WESTERN UNIVERSITY
DAN DEPARTMENT OF MANAGEMENT AND ORGANIZATIONAL STUDIES

MOS 3370A: MANAGEMENT ACCOUNTING

Final Makeup Exam

Friday, January 15, 2021

2:00 PM to 5:00 PM – 3 hours

Instructions:

- You can use your textbook (including etext) and notes for the exam
- You will be required to keep your video on for the entire session
- You will need to have your student card readily available since you will be required to display it to the camera when requested
- You must be prepared to share your screen if requested by the Proctor
- You are required to handwrite your responses for each question on a new page. Write your name at the top of every page in the right-hand corner
- No speaking, no earphones/airpods/listening devices and **no correspondence with others during the exam**
- You should be in a room by yourself
- If you have a question, raise your hand using the Zoom function. You can direct message your Proctor as well.
- Any distribution of the exam is considered an Academic Offence
- At the conclusion of the exam you are required to take a photo or scan and upload your exam to the assignment dropbox. **No JPEG files allowed since they require too much space.** Your scan or pictures should be in PDF format
- Use the following formula for any CCA tax shield calculations you feel are necessary:

CCA Tax Shield: $PV = \frac{cdt}{d+k} \times \frac{1+1.5k}{1+k}$

CCA Lost Tax Shield: $PV = \frac{sdt}{d+k} \times (1+K)^{-n}$

- Use the following tables for any present value calculations that you feel are necessary

Table A-2

PRESENT VALUE OF 1

(PRESENT VALUE OF A SINGLE SUM)

$$PVF_{n,i} = \frac{1}{(1+i)^n} = (1+i)^{-n}$$

(n) periods	2%	2½%	3%	4%	5%	6%	8%	9%	10%	11%	12%	15%
1	.98039	.97561	.97087	.96156	.95238	.94340	.92593	.91743	.90909	.90090	.89286	.86957
2	.96117	.95181	.94260	.92456	.90703	.89000	.85734	.84168	.82645	.81162	.79719	.75614
3	.94232	.92860	.91514	.88900	.86384	.83962	.79383	.77218	.75132	.73119	.71178	.65752
4	.92385	.90595	.88849	.85480	.82270	.79209	.73503	.70843	.68301	.65873	.63552	.57175
5	.90583	.88385	.86261	.82193	.78353	.74726	.68058	.64993	.62092	.59345	.56743	.49718
6	.88797	.86230	.83748	.79031	.74622	.70496	.63017	.59627	.56447	.53464	.50663	.43233
7	.87056	.84127	.81309	.75992	.71068	.66506	.58349	.54703	.51316	.48166	.45235	.37594
8	.85349	.82075	.78941	.73069	.67684	.62741	.54027	.50187	.46651	.43393	.40388	.32690
9	.83676	.80073	.76642	.70259	.64461	.59190	.50025	.46043	.42410	.39092	.36061	.28426
10	.82035	.78120	.74409	.67556	.61391	.55839	.46319	.42241	.38554	.35218	.32197	.24719
11	.80426	.76214	.72242	.64958	.58468	.52679	.42888	.38753	.35049	.31728	.28748	.21494
12	.78849	.74356	.70138	.62460	.55684	.49697	.39711	.35554	.31863	.28584	.25668	.18691
13	.77303	.72542	.68095	.60057	.53032	.46884	.36770	.32618	.28966	.25751	.22917	.16253
14	.75788	.70773	.66112	.57748	.50507	.44230	.34046	.29925	.26333	.23199	.20462	.14133
15	.74301	.69047	.64186	.55526	.48102	.41727.	.31524	.27454	.23939	.20900	.18270	.12289

