

IQRA NATIONAL UNIVERSITY



Engineering Management

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Final term paper

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Question No (4)⇒ Part (A)

Solution:- we know that

$$P = F \left(\frac{1}{1+i} \right)^n$$

Putting value

$$P = 100000000 \left(\frac{1}{1+0.08} \right)^6$$

$$P = 100000000 \left(\frac{1}{1.08} \right)^6$$

$$P = 100000000 (0.6302)$$

$$P = 63020000$$



Question (1)=> Part (B)

$$P = A \left[\frac{(1+i)^n - 1}{i(1+i)^n} \right]$$

$$10000000 = 1000000 \left[\frac{(1+0.06)^n - 1}{0.06(1+0.06)^n} \right]$$

$$\frac{10000000}{1000000} = \left[\frac{(1+0.06)^n - 1}{0.06(1+0.06)^n} \right]$$

$$10 = \left[\frac{(1+0.06)^n - 1}{0.06(1+0.06)^n} \right]$$

$$10 \times 0.06(1+0.06)^n = (1+0.06)^n - 1$$

$$0.6(1.06)^n = (1.06)^n - 1$$

$$-0.6(1.06)^n + (1.06)^n = 1$$

$$(1.06)^n [1 - 0.6] = 1$$

$$(1.06)^n (0.4) = 1$$

$$(1.06)^n = \frac{1}{0.4}$$

$$\Rightarrow (1.06)^n = 2.5$$

Taking \ln

$$\ln 2.5 = n * \ln (1.06)$$

$$0.916 = n * 0.0583$$

$$n = \frac{0.916}{0.0583}$$

$$n = 15.7 \text{ years}$$

$$N = 15.7 \text{ years}$$



Question No (2)=> Part (A)

$$A = 30 \text{ million}$$

$$i = 15\% \Rightarrow 0.15$$

$$N = 5 \text{ years}$$

Solution :- we know that

$$P = A \left[\frac{(1+i)^n - 1}{i(1+i)^n} \right]$$

Putting value

$$P = 30000000 \left[\frac{(1+0.15)^5 - 1}{0.15(1+0.15)^5} \right]$$

$$P = 30000000 \left[\frac{(1.15)^5 - 1}{0.15(1.15)^5} \right]$$

$$P = 30000000 \left[\frac{1.0114}{0.15(1.15)^5} \right]$$

$$P = 30000000 \left[\frac{1.0114}{0.3017} \right]$$

$$P = 30000000 \left[3.3522 \right] \Rightarrow \boxed{100566000}$$

Question No (2)=> Part (B)

$$A = 10000$$

$$i = 5\%$$

$$N = 15 \text{ years}$$

Solution:-

$$F = A \left[\frac{(1+i)^n - 1}{i} \right]$$

Putting value

$$F = 10000 \left[\frac{(1+0.05)^{15} - 1}{0.05} \right]$$

$$F = 10000 \left[21.5786 \right]$$

$$F = 215786$$



Question No (3)=> Part (A)

Answer:- Property is depreciable if it meet the following basic requirements

=> It must be used in business or held to produce income

=> It must have useful life and the life must be longer than one year

=> It must be something that wears out decay gets used up become obsolete or loss value from natural causes.



Question No (3)=> part (B)

Solution :- we know that

From

$$d_v = (B - SvN) \left[2 \frac{(N - k + 1)}{N(N+1)} \right]$$

$$Bv_k = B - \left[2 \frac{(B - SvN)}{N} \right] k + \left[\frac{(B - SvN)}{N(N+1)} \right] k(k+1)$$

Putting value for sample ①

$$d_1 = 400000 \left(2 \frac{(10 + 1 - 1)}{10(10+1)} \right)$$

$$d_1 = 400000 \left(2 \frac{(10)}{10(11)} \right)$$

$$d_1 = 400000 (0.1818)$$

$$d_1 = 72720$$

Bv1 =

$$400000 - \left[2 \frac{(400000)}{10} \times 1 \right] + \left[\frac{400000}{10(11)} \right] 1(1+1)$$

