Mid Term Exam

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Section: A

Question-01

In that case, I think I will select "Participating in joint venture" acquisition method.

In that case, I think I will select "Licensing of technology"; so that I can use this technology with small investment and quickly also. I think "urgency of acquisition" factor helps me to decide the acquisition method. And Licensing of technology is cheapest than others four acquision technology. So, I will select it.

Question-02

I think it is a black marketing. Because the tickets is illegal and the way of selling tickets is also illegal. So, we can say that the selling process of tickets is under Black marketing. All tickets were sold before, so the tickets were illegal and the man have no right to sold tickets after selling all tickets. So, it is showing black marketing

Question - 03

Discount number	Discount quantity	Discount (%)	Discount price (P)
1	0 to 3000	No discount	12
2	3001 to 4000	10%	10.8
3	4001 to over	18%	9.84

Here,

$D = 5950$ bags per week

$= 178500$ bags per week. [210 days = 30 week]

$S = \$81$

$H = 19\%$

$H_1 = 12 \times \frac{19}{100}$

$= 2.28$

$\therefore Q_1^* = \sqrt{\frac{2DS}{H_1}}$

$= \sqrt{\frac{2 \times 178500 \times 81}{2.28}}$

$= 3561.31$ [it is not feasible]

$\therefore Q_1^* = 3000$ maximum.

P.T.O

$$q_2^* = \sqrt{\frac{2DS}{H_2}}$$

$$= \sqrt{\frac{2 \times 178500 \times 81}{2.052}}$$

$$= 3753.95$$

$$H_2 = 10.8 \times \frac{19}{100}$$

$$= 2.052$$

$$\therefore q_2^* = 3753.95$$

$$q_3^* = \sqrt{\frac{2DS}{H_3}}$$

$$= \sqrt{\frac{2 \times 178500 \times 81}{1.8696}}$$

$$= 3932.80$$ [it is not feasible]

$$H_3 = 9.84 \times \frac{19}{100}$$

$$= 1.8696$$

$$\therefore q_3^* = 4001 \text{ minimum.}$$

$$\therefore T_{c_1} = \left(\frac{D}{q_1^*} \times S\right) + \left(\frac{q_1^*}{2} \times H_1\right) + (M_1 \times D)$$

$$= \left(\frac{178500}{3000} \times 81\right) + \left(\frac{3000}{2} \times 2.28\right) + (12 \times 178500)$$

$= 21,50239.5$

$$TC_2 = \left(\frac{D}{Q_2^*} \times S\right) + \left(\frac{Q_2^*}{2} \times H_2\right) + (M_2 \times D)$$

$$= \left(\frac{178500}{375395} \times 81\right) + \left(\frac{375395}{2} \times 2.052\right) + (10.8 \times 178500)$$

$$= 1,935503.096.$$

$$TC_3 = \left(\frac{D}{Q_3^*} \times S\right) + \left(\frac{Q_3^*}{2} \times H_3\right) + (M_3 \times D)$$

$$= \left(\frac{178500}{4001} \times 81\right) + \left(\frac{4001}{2} \times 1.8696\right) + \left(9.84 \times 178500\right)$$

$$= 1,763793.856.$$

So, optimal order quantity = 400.1. and total cost associated with 1763793.856. As it is minimum among three total costs, so we can say that TC_3 is optimal order quantity..

Question-04

$$EFF\% = \left(1 + \frac{I_{NOM}}{M}\right)^M - 1$$

$I_{NOM} = 22\%$

$= 0.22$

M = weekly

$= 52$

$$= \left(1 + \frac{0.22}{52}\right)^{52} - 1$$

$$= 0.2455$$

$$= 24.55\%.$$

∴ Project N;

$$NPV = P_0 + P_1 + P_2 + P_3 + P_4 + P_5$$

$$\Rightarrow 0 = -8451 + \frac{F_1}{(1+i)^{N_1}} + \frac{F_2}{(1+i)^{N_2}} + \frac{F_3}{(1+i)^{N_3}} + \frac{F_4}{(1+i)^{N_4}} + \frac{F_5}{(1+i)^{N_5}}$$

Let, $1+i = x$;

$$\Rightarrow 0 = -8451 + \frac{4009}{x^1} + \frac{1946}{x^2} + \frac{1964}{x^3} + \frac{1964}{x^4} + \frac{2164}{x^4} + \frac{4619}{x^5}$$