Table A-4

PRESENT VALUE OF AN ORDINARY ANNUITY OF 1

$$PVF\text{-}OA_{n,i} = \frac{1-\frac{1}{(1+i)^n}}{i}$$

(n) periods	2%	2½%	3%	4%	5%	6%	8%	9%	10%	11%	12%	15%
1	.98039	.97561	.97087	.96154	.95238	.94340	.92593	.91743	.90909	.90090	.89286	.86957
2	1.94156	1.92742	1.91347	1.88609	1.85941	1.83339	1.78326	1.75911	1.73554	1.71252	1.69005	1.62571
3	2.88388	2.85602	2.82861	2.77509	2.72325	2.67301	2.57710	2.53130	2.48685	2.44371	2.40183	2.28323
4	3.80773	3.76197	3.71710	3.62990	3.54595	3.46511	3.31213	3.23972	3.16986	3.10245	3.03735	2.85498
5	4.71346	4.64583	4.57971	4.45182	4.32948	4.21236	3.99271	3.88965	3.79079	3.69590	3.60478	3.35216
6	5.60143	5.50813	5.41719	5.24214	5.07569	4.91732	4.62288	4.48592	4.35526	4.23054	4.11141	3.78448
7	6.47199	6.34939	6.23028	6.00205	5.78637	5.58238	5.20637	5.03295	4.86842	4.71220	4.56376	4.16042
8	7.32548	7.17014	7.01969	6.73274	6.46321	6.20979	5.74664	5.53482	5.33493	5.14612	4.96764	4.48732
9	8.16224	7.97087	7.78611	7.43533	7.10782	6.80169	6.24689	5.99525	5.75902	5.53705	5.32825	4.77158
10	8.98259	8.75206	8.53020	8.11090	7.72173	7.36009	6.71008	6.41766	6.14457	5.88923	5.65022	5.01877
11	9.78685	9.51421	9.25262	8.76048	8.30641	7.88687	7.13896	6.80519	6.49506	6.20652	5.93770	5.23371
12	10.57534	10.25776	9.95400	9.38507	8.86325	8.38384	7.53608	7.16073	6.81369	6.49236	6.19437	5.42062
13	11.34837	10.98319	10.63496	9.98565	9.39357	8.85268	7.90378	7.48690	7.10336	6.74987	6.42355	5.58315
14	12.10625	11.69091	11.29607	10.56312	9.89864	9.29498	8.24424	7.78615	7.36669	6.98187	6.62817	5.72448
15	12.84926	12.38138	11.93794	11.11839	10.37966	9.71225	8.55948	8.06069	7.60608	7.19087	6.81086	5.84737

Upon Exam Completion:

- Advise your Proctor that you are ready to submit your exam paper
- Upload your exam to the Assignments Folder on the course site
- Advise your Proctor once your exam has been uploaded

- There are 6 questions with possible marks as follows:

1	15
2	15
3	25
4	10
5	20
6	15

Question 1 (15 marks)

Canadian Company produces three models of its only product which is a filing cabinet. Data from the most recent year end is shown below:

		Personal	Basic Office	Premium Office
Sales volume (units)		12,000.00	30,000.00	6,000.00
Unit selling price		150.00	200.00	300.00
Variable cost per unit		120.00	140.00	180.00

Fixed costs are $1,500,000 per year and the company does not believe selling prices can be increased in future years due to competition.

Required:

1. What is the company's overall break-even point in sales dollars given the current product mix?
2. What are the unit sales required for each product at the overall break-even level?
3. If the sales volume doubled for the Basic Office model and all other figures remained the same, what would the effect be on the overall break-even point in terms of sales dollars?
4. The company is considering a new advertising program that would cost $180,000. How many units of each product would have to be sold to justify the new advertising expenditure? Assume the product mix will not change.
5. Suppose the advertising program was used only to encourage the Basic Office customers to buy the Premium Office model and it would have no affect on the volume of the Personal model. Realizing that the company might not persuade all of the Basic Office customers to switch to the Premium Office model, how many customers must purchase the Premium office model to justify the advertising expenditure?
6. The company is considering adding a new model to its line of filing cabinets which would sell for $250 and have variable costs of $160. The new model would increase annual fixed costs by $102,000 and would also reduce unit sales of the Basic Office and Premium Office model by 10% each. If there was no change in the sales volume of the Personal model, how many units of the new model must be sold to justify its addition?

Question 2 (15 marks)

ABC corporation manufactures 2 products, A and B, that pass through a painting process and a waterproofing process. Each of the products uses 2 types of raw materials, Varsol 2 and Varsol 4. The per unit standard costs for each product are shown below:

	Direct Materials		Direct Labour	
	Varsol 2	Varsol 4	Painting	Waterproofing
Product A	1.8 litres	2.0 litres	0.20 hours	0.80 hours
Product B	3.0 litres	4.5 litres	0.35 hours	0.90 hours

Details regarding the Direct Materials are shown below:

	Purchases	Cost	Standard cost	Used in production
Varsol 2	14,500 litres	$ 52,200.00	$3.50 per litre	8,500 litres
Varsol 4	15,500 litres	$ 20,925.00	$1.40 per litre	13,000 litres

Additional information is shown below:

1. The standard labour rate for painting is $19.80 per hour and the rate for waterproofing is $19.20 per hour.
2. During May, 1,200 Direct Labour hours were worked in the painting department at a total cost of $27,000 and 2,850 hours were worked in the waterproofing department at a total cost of $59,850.
3. Production during May was 1,500 of A and 2,000 of B.

Required:

1. What is the total standard cost of each product for Direct Materials and Direct Labour?
2. Calculate the Direct Materials variances for Varsol 2.
3. Calculate the Direct Labour variances for the Waterproofing process.

