

Examinee:

Student Number:

This examination contains 10 problems on 9 pages. Please check that you have got the complete set.

Please enter your answers in the space immediately below each question. Only answers given there will be graded.

Admissible aids: Pocket calculator, language dictionary

Useful formulas:

The present value of a series of n equal payments a due at the end of each period at a discount rate r (per period) is: $PV = \frac{a}{r} \left(1 - \frac{1}{(1+r)^n} \right)$.

The two solutions of the quadratic equation $ax^2 + bx + c$ are: $x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$.

1	2	3	4	5	6	7	8	9	10	Σ	Grade
/15	/8	/8	/6	/12	/15	/10	/15	/16	/15	/120	

Problem 1: The Stink & Poison (S&P) Chemical Corp. intends to issue an interest-only bond with ten years to maturity. The current market interest rate for ten-year government bonds is 3%. S&P expects having to pay a premium of 360 basis points (3.6 %) above the interest rate of government bonds. S&P needs \$120 million. The yearly coupon is to be 6.5 %. 1% of the proceeds from the issue is deducted for issuance costs. The nominal amount to be issued must be a multiple of \$50 million. (15 points)

a) What amount will S&P issue (par value)? Why? Could the bond be sold at a premium?

b) Set up an equation that can be solved for the present value of the issue.

c) Solve the equation.

[2]

d) How much money will be available to S&P from the issue? \$

S&P could keep part of the bond to fine tune the amount of debt outstanding to their financing needs of \$120 million. How much face value of the bond would they keep in treasury?

Problem 2: An interest-only bond with face value \$10,000, annual coupon of 6% and two years to maturity is available at a price of \$10,500. Determine the yield to maturity. (8 points)

a) Give an equation that can be solved for the YTM:

b) Solve the equation:

$r =$

[3]

Problem 3: Car dealer Jack Lemon offers a used car at a price of \$ 10 000 or, alternatively equal monthly installments over 5 years at an effective annual interest rate of 10%. Determine the monthly payment.

(8 Points)

a) Determine the monthly discount factor for a yearly interest rate of 10%.

b) Give an equation that can be solved for the monthly payment:

c) Solve for the monthly payment:

[4]

Problem 4: A zero bond (face value \$10,000) is available at \$4 500. The long run market interest rate for the issuer is 6% p.a. Determine the time to maturity. (6 points)

a) Give an equation that can be solved for the time to maturity:

b) Solve it:

Problem 5: On 15th of November you purchased a bond at a quoted price of \$1,038.80, the bond has a 7% coupon rate paid annually on July 1st. The face value is \$1,000. (12 points)

a) How much will you have to pay for it?

b) What is the current yield of the bond?

c) Assume the yield to maturity is 5.2%, constant over time. What is the capital gains yield for the year to come?

d) Which quoted price do you expect in one year?

[6]

- d) Determine the annuity (due at year's end) equivalent to the cash flow stream of each of the alternatives at the required rate of return of 10%.

Problem 7: Company Y's share price is \$5.50 while company Z's stock is traded at a price of \$10 per share. Y has a beta of 1.4, Z's beta is 0.75. Company Y announced a dividend of \$0.50 while Z will pay no dividend. The market risk premium is 7.5% and the risk-free rate of return is 4%. What are the share prices of the two companies one year from now, predicted by the CAPM? (10 points)

- a) Set up equations that can be solved for the share prices:

- b) Solve:

- c) Determine expected capital gains yield and dividend yield for both stocks:

	Capital gains yield	Dividend yield
Stock Y:		
Stock Z:		

Problem 9: Consider the following market value balance sheet:

<i>Circular File Company (Market Values)</i>			
Net W.C.	10	17	Bonds outstanding
Fixed assets	<u>15</u>	<u>8</u>	Common stock
Total assets	25	25	Total liabilities

The bonds of this firm pay 8% p.a. interest. The market value equals the book value. The corporate income tax rate is 25%. The cost of equity currently is 12%. (20 points)

- a) Calculate the after-tax weighted average cost of capital.

After-tax WACC =

- b) Calculate the opportunity cost of capital by unlevering.

$r =$

- c) Assume the firm downsizes its entire business by reducing NWC by 2 and fixed assets by 3 and repurchases bonds of a market value of 5. After that the cost of debt falls to 7%. Calculate the new cost of equity. Comment on your result.
- d) Calculate the new after-tax WACC.

$r_E =$

Problem 10: Multiple Choice Questions. Please check the correct box. Each correct check mark yields 3 points. For any false check mark 3 points are taken away from the credit for problem 10, so guessing at random does not pay.

	True	false
"Duration" is a different expression for "Time to Maturity"		
Longer "Time to Maturity" implies a larger duration, everything else equal		
The duration measures the sensitivity of the present value of a bond with respect to changes in the market interest rate.		
An interest-only bond sells at a premium if the Yield to Maturity is higher than the coupon rate.		
All other things equal, the lower the coupon rate the greater the interest rate risk.		