$$\Rightarrow 400000 - [80000] + \left[\frac{400000}{110} \right] \times 2$$

$$400000 - 80000 + 7272.7$$

$$\Rightarrow 327272.7$$

For d_2

$$d_2 = 400000 \left[2 \frac{(10-2+1)}{10(10+1)} \right]$$

$$d_2 = 400000 \left[2 \frac{(8+1)}{10(11)} \right]$$

$$d_2 = 400000 \left[2 \frac{(9)}{110} \right]$$

$$d_2 = 400000 \left[\frac{18}{110} \right]$$

$$d_2 = 65454.5$$

BV2 =

$$400000 - \left[2 \left(\frac{400000}{10} \right) \right] \times 2 + \left[\frac{400000}{10(11)} \right] 2 \times 3$$

$$\frac{IP \neq 13170}{\Rightarrow}$$

$$400000 - 80000 \times 2 + \left[\frac{400000}{110} \right] \times 6$$

$$400000 - 160000 + 3636.36 \times 6$$

$$400000 - 160000 + 21818.16$$

$$\Rightarrow 264818.16$$

$$d_3 = 400000 \left[\frac{2(10-3+1)}{10(10+1)} \right]$$

$$d_3 = 400000 \left[\frac{2(8)}{10(11)} \right]$$

$$d_3 = 400000 \left[\frac{16}{110} \right]$$

$$d_3 = 58181.8$$

$$BV_3 = 400000 - \left[\frac{2(400000)}{10} \right] \times 3 + \left[\frac{400000}{10(11)} \right] \times 4$$

$$BV_3 = 400000 - 240000 + 43636.3$$

$$BV_3 = 203636.3$$

$$\Rightarrow d_4 = 400000 \left[\frac{2(10-4+1)}{10(10+1)} \right]$$

$$= 400000 \left[\frac{2(7)}{110} \right]$$

$$= 50909.0909$$

$$BV_4 = 400000 + \left[2 \left(\frac{400000}{10} \right) \times 4 + \left[\frac{400000}{110} \right] 4 \times 5 \right]$$

$$= 400000 + [320000] + 72727.2727$$

$$= 792727.2727$$

$$\Rightarrow d_5 = 400000 \left[\frac{2(10-5+1)}{10(10+1)} \right]$$

$$43636.3$$

$$BV_5 =$$

$$400000 - \left[2 \left(\frac{400000}{10} \right) \right] \times 5 + \left[\frac{400000}{110} \right] 5 \times 4$$

$$400000 = 400000 + 72727.2$$

$$BV_5 = 72727.2$$

10 + 13170

$$\Rightarrow d_6 = 400000 \left[2 \left[\frac{10 - 6 + 1}{10(11)} \right] \right]$$

$$d_6 = 36363.6$$

$$B_{v6} =$$

$$400000 - \left[2 \left[\frac{400000}{10} \right] \times 6 + \left[\frac{400000}{110} \right] \times 6 \times 7 \right]$$

$$400000 - 480000 + 152727$$

$$\Rightarrow 72727$$

$$d_7 = 400000 \left[2 \left[\frac{10 - 7 + 1}{10(11)} \right] \right]$$

$$d_7 = 29090.90$$

$$B_{v7} = 400000 - \left[2 \left[\frac{400000}{10} \right] \times 7 + \left[\frac{400000}{110} \right] \times 7 \times 8 \right]$$

$$B_{v7} = 400000 - 560000 + 203636.36$$

$$= 43636.36$$

$$\frac{400000}{10} \neq 13170$$

→

$$d_8 = 400000 \left[\frac{2[10 - 8 + 1]}{10(11)} \right]$$

$$d_8 = 400000 (0.05454)$$

$$d_8 = 21818.18$$

$$B_{v8} = 400000 - \left[2 \left[\frac{400000}{10} \right] \right] \times 8 + \left[\frac{400000}{110} \right] \times 8 \times 9$$

$$B_{v8} = 400000 - 640000 + 3636.36 \times 72$$

$$B_{v8} = 400000 - 640000 + 261817.9$$

$$B_{v8} = 21818.18$$

$$\Rightarrow 21817.9$$

$$d_9 =$$

$$400000 \left[\frac{2[10 - 9 + 1]}{10(11)} \right]$$

$$d_9 = 14545.4$$

$$\frac{10 + 13170}{\rightarrow} Bv_9 = 400000 - \left[2 \left(\frac{400000}{10} \right) \times 9 \right] + \left[\frac{400000}{110} \right] \times 9 \times 10$$