P.T.O

$\therefore -8451x^5 + 4999x^4 + 1946x^3 + 1964x^4$

$+2164x + 4619 = 0$ - - (i)

Trial and error method

$x = 1.1$ R.H.S = 5674.58

$x = 1.2$ R.H.S = 2743.78

$x = 1.3$ R.H.S = -2073.61

$x = 1.29$ R.H.S = -1489.87

$x = 1.28$ R.H.S = -930.53

$x = 1.27$ R.H.S = -394.93

$x = 1.26$ R.H.S = 117.61

Difference between 1.27 and 1.26

0.01 → -512.54

P.T.O

∴ 512.54 এর জন্য পার্থক্য 0.01

∴ 1 " " " " $\frac{0.01}{512.54}$

∴ 117.61 " " " " $\frac{0.01 \times 117.61}{512.54}$

$= 0.00229465$

∴ $x = 1.26 + 0.00229465$

$= 1.26229465$

$\Rightarrow 1 + i = 1.26229465$

$\Rightarrow i = 0.26229$

$= 26.23\% > 24.55\%$

P.T.O

Project M;

$$NPV = P_0 + P_1 + P_2 + P_3 + P_4 + P_5$$

$$\Rightarrow 0 = -9996 + \frac{F_1}{(1+i)^{N_1}} + \frac{F_2}{(1+i)^{N_2}} + \frac{F_3}{(1+i)^{N_3}} + \frac{F_4}{(1+i)^{N_4}} + \frac{F_5}{(1+i)^{N_5}}$$

Let $1+i = x$;

$$\Rightarrow 0 = -9996 + \frac{5783}{x^1} + \frac{3628}{x^2} + \frac{3314}{x^3} + \frac{1500}{x^4} + \frac{1299}{x^5}$$

$$\therefore -9996x^5 + 5783x^4 + 3628x^3 + 3314x^2 + 1500x + 1299 = 0 \quad \text{--(ii)}$$

Trial and error method

$x = 1.1$ R.H.S = 4156.04

$x = 1.2$ R.H.S = 1258.73

$x = 1.3$ R.H.S = -377.25

$x = 1.21$ R.H.S $= 862.58$

$x = 1.22$ R.H.S $= 444.46$

$x = 1.23$ R.H.S $= 3.69$

$x = 1.24$ R.H.S $= -460.44$

∴ Difference between 1.23 and 1.24 হবে

0.01 → 456.75

∴ 456.75 এর জন্য x এর পার্থক্য 0.01

∴ 1 " " " " $\frac{0.01}{456.75}$

∴ 3.69 " " " " $\frac{0.01 \times 3.69}{456.75}$

$= 0.00080788$

$\therefore \quad n = 1.23 + 0.000080788$

$= 1.230080$

$\Rightarrow 1+i = 1.230080$

$\Rightarrow i = 0.230080$

$= 23\% < 24.55\%$

Both Projects are independent but Project N will be selected because the IRR rate is greater than given Percentage. on the other hand Project M is less than given Percentage of EFF. So, Project N will be selected in that case.

(b) NPV of N;

$$P_0 + P_1 + P_2 + P_3 + P_4 + P_5$$

$$\Rightarrow -8451 + \frac{4999}{(1+0.2455)^1} + \frac{1946}{(1+0.2455)^2}$$

$$+ \frac{1964}{(1+0.2455)^3} + \frac{2164}{(1+0.2455)^4}$$

$$+ \frac{4619}{(1+0.2455)^5}$$

$$= 273.96 > 0.$$

NPV of M;

$$P_0 + P_1 + P_2 + P_3 + P_4 + P_5$$

$$= -9996 + \frac{5783}{(1+0.2455)^1} + \frac{3628}{(1+0.2455)^2}$$

$$+ \frac{3314}{(1+0.2455)^3} + \frac{1500}{(1+0.2455)^4}$$

$$+ \frac{1299}{(1+0.2455)^5}$$

$$= -242.20 < 0$$

Both Projects are indepent but the NPV of N is greater than 0 but NPV of M is ~~he~~ less than 0. In that case we have to select Project N: So, My decision is same if we use NPV method.