Examination: 5075 "Management VI"(Management Accounting) **Winter semester: 2009/10**
Examiner: Schöndube-Pirchegger
Duration: 120 min

Name: _____ **Matriculation number:** _____

The following aids can be used: Calculator, English language dictionary

A total of 120 points can be achieved. You are advised to base your time allocation on the points indicated at the questions. Please answer each question in the space immediately below the question. Additions written elsewhere will not be recognized. All of the following 14 questions are to be answered. Check whether you received the complete set of 10 pages with 14 questions.

Questions:

1. When 50,000 units are produced the fixed cost is \$10 per unit. What are the fixed costs per unit, when 100,000 units are produced? (2 points)

Fixed Costs per unit =

2. DaSilva Manufacturing provided the following information for last month.

Sales	\$10,000
Variable costs	3,000
Fixed costs	<u>5,000</u>
Operating income	<u>\$2,000</u>

If sales double next month, what is the projected operating income? (2 points)

Projected Operating Income =

3. Tire and Spoke Manufacturing currently produces 1,000 bicycles per month. The following per unit data apply for sales to regular customers:

Direct materials	\$50
Direct manufacturing labor	5
Variable manufacturing overhead	14
Fixed manufacturing overhead	<u>10</u>
Total manufacturing costs	<u>\$79</u>

The plant has capacity for 3,000 bicycles and is considering expanding production to 2,000 bicycles. What is the per unit cost of producing 2,000 bicycles? (3 points)

Per unit cost =

4. Pederson Company reported the following:

Manufacturing costs	\$2,000,000
Units manufactured	50,000
Units sold	47,000 units sold for \$75 per unit

What is the amount of gross margin? (2 points)

Amount of gross margin =

5. Karen Hefner, a florist, operates retail stores in several shopping malls. The average selling price of an arrangement is \$30 and the average cost of each sale is \$18. A new mall is opening where Karen wants to locate a store. The mall operator offers the following three options for its retail store rentals:

1. paying a fixed rent of \$15,000 a month,
2. paying a base rent of \$9,000 plus 10% of revenue received, or
3. paying a base rent of \$4,800 plus 20% of revenue received up to a maximum rent of \$25,000.

Required:

- a. For each option, compute the breakeven sales quantity and the monthly rent paid at break-even. (9 points)
- b. Beginning at zero sales, show the sales levels at which each option is preferable up to 5,000 units. You may add a picture on the reverse side. (13 points)

Answer:

6. Moira Company has just finished its first year of operations and must decide which method to use for adjusting cost of goods sold. Because the company used a budgeted indirect-cost rate for its manufacturing operations, the amount that was allocated (\$435,000) to cost of goods sold was different from the actual amount incurred (\$425,000).

Ending balances in the relevant accounts were:

Work-in-Process	\$ 40,000
Finished Goods	80,000
Cost of Goods Sold	680,000

Required:

Determine Cost of goods sold and the ending balances of Work-in-Process and Finished Goods after adjusting for overallocated overhead if

- the difference between allocated and actual overhead is directly written off to Cost of Goods Sold (2 points)
- the difference between allocated and actual overhead is prorated to ending account balances. (6 points)

Answer:

7. Wallace Printing has contracts to complete weekly supplements required by forty-six customers. For the year 2009, manufacturing overhead cost estimates total \$420,000 for an annual production capacity of 12 million pages.

For 2009 Wallace Printing decided to evaluate the use of additional cost pools. After analyzing manufacturing overhead costs, it was determined that number of design changes, setups, and inspections are the primary manufacturing overhead cost drivers. The following information was gathered during the analysis:

<u>Cost pool</u>	<u>Manufacturing overhead costs</u>	<u>Activity level</u>
Design changes	\$ 60,000	200 design changes
Setups	320,000	4,000 setups
Inspections	40,000	16,000 inspections
Total manufacturing overhead costs	<u>\$420,000</u>	

During 2009, two customers, Wealth Managers and Health Systems, are expected to use the following printing services:

<u>Activity</u>	<u>Wealth Managers</u>	<u>Health Systems</u>
Pages	60,000	76,000
Design changes	10	2
Setups	20	10
Inspections	30	38

- Assuming activity-cost pools are used, what are the activity-cost driver rates for design changes, setups, and inspections cost pools? (3 points)
- Using the activity-cost driver rates determined in the previous question, what is the manufacturing overhead cost estimate for *Health Systems* during 2009? (3 points)

Answer:

8. Norton's Mufflers may manufacture one of three different products, Model X, Model Y, and Model Z. Considerable market demand exists for all models. The following per unit data apply:

	<u>Model X</u>	<u>Model Y</u>	<u>Model Z</u>
Selling price	\$80	\$90	\$100
Direct materials	30	30	30
Direct labor (\$10 per hour)	15	15	20
Variable support costs (\$5 per machine-hour)	5	10	10
Fixed support costs	20	20	20

- a. If there is excess capacity, which model is the most profitable to produce? Why?
 b. If machine capacity is the bottleneck, which model is the most profitable to produce? Why?

