3-1. A rod has a outer diameter of 46 mm and an inner diameter of 36 mm. Three torques T_1, T_2 and T_3 are applied to the rod as shown. If $T_1 \sim N(70, 7^2)$ Nm , $T_2 \sim N(30, 2^2)$ Nm , and $T_3 \sim N(90, 5^2)$ Nm, determine the distribution of the maximum shear stress developed in the rod. Assuming that T_1, T_2 and T_3 are independent. (**Ans.** $\tau_{max} \sim N(4.2, 0.74^2)$ MPa)