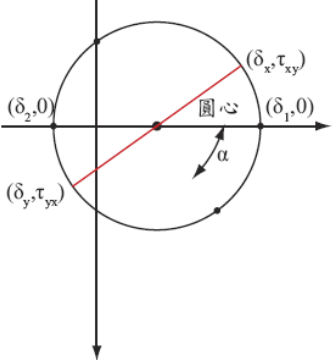
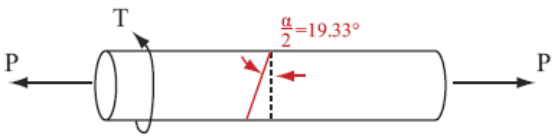
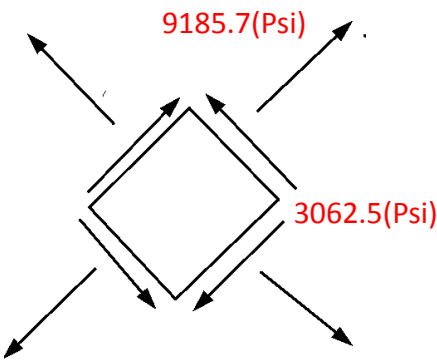
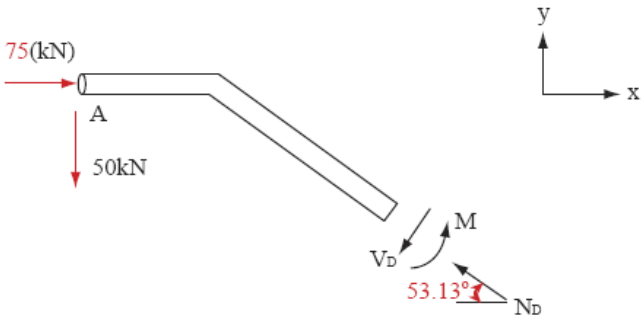


2B580991 《機械設計》 勘誤表

| 頁數 | 位置 | 原文 | 更正 |
|----|-----------------|----------------------------|--|
| 5 | 例 1-4 第 1 行後 | 軸之公差 25 μ | 軸之公差 15 μ |
| 26 | 例 1-11 解(1)圖 | (略) |  |
| | 例 1-11 解(2)圖 | (略) |  |
| 28 | 解 | 1.取三維應力元素... | $\sigma_1 = \sigma_x = \frac{PR}{t} = \frac{500 \times \frac{4-0.08}{2}}{0.08} = 12250 \text{ (psi)}$ $\sigma_2 = \sigma_x = \frac{PR}{2t} = \frac{500 \times \frac{4-0.08}{2}}{2 \times 0.08} = 6125$ $(\tau_{\max})_{xy} = 3062.5$ |
| | | 中間圖 |  |
| | | 3.絕對最大剪應力... | $\tau_{\max} = \dots = 6125 \text{ psi}$ |
| 33 | 例 1-15 題目 | 如圖...材料的 E=207GPa， 試求.. | 如圖...材料的 E=207GPa， G=80GPa ，試求.. |
| 35 | 第 3 行 | (略) | $M_1 = PX_1 + \frac{WX_1^2}{2}$ |

| | | | |
|-----|-----------|---|---|
| 44 | 第 6~10 行 | (略) | <p>圓心座標...(-30, 0)</p> $\text{半徑 } R = \sqrt{\left(\frac{\sigma_x - \sigma_y}{2}\right)^2 + (\tau_{xy})^2}$ $\sigma_1 = \dots = -30 + 70.71 = 40.71$ $\sigma_2 = \dots = -30 - 70.71 = -100.71$ |
| 47 | 解(2) | (略) | $\text{壓應力 } \sigma_B = \frac{3}{2.83 \times 10^{-3}} + \frac{(1.2)(0.03)}{6.36 \times 10^{-7}} = 57663.84 \text{ kpa}$ $\text{剪應力 } \tau_B = \frac{2}{2.83 \times 10^{-3}} + \frac{(1.2)(0.03)}{1.27 \times 10^{-6}} = 19604.35 \text{ kpa}$ $\tau_{\max} = \sqrt{\left(\frac{-57663.84}{2}\right)^2 + (19604.35)^2} = 34865.6 \text{ kpa}$ $\sigma_{\max} = \frac{-57663.84 \pm 34865.6}{2}$ $= 6033.68 \text{ kpa}, -63697.52 \text{ kpa}$ |
| 59 | 上方圖 | (略) | <p>庫倫莫爾理論</p> |
| 90 | 第 5 題最後一行 | (略) | $n = \frac{S_y \times 0.5}{\tau_{\max}} = \frac{280 \times 0.5}{89.2} = 1.57$ |
| 106 | 第 5-6 行 | $T_{AD} = 458 \text{ lb-in}$ $T_{BC} = 1099.2 \text{ lb-in}$ | $T_{AD} = 302.925 \text{ lb-in}$ $T_{BC} = 727.02 \text{ lb-in}$ |
| 129 | 倒數 3-4 行 | $T_{AD} = 31.2 \text{ (N-m)}$ $T_{BC} = 75.72 \text{ (N-m)}$ | $T_{AD} = 22 \text{ (N-m)}$ $T_{BC} = 53.24 \text{ (N-m)}$ |
| 133 | 第 5 題最後一行 | (略) | $n = 1 = \frac{5500}{\frac{96302.6}{d^3}} \Rightarrow d = 2.6 \text{ in}$ |

