

## Answers of Problems 10

10.1

- (1) 28.4 MPam<sup>1/2</sup>
- (2) 1.28 mm

10.2

Omitted

10.3

- (1)  $K_{IC} = \frac{F_0}{hW} \sqrt{\pi a}$
- (2)  $a \leq \frac{1}{\pi} \left( \frac{K_{IC}}{P} \right)^2$
- (3) Buckling before fracture

10.4

- (1)  $K_{IC} = \frac{1.12F_{1A}}{Wh} \sqrt{\pi a_1}$ ,  $\sigma_P = \frac{F_{2A}}{Wh}$ ,  $\sigma_B = \frac{F_{2B}}{Wh}$
- (2)  $F = \frac{61}{1480} \frac{F_{1A} W_3}{W} \sqrt{\frac{a_1}{a_3}}$

10.5

- (1) 1.73 MPam<sup>1/2</sup>
- (2) 0.53 mm

10.6

- (1) 100 MPam<sup>1/2</sup>
- (2) 1.02 MPa
- (3) 1.36 MPa

10.7

- (1) 2.31 MPam<sup>1/2</sup>
- (2) 15 MPa
- (3-a) 1160 N
- (3-b) 1500 N
- (3-c) 1500 N

10.7

- (1) 6.7 mm

(2) 11 mm