Show your calculations.

(6 points)

Answer:

9. At the end of the accounting period Susan Corporation reports operating income of \$30,000 and the fixed overhead cost rate is \$20 per unit. Calculate the change in operating income due to production of an additional 100 units to finished goods inventory

- a. under absorption costing,
 b. under variable costing.

(4 points)

Answer:

10. The actual information pertains to the month of August. As part of the budgeting process Alloway's Fencing Company developed the following static budget for August. Alloway is in the process of preparing the flexible budget and understanding the results.

	<u>Actual Results</u>	<u>Flexible Budget</u>	<u>Static Budget</u>
Sales volume (in units)	<u># 20,000</u>		<u># 25,000</u>
Sales revenues	\$1,000,000	\$	\$1,250,000
Variable costs	<u>512,000</u>	\$	<u>600,000</u>
Contribution margin	488,000	\$	650,000
Fixed costs	<u>458,000</u>	\$	<u>450,000</u>
Operating profit	<u>\$ 30,000</u>	<u> </u>	<u>\$ 200,000</u>

Required:

Insert the missing \$ amounts.

(5 points)

11. Pots Manufacturing Company's costing system has two direct-cost categories: direct materials and direct manufacturing labor. At the beginning of 2009, Pot Manufacturing adopted the following standards for its manufacturing costs:

	Input
Direct materials	25 pounds at \$0.5 per pound
Direct manufacturing labor	0.2 hrs. at \$18 per hr.

The records for January indicated the following:

Direct materials used	350,000 pounds at \$0.48 per pound
Direct manufacturing labor	2,520 hrs. at \$18.50 per hr.
Actual production	12,800 output units

Required:

For the month of January 2009, compute the following variances, indicating whether each is favorable (F) or unfavorable (U):

- | | |
|---|------------|
| a. Direct materials price variance | (4 points) |
| b. Direct materials efficiency variance | (5 points) |
| c. Direct manufacturing labor price variance | (4 points) |
| d. Direct manufacturing labor efficiency variance | (5 points) |

Answer:

12. The following data are available for Ruggles Company for the year ended September 30, 2006.

Sales:	24,000 units at \$50 each
Expected and actual production:	30,000 units
Manufacturing costs incurred:	
Variable:	\$525,000
Fixed:	\$372,000
Nonmanufacturing costs incurred:	
Variable:	\$144,800
Fixed:	\$77,400
Beginning inventories:	none

Required:

- Determine operating income using the variable-costing approach. (8 points)
- Determine operating income using the absorption-costing approach. (8 points)
- Explain why operating income is not the same under the two approaches and show where the difference goes. (4 points)

Answer:

13. Ceylon Tea Products has an exclusive contract with British Distributors. Calamine and Ceylon are two brands of teas that are imported and sold to retail outlets. The following information is provided for the month of March:

	Actual		Budget	
	<u>Calamine</u>	<u>Ceylon</u>	<u>Calamine</u>	<u>Ceylon</u>
Sales in pounds	1,800 lbs.	1,800 lbs.	2,000 lbs.	1,500 lbs
Price per pound	\$2.50	\$2.50	\$2.00	\$3.00
Variable cost per pound	<u>1.00</u>	<u>2.00</u>	<u>1.00</u>	<u>1.50</u>
Contribution margin	<u>\$1.50</u>	<u>\$0.50</u>	<u>\$1.00</u>	<u>\$1.50</u>

- a. What is the actual contribution margin for the month? (3 points)

Answer:

- b. What is the contribution margin for the flexible budget? (3 points)

Answer:

- c. For the contribution margin, what is the total static-budget variance? (3 points)

Answer:

- d. For the contribution margin, what is the total flexible-budget variance? (3 points)

Answer:

14. Bovar Company manufactures airplanes. It has just completed the manufacture of its first newly designed aircraft, LN-14. Manufacturing data for the LN-14 follows:

Direct material cost	\$4,000,000	per unit of LN-14
Direct manufacturing labor time for first unit	150,000	direct manufacturing labor-hours
Learning curve for manufacturing labor time per aircraft	80%	cumulative average time ^a
Direct manufacturing labor cost	\$ 27	per direct manufacturing labor-hour
Variable manufacturing overhead cost	\$ 21	per direct manufacturing labor-hour

^a for a 80% learning curve, $b = \ln 0.80 / \ln 2 = -0.321928$.

Required:

- a) How many direct manufacturing labor-hours are required in order to manufacture 4 aircrafts? (6 points)
- b) Calculate the total variable costs of producing 4 units. (4 points)

Answer: