

## 104 學年度四技二專第一次聯合模擬考試 動力機械群 專業科目(一) 詳解

104-1-02-4

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C	A	A	B	C	D	C	D	A	C	C	B	A	D	B	D	D	B	A	B
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
C	B	D	A	D	C	C	A	D	B	A	C	B	D	C	A	B	B	D	A

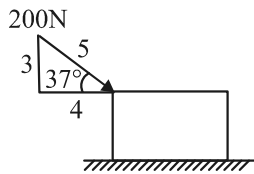
### 第一部分：應用力學

2. (A) 為應用力學分析的物體

4. 設水平分力為  $F_x$

$$\frac{F_x}{4} = \frac{200}{5}$$

$$\therefore F_x = 160 \text{ N } (\rightarrow)$$



5.  $R = \sqrt{P^2 + Q^2 + 2PQ \cos \theta}$

$$= \sqrt{10^2 + 10^2 + 2 \times 10 \times 10 \cos 60^\circ} = \sqrt{100 + 100 + 100}$$

$$= \sqrt{300} = 10\sqrt{3} \text{ N}$$

7.  $M_A = F \times d = 30 \times 2 = 60 \text{ N-m}$

8.  $M_A = F \times d = (1300 - 1000) \times 3$   
 $= 300 \times 3 = 900 \text{ N-m } (\curvearrowright)$

9.  $C_1 = 30 \times 8 = 240 \text{ N-m } (\curvearrowleft)$

$$C_2 = 80 \times 4 = 320 \text{ N-m } (\curvearrowright)$$

$$\Sigma C = C_2 - C_1 = 320 - 240 = 80 \text{ N-m } (\curvearrowright)$$

10.  $C = \Sigma M_A = 400 \times 5 - 100 \times 3 = 1700 \text{ N-m } (\curvearrowleft)$

$$R_y = 400 - 100 = 300 \text{ N } (\uparrow), R_x = 300 \text{ N } (\leftarrow)$$

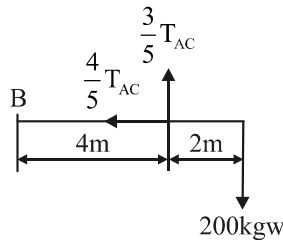
$$\therefore R = \sqrt{300^2 + 300^2} = 300\sqrt{2} \text{ N}$$

11.  $\Sigma M_B = 0$

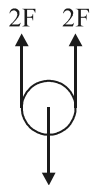
$$\frac{3}{5} T_{AC} \times 4 = 200 \times 6$$

$$\frac{3}{5} T_{AC} = 300$$

$$\therefore T_{AC} = 500 \text{ kgw}$$



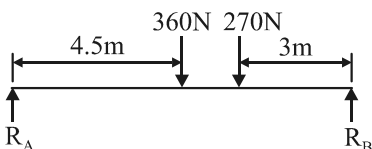
12.  $4F = 1200 \text{ kgw}, \therefore F = 300 \text{ kgw}$



13.  $\Sigma M_A = 0, R_B \times 9 = 360 \times 4.5 + 270 \times 6$

$$\therefore R_B = 360 \text{ N}, \text{ 又 } \therefore F_y = 0, 360 + 270 = R_A + R_B$$

$$\therefore R_A = 270 \text{ N}$$



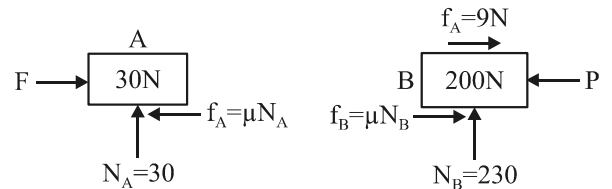
15. (B) 相同物質的摩擦，其摩擦角會等於靜止角

16.  $\tan \theta = \mu, \therefore \mu = \sqrt{3} = 1.732$

17.  $f_A = \mu N_A = 0.3 \times 30 = 9 \text{ N}$

$$f_B = \mu N_B = 0.3 \times 230 = 69 \text{ N}$$

$$\therefore \Sigma F_x = 0, \therefore P = f_A + f_B = 9 + 69 = 78 \text{ N}$$

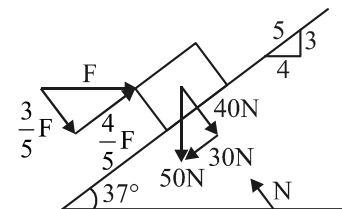


18.  $N = \frac{3}{5}F + 40, f = 0.2 \times (\frac{3}{5}F + 40)$

① 物體上滑,  $\frac{4}{5}F = 30 + 0.2 \times (\frac{3}{5}F + 40), F = 55.9 \text{ N}$

② 物體下滑,  $\frac{4}{5}F = 30 - 0.2 \times (\frac{3}{5}F + 40), F = 23.9 \text{ N}$

故  $23.9 \leq F \leq 55.9$ , 物體保持不動



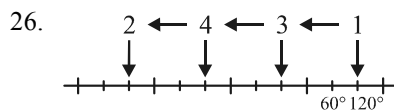
20.  $\frac{T_1}{T_2} = e^{\mu \alpha} = e^{2 \times \frac{\pi}{2}} = e^\pi, \therefore T_1 = T_2 e^\pi$

### 第二部分：引擎原理及實習

21. (C) 應先拆負極，再拆正極

24. (A) CI 引擎係利用壓縮點火，故不需裝置火星塞

25.  $CR = \frac{PDV + CCV}{CCV} = \frac{800 + 80}{80} = 11$



進 → 壓 → 動 → 排 → 進

(A) 第二缸在進氣行程 120°, 排氣門是關閉的

(B) 第三缸在動力行程 120°

(D) 四缸引擎的動力間隔為 180°

34. (D) 燃燒室的 S/V 比較小時，可以減少 HC 的排出量

39. (D) 水溫感知器裝置在引擎水套上