| | | | |
|-----|---------|--|---|
| 134 | 下方圖 | (略) | |
| 135 | (2) | (略) | |
| | (3) | 更正如下： (3)故最大受力位於 C 點 $M_c = \sqrt{[(M_y)_c]^2 + [(M_z)_c]^2} = \sqrt{(118.75)^2 + (37.5)^2}$ $= 124.53 \text{ (N-m)}$ $\sigma_c = \frac{32 \times M_c}{\pi d^3} = \frac{1268.15}{d^3}$ $\tau_c = \frac{16 \times T}{\pi d^3} = \frac{38.197}{d^3}$ $\tau_{\max} = \sqrt{\left(\frac{\sigma_c}{2}\right)^2 + (\tau_c)^2} = \sqrt{\left(\frac{634.07}{d^3}\right)^2 + \left(\frac{38.197}{d^3}\right)^2} = \frac{635.22}{d^3}$ $n = 2 = \frac{0.5 \times 500 \times 10^6}{\frac{635.22}{d^3}} \Rightarrow d = 0.017 \text{ m}$ | |
| 138 | 第 2 行 | $\dots \sqrt{(0.159F)^2 + 3 \times (0.0856F)^2}$ $= 0.2174F$ $\dots F = 1149.95 \text{ (N)}$ | $\dots \sqrt{(0.159F)^2 + 3 \times (0.03183F)^2}$ $= 0.1683F$ $\dots F = 1485.56 \text{ (N)}$ |
| 145 | 第 1 行 | (略) | $f = \frac{1}{4} \sqrt{\frac{k}{m}} = \frac{1}{4} \sqrt{\frac{6.67}{2}} = 0.456$ |
| 153 | 倒數第 4 行 | $\frac{60.83}{1500S} + \frac{68.543}{310} = \frac{1}{n} \dots$ | $\frac{60.83}{150} + \frac{68.543}{310} = \frac{1}{n} \dots \Rightarrow n = 1.596$ |
| 155 | 倒數第 2 行 | $\frac{\overline{B'C}}{\overline{A'D}} = \frac{\overline{B'C}}{\overline{AA'}} \dots$ | $\frac{\overline{B'C}}{\overline{A'D}} = \frac{\overline{B'B}}{\overline{AA'}} \dots$ |
| 162 | 第 4 行 | (略) | $= \frac{FhL}{EI}, \text{ 彎曲正應力 } \sigma = K \frac{M \times \frac{d}{2}}{d}$ |
| 187 | 倒數第 3 行 | (略) | $\tau_c = \tau_D = \frac{14797.67}{201.06} = 73.6.. \text{ (MPa)}$ |
| 205 | 第 7 行 | (略) | $\tau = 100 = \frac{86060.04}{2 \times \frac{\pi}{4} d^2} \Rightarrow d = 23.4 \text{ (mm)}$ |
| 206 | 倒數第 3 行 | (略) | 由①②可得 $F_B = 3000 \text{ (N)}$, $F_A = 21000 \text{ (N)}$ |
| 207 | 最後一行 | 效率 $E=0$ | (刪除) |

