

1. For the given ply orientations and material properties;
 - a. Determine the reduced stiffness matrix in reference coordinates for each ply.
 - b. Identify the plies that do not cause any shear couplings

$$E_1 = 163 \text{ GPa} \quad E_2 = 11.31 \text{ GPa} \quad G_{12} = 5.50 \text{ GPa} \quad \nu_{12} = 3.13$$

90
-45
-30
30
0

2. Show the following laminate sequences graphically

- a. $[30/\mp 40/60_2]_s$
- b. $[(60/\mp 45/60)_2]_Q$
- c. $[0_G/\pm 45_C/90_K]_T$

3. How many plies are in the following laminates

- a. $[(30/\mp 45/\overline{60})_5]_s$
- b. $[(30/60)_3/(90/45/0)_2]_{3s}$