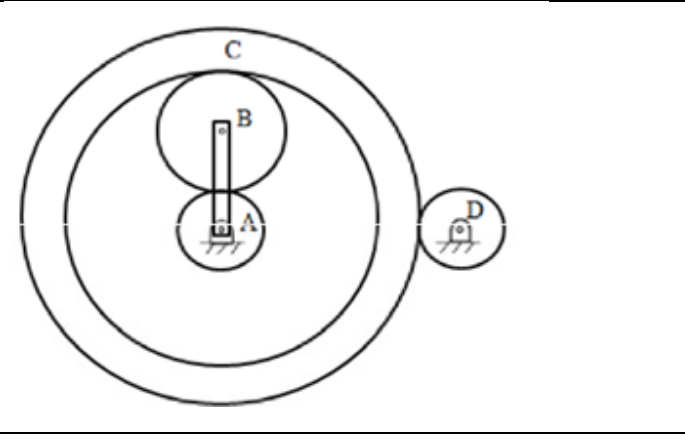
3. A planetary gear train has four gears and one carrier (arm), if gear -1 rotates with 60 rpm cw when looked from the left, what is the angular velocity of the carrier and its direction so that Gear 4 rotates in counterclockwise direction at twice the angular velocity of gear 1 when looked from the left.



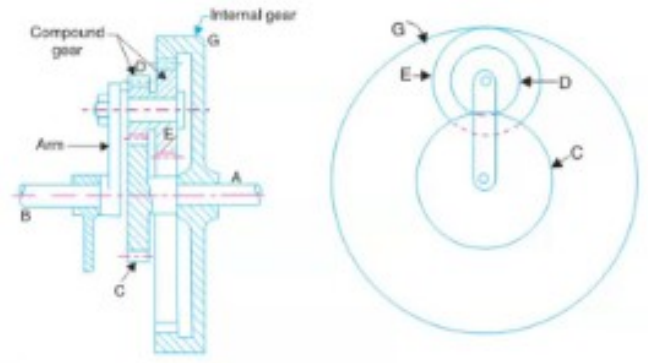
4. For the epicyclic gear arrangement shown in the figure, $\omega_2 = 100$ rad/s clockwise (CW) and $\omega_{arm} = 80$ rad/s counter clockwise (CCW). The angular velocity ω_5 (in rad/s) is



5. An epicyclic gear train is shown in the figure below. The number of teeth on the gears A, B and D are 20, 30 and 20, respectively. Gear C has 80 teeth on the inner surface and 100 teeth on the outer surface. If the carrier arm AB is fixed and the sun gear A rotates at 300 rpm in the clockwise direction, then the rpm of D in the clockwise direction is



6. Two shafts A and B are co-axial. Gear C (50 teeth) is rigidly mounted on shaft. A compound gear D-E gears with C and an internal gear G. D has 20 teeth and gears with C and E has 35 teeth and gears with an internal gear G. The gear G is fixed and is concentric with the shaft axis. The compound gear D-E is mounted on a pin which projects from an arm keyed to the shaft B. Sketch the arrangement and find the number of teeth on internal gear G assuming that all gears have the same module. If the shaft A rotates at 110 rpm, find the speed of shaft B.



7.