

مسائل ۵ و ۶ از فصل سوم و

6.13. Figure 6.25 shows the load-displacement records of a three-point bend specimen of width  $W = 50$  mm and thickness  $B = 20$  mm containing three cracks of length  $a = 24, 25$  and  $26$  mm. The specimen with  $a = 25$  mm fails at a displacement  $u = 2$  mm. Determine the value of  $J$  using Equation (6.51) and Equation (6.36).

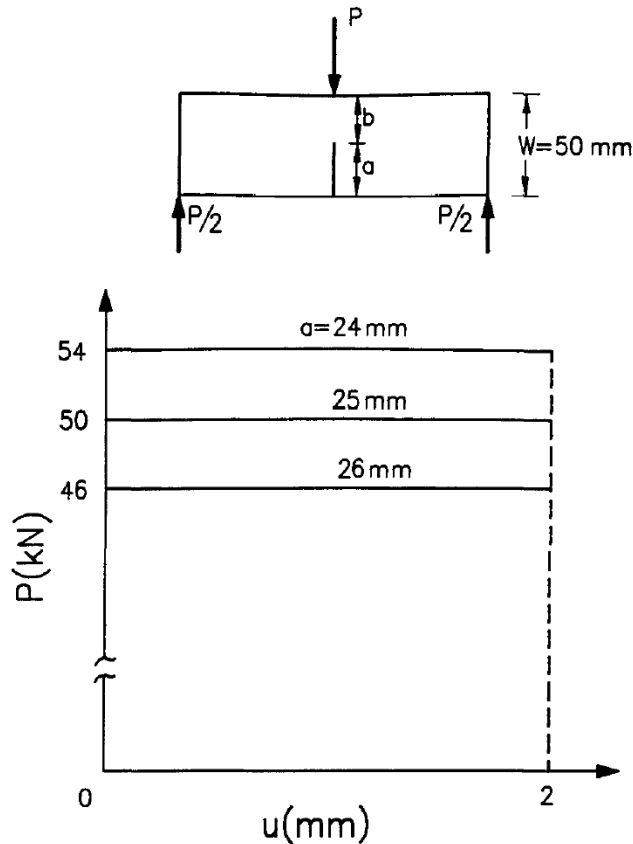


Fig. 6.25. Load-displacement ( $P - u$ ) records of a three-point bend specimen with three different crack lengths.

and under dead-load

$$J = - \left( \frac{\partial \Pi}{\partial a} \right)_P = - \int_0^{P_0} \left( \frac{\partial u}{\partial a} \right)_P dP . \quad (6.36)$$

$$J = \frac{2}{b} \int_0^{\delta} P d\delta \quad (6.51)$$

$b$  is the ligament length.