| | | | |
|-----|--------------|----------------------------------|--|
| 208 | 第9題 題目第3行 | 積為 320mm ² 。螺紋... | 積為 320mm ² ，應力面積=0.1187in ² 。螺紋... |
| 262 | 倒數 第2行 | (略) | $\Rightarrow \frac{N_E}{1750} = \left(-\frac{20}{70}\right)\left(-\frac{18}{22}\right)\left(-\frac{22}{54}\right)$ $N_E = -166.67(\text{rpm})$ |
| 275 | 第5行後 | (略) | <p>(1)外切時</p> $C = \frac{1}{2}(D_1 + D_2) = 28\text{mm}$ $Pc = \frac{\pi D_1}{T_1} = M\pi = \pi$ <p>(2)內切時</p> $C = \frac{1}{2}(D_2 - D_1) = 12\text{mm}$ |
| 314 | 倒數第6行 | = $\pi \times \dots (150 - 100)$ | 刪除 |
| 326 | 倒數 第7行後 | (略) | 故壓力 = $\frac{0.5968}{0.4} = 1.492 \text{ (N/mm}^2\text{)}$ |
| 366 | 倒數 第4行 | (略) | $1.5 \times \tau = \frac{16T}{\pi d^3} = \frac{20265.746}{d^3} = 300 \times 10^6 \times 1.5 \Rightarrow d = 0.0356$ |
| 369 | 第9行 | (略) | FS=...=2.13 |
| 376 | 第3題 解析(一) | (略) | $\tan\theta = \frac{2}{3} \Rightarrow \theta = 33.69^\circ$ $\Sigma M_B = 0 \Rightarrow F_C \times \sin\theta \times 4 = 40 \times 5$ $\Rightarrow F_C = 90.14 \text{ (kN)}$ <p>B 點作用力</p> $B_x = F_C \times \cos\theta = 75 \text{ (kN)} \rightarrow$ $B_y = F_C \times \sin\theta - 40 = 10 \text{ (kN)} \downarrow$ |
| | 第3題 解析(二) | (略) |  $\Sigma F_x = 0 \Rightarrow N_D \times \cos 53.13 + V_D \times \cos 36.87 = 75 \dots \textcircled{1}$ $\Sigma F_y = 0 \Rightarrow N_D \times \sin 53.13 - V_D \times \cos 53.13 = 5$ <p>由①②可知 $V_D = 30$, $N_D = 85 \text{ (N)}$</p> $\Sigma M_D = 0 \Rightarrow 75 \times (2-1) - 50 \times \left(1.5 + \frac{1.5}{2}\right)$ $M = -37.5 \text{ (kN} \cdot \text{m)}$ <p>故 $M = -37.5 = 37.5 \text{ kN} \cdot \text{m}$ (順時針)</p> |

| | | | |
|-----|-----------|--|---|
| 377 | 第四題 解析 | <p>更改如下：</p> <p>1.齒輪1 $M = \frac{D_1}{N_1} \Rightarrow D_1 = 108 \text{ (mm)}$</p> <p>$F_{t1} = \frac{2T}{D_1} = \frac{2 \times 477.5}{108 \times 10^{-3}} = 8842.6 \text{ (N)}$ 切線力</p> <p>$F_{n1} = F_{t1} \times \tan 20^\circ = 3218.44 \text{ (N)}$ 徑向力</p> <p>2.齒輪2 齒輪2之切線力=8842.6 (N) ，徑向力=3218.44 (N)</p> <p>3.齒輪3 切線力=8842.6 (N) 徑向力=3218.44 (N) 軸C之作用力 = $\sqrt{(8842.6)^2 + (3218.44)^2} = 9410 \text{ (N)}$</p> | |
| 379 | 倒數 4 行 | $\sigma_{\max} = \sqrt{\left(\frac{\sigma_x}{2}\right)^2 + \tau^2} = 0.0046P$ <p>利用最大剪應力理論</p> <p>$0.5 \times 60 = 0.0046P$</p> <p>$P = 6521.74$</p> | $\sigma_{\max} = \sqrt{\left(\frac{\sigma_x}{2}\right)^2 + \tau^2} = 0.0046P$ <p>(1)最大剪應力 $60 = 0.0046P \rightarrow P = 13043(N)$</p> <p>(2)最大正向應力 $100 = 0.0092P \rightarrow P = 10869(N)$</p> <p>故最大容許負荷 $P = 10869(N)$</p> |
| 383 | 第四題解析 | <p>(一)d=7mm 時..... $h_s = 4.336 \times 7 = 30.375 < 60(\text{mm})$ 故 d=7mm 時可符合上述要求</p> <p>(二)d=8mm 時..... $h_s = 6 \times 8 = 48\text{mm} < 60(\text{mm})$ 故 d=8mm 時可符合上述要求</p> | <p>(一)d=7mm 時..... $h_s = 4.336 \times 7 = 30.375 < 60(\text{mm})$ 自由長度 $L = 75 + \frac{22}{0.8} = 102.5\text{mm}$ 彈簧壓實時 $P = Kx = 0.8 \times (102.5 - 35) = 54(\text{kg})$ 帶回 $\tau = \frac{8 \times 54 \times 110}{\pi \times 7^3} \times \left(1 + \frac{0.5}{15.71}\right) = 45.5 > 40$ 故 d=7mm 時不符合上述要求</p> <p>(二)d=8mm 時..... $h_s = 6 \times 8 = 48\text{mm} < 60(\text{mm})$ 彈簧壓實時 $P = Kx = 0.8 \times (102.5 - 48) = 43.6(\text{kg})$ 帶回 $\tau = \frac{8 \times 43.6 \times 110}{\pi \times 7^3} \times \left(1 + \frac{0.5}{13.75}\right) = 24.72 < 40$ 故 d=8mm 時可符合上述要求</p> |

製表日期：2010.07.08

千華數位文化公司編輯部 提供