2022 1st Semester Engineering Economy

Assignment Chapter 1

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1.18

P = 20,000,000

n = 6

i = 10%, 0.1

A = ?

1.25

End of period in March: total = 50+70 = $120, interest = 120\*0.03 = $3.6

End of period in June: total = 120+120+20 = $260, interest = 260\*0.03 = $7.8

End of period in September: total = 260+150+90=$500, interest = 500\*0.03 = $15

End of period in December: total = 500+40+110 = $650, interest = 650\*0.03 = $19.5

1.33

Early-bird: 20,000\*0.9=$18,000

After 1 year equal to early-bird $19,000: 18,000\*1.06=$19,080

Savings: 20,000-19,080=$920

1.40

$10,000 with 10% simple interest rate for 3 years: 10,000+1000+1000+1000=$13,000

$10,000 with i(%) compound interest rate for 3 years:

Spreadsheet function for i value: RATE(3,,-10000,13000), result: 9.14%

1.45

WACC = 0.05\*0.1+0.95\*0.19 = 0.1855 = 18.55%

ROR >= MARR > WACC=18.55%

Need to be conducted project: Inventory, Technology, Warehouse, Maintenance (% over 18.55%)

\*

45. ROR ≥ MARR > WACC  
When WACC=18.55, how could you guarantee 19.5% of “Maintenance” ROR is greater than MARR?  
In this problem, we do not know the exact value of MARR while we only know the MARR should be greater than 18.55%!  
For example, MARR could even be 35% which is greater than 18.55%. In this case, no project will be undertaken.

1.61

answer: (a) 1,354,100

|  |  |
| --- | --- |
| End-of-Period (Year) | Amount of Money |
| 0 | 650000+200000=$850,000 |
| 1 | 850000\*1.15 + 200000 = $1,177,500 |
| 2 | 1177500\*1.15 = $1,354,125 |

i = 15%, compound interest rate