HOLY ANGEL UNIVERSITY
SCHOOL OF ENGINEERING AND ARCHITECTURE
GENERAL ENGINEERING DEPARTMENT
ENGINEERING ECONOMICS

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SECTION:	CPE -202	INSTRUCTOR:	JABPEC Pineda

COMPUTATIONAL CLASS ACTIVITY NO. _____

1. A company is considering two types of equipment for its manufacturing plant. Pertinent data are as follows:

COST TYPE	TYPE A	TYPE B
FIRST COST	200,000 PHP	300,000 PHP
Annual operating cost	32,000 PHP	21,000 PHP
Annual cost labor	50,000 PHP	32,000 PHP
Insurance / property taxes	3% of first cost	3% of first cost
Payroll taxes	40% of labor cost	40% of labor cost
Estimated life	10	10

If the minimum required rate of return is 15%. Which equipment should be selected? Use EUAC method

2. Choose from the two machines which is more economical

COST TYPE	MACHINE A	MACHINE B
FIRST COST	8,000 PHP	14,000 PHP
SALVAGE VALUE	0 PHP	2,000 PHP
ANNUAL OPERATION COST	3,000 PHP	2,400 PHP
ANNUAL MAINTENANCE COST	1,200 PHP	1,000 PHP
TAXES AND INSURANCE (3%)	240 PHP	420 PHP
ESTIMATED LIFE (YEARS)	10	15

If money is worth 16%. Use RoR method

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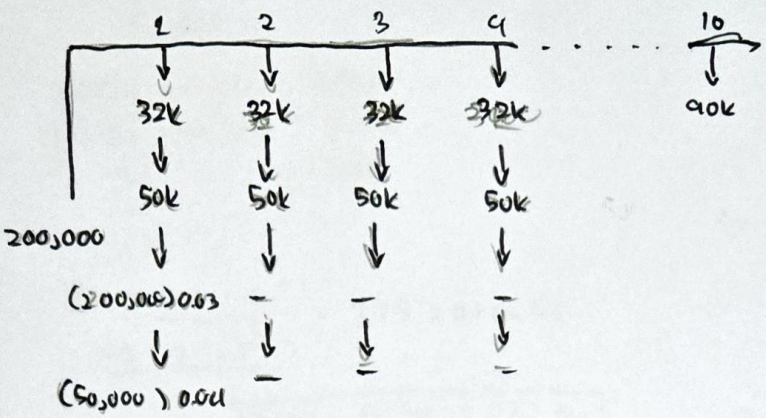
H 1 : SOLVING

TYPE A



= 90 k

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

$A = 200{,}000\left[\frac{0.15}{1-(1+0.15)^{-10}}\right]$

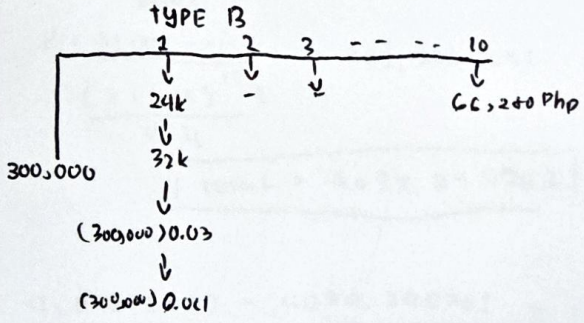
A = 39950.4125

TYPE A

EUAC = 39950.4125 + 90,000

EUAC = 129,950.4125 Php

TYPE B



= 66,240

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

$A = 300{,}000\left[\frac{0.15}{1-(1+0.15)^{-10}}\right]$

A = 59,775.6184

EUAC = 59,775.6184 + 66,240

EUAC = 126,055.6184

TYPE B ~~IS MORE~~ EGO SHOULD BE SELECTED

#2: SOLUTION

MACHINE A

ANNUAL OP COST = 3,000
ANNUAL main cost = 1,200
TAX = 240

$$d = \frac{₱5{,}000 - 0}{\frac{(1+0.16)^{10}-1}{0.16}} = 375.20866\,45$$

TOTAL = 4,₱15.2087 Php

MACHINE B

ANNUAL OP COST = 2,400
ANNUAL main cost = 1,000
TAX = 420

$$d = \frac{₱1{,}000 - 2000}{\frac{(1+0.16)^{15}-1}{0.16}} = 232.290262$$

TOTAL = 4052.290262

$$\frac{₱15.2087 - 4052.290261}{₱1{,}000 - ₱5{,}000} \times 100$$

$$= 12.72\%$$

MACHINE A IS MORE ECONOMICAL