Trade and Cash Discount

1. $LP = RM\ 1500$, $d_1 = 20\%$, $d_2 = 15\%$, $d_3 = x\%$, $NP = RM\ 969$

$$NP = LP\ (1-d_1)(1-d_2)(1-d_3)$$
$$969 = 1500\ (1-0.2)(1-0.15)(1-x)$$
$$969 = 1500\ (0.8)(0.85)(1-x)$$
$$0.95 = 1-x$$
$$x = 0.05 @ 5\%$$

2. Invoice $= RM\ 3,200$, Transport $= RM\ 88$ (included), $d_1 = 20\%$, $d_2 = 10\%$

$$LP = 3200 - 88 = 3112$$

$$\text{Total Payment (TP)} = LP(1-d_1)(1-d_2) + AD$$
$$= 3112\ (1-0.2)(1-0.1) + 88$$
$$= 3112\ (0.8)(0.9) + 88$$
$$= RM\ 2,328.64$$

3. Invoice $= RM\ 3,400$, Handling Charge $= RM\ 250$ (included)
$d_1 = 8\%$, $d_2 = 5\%$, cash discount terms $= 3/15,\ 2/20,\ n/30$

Invoice Date : 21 May 2019 $\left.\right\}$ $31 - 21 = 10$
Payment Date : 6 June 2019 $\left.\right\}$

$$\frac{\ \ \ \ 6\ \ \ \ }{16\ day} \rightarrow cd = 2\%$$

$$LP = 3400 - 250 = 3150$$

$$\text{Total Payment (TP)} = LP\ (1-d_1)(1-d_2)(1-cd) + AD$$
$$= 3150\ (1-0.08)(1-0.05)(1-0.02) + 250$$
$$= 3150\ (0.92)(0.95)(0.98) + 250$$
$$= RM\ 2,948.04$$

4. Invoice $= RM\ 8,000$ $d_1 = 12\%$ $d_2 = 10\%$
Transport $= RM\ 150$ $\left.\right\}$ excluding   cash discount terms $= 5/10,\ n/30$
Insurance $= RM\ 50$ $\left.\right.$

i) $LP = RM\ 8,000$
$$SDER = 1 - (1-d_1)(1-d_2)$$
$$= 1 - (1-0.12)(1-0.1)$$
$$= 1 - (0.88)(0.9)$$
$$= 0.208 @ 20.8\%$$

ii) Invoice Date : 5 Feb 2019 $\left.\right\}$ $15 - 5 = 10$
Payment Date : 15 Feb 2019 $\left.\right\}$ $\rightarrow cd = 5\%$

$$\text{Total Payment (TP)} = LP\ (1-SDER)(1-cd) + AD$$
$$= 8000(1-0.208)(1-0.05) + 150 + 50$$
$$= 8000(0.792)(0.95) + 200$$
$$= RM\ 6,219.20$$

5. $TP = RM\,1,190$ Invoice Date : 25 March 2019 $\}$ $31-25 = 6$

Transport $= RM\,14$ (inclusive of TP)   Payment Date : 2 April 2019 $\}$ $\underline{\quad 2}$

$d_1 = 20\%$ 8

cash discount terms $= 2/15, \; n/30.$ $\therefore, \; cd = 2\%$

$$TP = LP(1-d_1)(1-cd) + AP.$$
$$1190 = LP(1-0.2)(1-0.02) + 14.$$
$$1176 = LP(0.8)(0.98)$$
$$LP = RM\,1500$$

Markup & Markdown.

1. $C = RM\,3,600$ $OE = 0.05\,SP$ $NP = 0.2\,SP$

i) $SP = C + OE + NP.$
   $SP = C + 0.05\,SP + 0.2\,SP.$
   $SP = C + 0.25\,SP.$
   $SP = \dfrac{C}{0.75} = \dfrac{3600}{0.75} = RM\,4,800$

ii) $NP = 0.2\,SP = 0.2(4800) = RM\,960$

iii) $M = SP - C = 4800 - 3600 = RM\,1,200$

2. $C = RM\,110$ $NP = RM\,40$ $OE = 0.25\,SP$

i) $SP = C + OE + NP.$ ii) $BEP = C + OE$
   $SP = C + 0.25\,SP. + NP.$ $= C + 0.25\,SP$
   $0.75\,SP = C + NP$ $= 110 + 0.25(200)$
   $0.75\,SP = 110 + 40$ $= RM\,160$
         $SP = \dfrac{150}{0.75} = RM\,200$ or