Question 3 (25 marks)

The following data relates to Western Corporation (WC) which is a wholesale distributor of industrial goods:

As at March 31		
Cash		15,000.00
Accounts receivable		20,000.00
Inventory		36,000.00
Buildings and equipment (net)		113,000.00
Accounts payable (to be paid in April)		21,750.00
Common shares		150,000.00
Retained earnings		12,250.00
Actual and budgeted sales		
March (actual)		50,000.00
April		60,000.00
May		72,000.00
June		90,000.00
July		48,000.00

1. Gross margin is 25% of sales.
2. Sales are 60% cash and 40% credit. Credit sales are collected in the month following the sale. Accounts receivable at March 31 are credit sales in March
3. Cost of goods sold is paid for in the month in which it is incurred, and inventory is fixed at $36,000.
4. Monthly expenses are shown below:
    a. Commissions – 12% of sales – paid monthly.
    b. Rent - $2,500 – paid monthly.
    c. Other (excluding depreciation) – 6% of sales – paid in the following month.
    d. Depreciation - $900 per month including any new purchases.
5. Equipment will be purchased for cash in April - $1,500.

Required:

1. Prepare an Income Statement for April, May, and June with totals for the quarter.
2. Prepare a Balance Sheet for April, May, and June.

Show all work.

Question 4 (10 marks)

Johnson Company (JC) produces paint and normally produces and sells 40,000 litres of paint per month. The paint sells for $35 per litre, variable costs are $21 per litre, fixed manufacturing costs are $230,000 per month and fixed selling expenses total $310,000 per month.
A major equipment break in one of the manufacturing lines has caused the sales to drop to 11,000 litres per month. Management estimates that the line won't be repaired for 2 months and they are considering closing the plant for the 2 months until the equipment is repaired.
If the plant is closed down, fixed manufacturing costs will reduce by $60,000 per month and fixed selling costs can be reduced by 10%. However, there would be a cost of $14,000 to start everything back up after the equipment is repaired.

Required:

1. Would you recommend that the plant close down for the 2 months while the equipment is being repaired? Show all work.
2. At what level of sales would the company be indifferent between closing the plant and keeping it open during the repair?

Question 5 (20 marks)

Jackson Company has been offered 2 different contracts to supply parts for 2 separate customers. One is a seven-year contract to supply a part for the military. The other is a five-year contract to supply a part for an automotive manufacturer. After careful study, the company has developed the following estimated data relating to the contracts:

	Military Contract	Automotive Contract
Cost of equipment needed – Class 7	500,000	
Cost of equipment needed – Class 8		400,000
Salvage value at end of contract	200,000	100,000
Working capital required	50,000	50,000
Working capital returned at end of contract		40,000
Annual net cash inflow – year 1	90,000	100,000
Annual net cash inflow – year 2	100,000	125,000
Annual net cash inflow – year 3-7	150,000	
Annual net cash inflow – year 3-5		150,000

The CCA rate for Class 7 and Class 8 would be 15% and 20% respectively. The company would take the maximum CCA allowable each year. It is not expected that the contracts would be extended beyond the initial contract period. The company's after-tax cost of capital is 15%, and the tax rate is 25%.

Required:

a) Jackson Company does not have the capacity to complete both contracts. Considering the effects of income tax, use net present value analysis to determine which contract would be the most desirable for Jackson Company. (Round all calculations to the nearest dollar.)

b) Calculate and explain the Project Profitability Index for each contract.

Question 6 (15 marks)

Mega Storage Inc. manufactures 3 types of storage racks. See the information below:

	Product			
	A	B	C	Total
Sales	75,000.00	95,000.00	105,000.00	275,000.00
Variable costs	(40,000.00)	(60,000.00)	(90,000.00)	(190,000.00)
Fixed costs	(28,000.00)	(20,000.00)	(20,000.00)	(68,000.00)
Operating income	7,000.00	15,000.00	(5,000.00)	17,000.00

The company produces 1,000 units of each product and each product is produced using robotic welding machines (RWM). The RWM time is 7 hours for product A, 5 hours for product B and 5 hours for product C and the company has a total capacity for RWM time of 17,000 hours. Fixed costs are allocated based on the RWM hours.

Required:

The following are independent situations.

1. At current levels of production, should the company continue to produce Product C? Explain.
2. If the company can sell unlimited quantities of all 3 products, which products should be produced?
3. Assume the company can sell unlimited quantities of all 3 products. If a customer wanted to purchase 500 units of product C, what would be the minimum sales price for the order?
4. The company has a contract that requires it to supply 500 of each product to a particular customer. If the total market demand for any individual product is 1,500 units, how many units of each product should the company manufacture and sell to maximize the company's contribution margin?