

Instructions:

- 1) The part of the exam is open book and open notes.
- 2) Partial points are based on readily observable evidence that you know at least part of the solution concept. The more evidence presented (and the clearer the evidence), the better the chance for partial points. In other words, **SHOW ALL WORK!**

1. (3 points) How much should invest today in order have \$2,000,000 in 40 years with a compound nominal interest rate of 7.5%?

$$I = 7.5 \quad Pmt = 0$$

$$N = 40$$

$$FV = 2000000$$

$$PV = 110,838.70$$

2. (3 points) What is the future value of an 10-year annuity with annual payments of \$2,178, assuming a 4.4% nominal interest rate?

End
wdy

$$PV = 0$$

$$N = 10$$

$$I = 4.4$$

$$Pmt = 2178$$

$$FV = 26639.53$$

3. (4 points) You are given a choice of receiving \$20,000 today or \$1,350 per year at the beginning of the next 30 years. If your required return is 5.5%, which do you prefer? Explain your answer. .5 points for the correct answer, 3.5 points for math to support the correct answer.

20000 vs $PV = 20699.68$

$$N = 30$$

$$Pmt = 1350$$

$$I = 5.5$$

$$FV = 0 \text{ BGN mode}$$

1020 End - 2.5

$$FV = 103166.23$$

$$FV = 99679.02$$

4. You have a 30 year mortgage with monthly payments. The mortgage is for \$155,000 and the annual percentage rate on the loan is 5.0%. Assuming you make all payments on time.

a. (2 points) What is your monthly payment?

$$N = 30 \times 12 = 360$$

$$PV = 155000$$

$$FV = 0$$

$$I = 5/12$$

$$Pmt = 832.07$$

b. (3 points) After making 200 on-time payments, what is the total amount of interest you will have paid?

① w/ calc

$$N = 200$$

$$CPT \ FV = 131557.60$$

$$97027.35$$

②

$$Pmt = Pvin + Finter$$

$$(832.07 \times 100) - (155000 - 97027.35)$$

$$166414 = 57972.65 + IN$$

$$108441.3$$

5. (6 points) You start with \$5,000 in the bank. Now, assume that you will receive \$2,000 a year in Years 1 through 4, \$0 a year in Years 5 through 8, and \$8,000 in Years 9-15, with all cash flows to be received at the end of the year. If you require an 8.8 percent rate of return, what is the future value of these cash flows in 15 years?

① NPV (8.8, 5000, {2000, 0, 8000}, {4, 4, 7})

② $PV = 32152.36$

3, 32152.36

3, $FV = 113932.15$

$$I = 8.8$$

$$Pmt = 0$$

6. (20 points) Fill in the missing numbers. Note, all of the below accounts will be used in creating the income statement or balance sheet. Use the back of the page, if needed.

Accounts receivable, net	680 ✓	Accrued taxes	2,049 ✓
Cost of service revenues	3,382 ✓	Research and development expense	1,226 ✓
Inventory	2,021 ✓	Prepaid cost of goods sold	124 ✓
Other current assets	651 ✓	Total current assets	21,568 ✓
Selling, general and administrative	9,358 ✓	Income from operations	842 ✓
Total liabilities	11,120 ✓	Additional paid-in capital	212,644 ✓
Net income	838 ✓	Income before income taxes	842 ✓
Property and equipment, net	2,212 ✓	Intangible assets, net	1,501 ✓
Accounts payable	5,210 ✓	Accrued compensation	1,634 ✓
Other accrued liabilities	697 ✓	Total current liabilities	11,003 ✓
Retained Earnings	(197,822) ✓	Total liabilities and stockholders' equity	\$ 26,005 ✓
Service revenues	15,363 ✓	Total revenues	16,834 ✓
Other long term assets	<u>724</u>	Accrued warranty	<u>1413</u>
Income taxes	<u>4</u>	Product revenues	<u>1471</u>
Common stock	<u>63</u>	Total assets	<u>26005</u>
Interest Expenses	<u>0</u>	Other long term liabilities	<u>117</u>
Cash and cash equivalents	<u>18092</u>	Cost of product revenues	<u>2026</u>

BS

ARGSO
 INU 2021
 ORN CA 65
 APCOGS 124
 Cash 18092
 TCA 21568

Acctax 2049
 AP 5210
 other Acc 697
 Acccomp 1634
 Accurr 1413
 TCL 11003

IS
 Service Rev 15363
 Product Rev 1471
 Tot Rev 16834
 Cost of Service 3382
 Cost of Prodcl
 SGA 9358
 R+D 1226

P+E 2212
 Intangible 1501
 other LTA 724
 TA 26005

~~TL 11120~~
 other TL 117
 TL 11120
 Common 63
 Add PIC 212644
 RE (197822)
 TI JOE 26005

Inc from ops 842
 Int 0
 Inc before tax 842
 taxes 4
 NI 838