(1) $L = 1.5 \, m$

$b = 50 \, mm = 0.05 \, m$ ⎫
$t = 3 \, mm = 0.003 \, m$ ⎬ 3-point Bending
$c = 30 \, mm = 0.03 \, m$ ⎭

$d = t + c \Rightarrow 0.033 \, m$

Face-Sheet Data :- $E_f = 65 \, kPa$

$\sigma_f = 530 \, MPa$

Core Data :- $E_c = 4.5 \, MPa$

$\tau_c = 3.8 \, MPa$

Failure Mechanisme :- • Elastic Indentation

• Core Shear

• Face Microbuckling

Max. P According to Elastic Indentation

$$P = bt \left(\frac{\pi^2 \, d \, E_f \, \sigma_c^2}{3L} \right)^{1/3} \Rightarrow (0.0068484) \times 10^6 \, N$$

$\Rightarrow 6.848 \, kN$

Max. P According to Core Shear

$$P = 2 \pi b d \tau_c \Rightarrow 0.0393955 \times 10^6 \, N$$

$\Rightarrow 39.3955 \, kN$

Max. P According to Face Micro buckling.

$$P = \frac{4bdt\sigma_f}{l} \implies 0.00726 \times 10^6 \, N$$

$$\implies 7.26 \, KN$$

∴ Max Allowable P ⟹ Min (6.848, 39.395, 7.26) KN

$$\implies 6.848 \, KN \quad \text{or} \quad 6848 \, N$$