ES301 – ENGINEERING ECONOMY

PROBLEM SETS

Directions:

- Solve the following problems with your complete solutions.
- Enclosed your final answer in a box.
- You may write or encoded your solutions.
- Use black or blue pen only.
- Submit your document(**ONE PER STUDENT**) in **pdf format** in my email (jementizajj@gmail.com)
- File format: ES301_Section_Familyname_PS
  (e.g. ES301_CPE1A_Jementiza_PS)
- Deadline: December 30, 2020 at 12:00 noon

PROBLEMS

Chapter 4

1. Use a MARR of 10% and useful of 10 years to select between the investment alternatives below.

	Alternatives	
	A	B
Capital Investment	-100, 000 Php	-125, 000 Php
Annual Revenues less expenses	34, 000 Php	41, 000 Php

2. Use a MARR of 12% and useful of 5 years to select between the investment alternatives below.

	Alternatives	
	C	D
Capital Investment	-80, 000 Php	-60, 000 Php
Annual Revenues less expenses	-25, 000 Php	-30, 000 Php

Chapter 5

3. The large profitable corporation has purchased a jet plane for use by its executives. The cost of the plane is ₱ 76,000,000. It has a useful life of 5 years. The estimated resale value at the end of five years is ₱6,000,000. Using sum of the years' digit method of depreciation, what is the book value of the jet plane at end of 3 years?

4. Power to a remote transmitting station is provided by a Diesel-generator unit. The original cost of the unit is P65,000. It costs P2,000 to ship the unit to the job site. An additional cost of P3,000 was incurred for installation.
   a. Determine the annual depreciation cost by the sinking fund method, if the unit has an expected life of 10 years. The salvage value of the unit at the end of its life was estimated at P5000.
   b. Determine the annual depreciation cost by the sinking fund method. Assume that the annual charge for depreciation was deposited in a fund drawing compound interest at the rate of 5%.
5. A marble quarry is estimated to contain 900,000 tons of stone, and a company just purchased this quarry P1, 800, 000. If 100,000 tons of marble can be sold each year and the average selling price per ton is P8.60, calculate the first year's depletion allowance for
   a. Cost depletion method
   b. Percentage depletion at 5% per year. The company's net income before deduction of a depletion allowance is P350, 000.

Chapter 6

6. A recapping plant is planning to acquire a new diesel generating set to replace its present unit which they run during brownouts. The new set would cost P135,000 with a five (5) year-life, and no estimated salvage value. Variable cost would be P150,000 a year. The present generating set has a book value of 75,000 a remaining life of 5 years. Its disposal value is now being P7,500, but it would be zero after 5 years. Variable operating cost would be P187,500 a year. Money is worth 10%. Which is profitable, to buy the new generator set or retain the present set? Support your answer by showing your computation.

7. It is desired to determine the present economic value of an old machine by considering of how it compares with the best modern machine that could replace it. The old machine is expected to require out of pocket cost of P85,000each year for 4 years and then scrapped for 5,000 residual value. The new machine requires an investment of P40,000 and would have out of pocket cost of P79,000 a year for 8 years and then zero salvage value. Invested capital should earn a minimum return of 15% before taxes. Determine the present value of the old machine.