                                        $BEP = SP - NP$
                                              $= 200 - 40 = RM\,160$

3. $C = RM\,600$, $GP = 0.4\,SP$, Total $OE = 600$
                                 $OE = RM\,15.$

i) $SP = C + m$ ii) $GP = OE + NP.$ iii) $BEP = SP - NP$
   $SP = C + 0.4\,SP$ $0.4\,SP = OE + NP.$ $= 1000 - 385$
   $SP = \dfrac{C}{0.6}$ $400 = 15 + NP$ $= RM\,615$
                  $NP = RM\,385$ or
   $= \dfrac{600}{0.6}$ $BEP = C + OE$

                  iv) 15% MD $= 600 + 15$
$= RM\,1,000$ $NSP = 0.85\,SP = 0.85(1000)$ $= RM\,615$
                          $= RM\,850$
                 Profit. $NSP - BEP = 850 - 615 = RM\,235$ 70'

4. $C = RM\,500$ $OE = 0.1\,C$ $NP = 0.25\,C$

i) $SP = C + OE + NP$
    $= C + 0.1C + 0.25C$
    $= 1.35C = 1.35(500) = RM\,675$

ii) $GP = SP - C$
    $= 675 - 500$
    $= RM\,175$

iii) $NP = 0.25C = 0.25(500) = RM\,125$

iv) $BEP = C + OE = 500 + 0.1(500)$
    $= RM\,550$

v) max $MD = NP$ or $= SP - BEP$
    $= RM\,125$

vi) $SP = 600$ $BEP = 550$; $SP > BEP \rightarrow$ Profit @ $NP = 600 - 550$
    $= RM\,50$.

Trade & Cash Discount + Markup Markdown.

1. $LP = RM\,8,400$ $d = 10\%$ cash discount terms $= 4/15, n/30$
    $GP = 0.25\,SP$ $OE = 0.04\,SP$.

i) Invoice Date: 8 Sept 2019 $\}$ $22 - 8 = 14 \rightarrow cd = 4\%$
    Payment Date: 22 Sept 2019 $\}$

    Total Paid (TP) $= LP(1-d)(1-cd) + AD$
    $= 8400(1-0.1)(1-0.04) + 0$
    $= 8400(0.9)(0.96)$
    $= RM\,7,257.60$

ii) $SP = C + GP$ $C = $ Total paid $= RM\,7257.60$
    $SP = C + 0.25\,SP$
    $SP = \dfrac{C}{0.75} = \dfrac{7257.60}{0.75}$
    $= RM\,9676.80$

iii) $BEP = C + OE$
    $= C + 0.04\,SP$
    $= 7257.60 + 0.04(9676.80)$
    $= RM\,7644.672$ @ $RM\,7644.67$

iv) max $MD = SP - BEP$
    $= 9676.80 - 7644.67$
    $= RM\,2032.128$

    $\therefore$ % max $MD = \dfrac{\text{max } MD}{SP} \times 100\%$

    $= \dfrac{2032.128}{9676.80} \times 100\%$

    $= 21\%$

Installment Purchases.

1. $CP = RM\ 13,000$

$\underline{DP = RM\ 1,000}$

$B = RM\ 12,000$

$r = 8\%$ (original balance)

$n = 36$

$m = 12$ (monthly) $\left.\right\}\ t = \dfrac{36}{12} = 3$

i) $I = Prt$ (original balance)

$= 12000\,(0.08)\,(3)$

$= RM\ 2,880$

ii) $R = \dfrac{B+I}{n}$

$= \dfrac{12000 + 2880}{36}$

$= RM\ 413.33$

2. $CP = RM\ 12,750$

$r = 4\%$ (reducing balance)

$I = RM\ 1,041.25$

* Note: Since there was no downpayment made the balance (B) is equal to the cash price or cost (q).

$I = \dfrac{Br\,(n+1)}{2m}$

$1,041.25 = \dfrac{12,750\,(0.04)\,(n+1)}{2\,(12)}$

$n+1 = \dfrac{1,041.25\,(24)}{12,750\,(0.04)}$

$n+1 = 49$

$n\ \ = 48$ months. @ 4 years.

3. $CP = RM\ 2,300$

$\underline{DP = RM\ 600}$

$B = RM\ 1,700$

$R = RM\ 100$

$n = 18$ months

$m = 12.$

Using Constant Ratio formula

$r = \dfrac{2m\,I}{B\,(n+1)}$ but $Rn = B + I$

$\qquad\qquad\qquad I = Rn - B$

$= \dfrac{2m\,(Rn-B)}{B\,(n+1)}$

$= \dfrac{2\,(12)\,(100(18) - 1700)}{1700\,(18+1)}$

$= 0.074303405$ @ 7.43%.

4. $CP = RM\ 1,999$

$\underline{DP = RM\ \ \ 999}$

$B = RM\ 1,000$

$R = RM\ 35$

$n = 30$

$m = 12$ (monthly)

i) $IP = Rn + DP$

$= 35\,(30) + 999$

$= RM\ 2,049$

ii) $I = IP - CP$

$= 2049 - 1999 = RM\ 50$

iii) $I = Prt$

$50 = 1000\,(r)\left(\dfrac{30}{12}\right)$

$r = 0.02$ @ 2%