$$Bv_9 = 400000 - 720000 + 327272.7$$

$$Bv_9 = 7272.9$$

$$d_{10} = 400000 \left[\frac{2 \left[10 - \frac{10 + 1}{10} \right]}{10(11)} \right]$$

$$= 72727.27$$

$$Bv_{10} = 400000 - \left[2 \left(\frac{400000}{10} \right) \times 10 \right] + \left[\frac{400000}{110} \right] \times 10 \times 11$$

$$= 400000 - 800000 + 400000$$

$$= 0$$

→ Depreciation and book value amount

For each year

<u>EOY's</u>	<u>dk</u>	<u>BVK</u>
0	0	400000
1	72720	327272.7
2	65454.5	261818.16
3	58181.8	203636.3
4	50909.09	792727.27
5	43636.3	72727.2
6	36363.6	72727
7	29090.90	43636.36
8	14545.4	7272.9
10	72727.27	0

Question No (4)Part (A)

(Solution:-)

Given that Gross income and expense
as stated income tax rate = 40%

=> I mid Net income

Consider the purchase of the machine
to have made at the end
of year zero, which is also
the beginning of year one.

(items) (amount)

Gross income (revenues) = \$ 50000

Cost of good sold = \$ 20000

Depreciation = \$ 4000

operating expenses = \$ 6000

Taxable income = \$ 20000

Taxes (40%) = \$ 8000

Net income = \$ 12000.

Question No (4)part (B)

Answer:-

Benefit

=> with this proposed park public primary health will improve besides that a new recreational activity will be added in the city of Lahore with new recreational activity local people from outside will pay a visit to this park thus increasing its value in terms of financial activities substitute business like cafe etc will also flourish which will generate revenue for the government and on a greater scale it will attract tourists to the city

=> Cost

As land already is available
So the Park building cost
will be low and also government
is planning to issue bonds so
the cost won't be a big
issue they can manage it
in low cost.

=> Disbenefits

if not properly managed they
can damage the nature and
issuance of bonds might be
an issue which is considerable
Factor.

Question NO (5)

(Answer:-) we know that we have determine the equivalent AW of all cost at the MRR of the 12% years to earn exactly 12% the annual income adjust for 90% occupancy must be the AW of cost

$$\Rightarrow \text{initial investment cost} \Rightarrow \$50000 + \$225000$$

$$\Rightarrow \$275000$$

$$\Rightarrow \text{Taxes and insurance per year}$$

$$\Rightarrow 0.1 \times 275000$$

$$\Rightarrow \$27500$$

$$\Rightarrow \text{up keep / year} \Rightarrow \$30 (12 \times 30) (0.9) =$$

$$\Rightarrow \$9720$$

CR cost / year

$$\frac{\$275000}{i} (A/P 12\%, 20) - \frac{\$50000}{i} (A/F 12\%, 20)$$

$$\Rightarrow (A/P, 12\%, 20) = \left[\frac{i(1+i)^n}{(1+i)^n - 1} \right] 275000$$

Putting value = $\left[\frac{0.12(1+0.12)^{20}}{(1+0.12)^{20} - 1} \right] \times 275000$

$$\Rightarrow \left[\frac{1.1576}{8.6463} \right] \times 275000$$

$$\Rightarrow \$ 36818.06$$

$$\Rightarrow 50000 (A/F, 12\%, 20)$$

$$\Rightarrow 50000 \left(\frac{i}{(1+i)^n - 1} \right)$$

$$\Rightarrow 50000 \left[\frac{0.12}{(1.12)^{20} - 1} \right]$$

$$\Rightarrow \$ 50000 \left[\frac{0.12}{8.6462} \right]$$

$$\Rightarrow \$ 6930.9$$

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$$\Rightarrow \$ 36123$$

Equivalent AW of (cost) =

$$- 27500 - 9720 - 36123$$

$$\Rightarrow \$ - 73343$$

the monthly rental amount R is

$$\Rightarrow \$ 73343 / (12 \times 30) (0.9)$$

$$\Rightarrow \$ 22603$$

⟷

The End