Concordia University
John Molson School of Business

Concordia

École de gestion
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Student Name _____ **ID#**_____

Sample Exam #4			
			# OF PAGES: **12 (incl. cover page)**
MATERIALS ALLOWED: **1) NON-ELECTRONIC ENGLISH LANGUAGE / OTHER LANGUAGE DICTIONARY** **2) NON-PROGRAMMABLE CALCULATOR - MAY NOT BE SHARED**			
SPECIAL INSTRUCTIONS: READ THE INSTRUCTIONS BELOW			

INSTRUCTIONS

1. ANSWER ALL QUESTIONS IN THE ANSWER BOOKLET THAT HAS BEEN PROVIDED TO YOU.

2. BE SURE TO RETURN THE EXAM PAPER ALONG WITH THE ANSWER BOOKLET AT THE END OF THE EXAM.

3. ANY STUDENT WHO FAILS TO RETURN THE ENTIRE EXAM PAPER ALONG WITH THE ANSWER BOOKLET(S) WILL BE REPORTED FOR CHEATING.

4. DO NOT TEAR YOUR EXAM PAPER OR YOUR ANSWER BOOKLET(S).

5. BE SURE TO PUT YOUR NAME AND STUDENT I.D. NUMBER ON THE EXAM PAPER AND THE ANSWER BOOKLET.

6. START EACH QUESTION ON A NEW PAGE IN THE ANSWER BOOKLET.

7. IT IS VERY IMPORTANT TO WRITE THE NAME OF YOUR INSTRUCTOR AND SECTION LETTER/NUMBER ON YOUR ANSWER BOOKLET(S).

Good Luck!

Question 1 (20 Multiple Choice Questions) **(45 - 50 minutes)** **(24 marks)**

Choose the Best answer of the following multiple-choice questions. Do not answer on the EXAM PAPER; write your answers in the ANSWER BOOKLET.

Use the following information to answer questions 1-4:

XYZ Corporation begins the month of March with 10,000 units in beginning inventory of work-in-process, 55% complete. 50,000 units were started during the month. Ending inventory of work-in-process is 8,000 units, 25% complete. Units are inspected for rework when they are 75% compete. Rejected units are returned to the 40% point. Normal rework is 2% of the units surviving the inspection. During the period, 48,000 units were inspected for rework. An inspection for spoilage occurs at 20%. Normal spoilage is 10% of the units inspected, 7,000 units were discarded at this point.

1. Normal spoilage during March amounted to:
   A) 6,000
   B) 5,000
   C) 4,200
   D) 5,200
   E) None of the above. **(1.5 mark)**

2. Normal rework during March amounted to:
   A) 1,040
   B) 1,200
   C) 960
   D) 900
   E) None of the above. **(1.5 mark)**

3. Assuming the answers of questions 1 and 2 above are 4,000 and 1,000, respectively, the proportion of normal spoilage cost allocated to normal rework would be:

   A) 1/63
   B) 1/60
   C) 1/57
   D) 0
   E) None of the above. **(1 mark)**

4. Assuming the answers of questions 1 and 2 above are 4,000 and 1,000, respectively, the proportion of normal rework cost allocated to normal spoilage would be:
   A) 4/63
   B) 4/60
   C) 4/57
   D) 0
   E) None of the above. **(1 mark)**

The following information pertains to questions 5 to 9:

The assembly department of ABC, Inc. uses weighted average process costing method. It began the month of January 1998 with 8,000 units in beginning work-in-process, which were 75% complete. During the period, work was begun on an additional 45,000 units. Direct materials are added when the goods are 50% complete, labor is added when the units are 30% complete and overhead is incurred uniformly. Units are inspected for rework when they are 70% complete. Rejected units are returned to 40% complete point for rework. Normal rework is 2 percent of the units surviving inspection. During the period, 42,000 units were inspected for rework. An inspection for spoilage occurs when the units are 80% complete. Normal spoilage is 1 percent of units inspected. This period, 600 units were spoiled. Ending work-in-process on January 31st, consisted of 4,000 units, 25% complete.

5. The number of equivalent units of direct material in normal spoilage was:
   A) 400
   B) 490
   C) 0
   D) 500
   E) None of the above. **(1 mark)**

6. The number of equivalent units of overhead in normal spoilage was:
   A) 392
   B) 400
   C) 380
   D) 0
   E) None of the above. **(1 mark)**

7. The number of equivalent units of direct labor in normal rework was:
   A) 1,000
   B) 0
   C) 950
   D) 820
   E) None of the above. **(1 mark)**

8. The number of equivalent units of overhead in normal rework was:
   A) 250
   B) 325.50
   C) 246
   D) 0
   E) None of the above. **(1 mark)**

9. The number of equivalent units of direct labor in abnormal spoilage was:
   A) 0
   B) 110
   C) 100
   D) 75
   E) None of the above. **(1 mark)**

Use the following information to answer questions 10-15

Assume that overhead is applied to the production on the basis of standard labour hours.

Number of labour hours in the master budget	6,000
Standard labour hours allowed per unit	2
Actual labour hours used per unit	2.1
Actual total variable overhead costs	$20,000
Actual total fixed overhead costs	$23,750
Fixed overhead applied to production	$25,000
Variable overhead efficiency variance	$937.50U
Fixed overhead volume variance	$1,000F

10. What is the standard variable overhead rate per labour hour?
A) $2.00
B) $3.00
C) $4.00
D) $4.80
E) None of the above. **(1.5 marks)**

11. What is the fixed overhead predetermined rate per labour hour?
A) $2.00
B) $3.00
C) $4.00
D) $4.80
E) None of the above. **(1 mark)**

12. What is the variable overhead allowed in the flexible budget using actual units of output?
A) $14,400
B) $18,750
C) $19,250
D) $22,350
E) None of the above. **(1.5 marks)**

13. What is the fixed overhead allowed in the flexible budget?
A) $23,500
B) $24,500
C) $25,500
D) $26,000
E) None of the above. **(1 mark)**

14. What is the variable overhead spending variance?
A) $125.50 F
B) $312.50 U
C) $240.50 F
D) $240.50 U
E) None of the above. **(1 mark)**

15. What is the fixed overhead flexible budget variance?

A) $250 F
B) $1,250 F
C) $1,250 U
D) $1,750 U
E) None of the above **(1 mark)**

16. Company F has two production departments, A and B, and two service departments, janitorial and personnel. Personnel costs are allocated based on number of employees and janitorial costs are allocated based on size of the department in square meters.

Department	**No. of Employees**	**Sq. Meters**	**Direct Costs**
A	150	10,000	$ 750,000
B	200	20,000	600,000
Janitorial	25	1,000	25,000
Personnel	15	2,000	18,000
Total	390	33,000	$1,393,000

Under the reciprocal allocation method, what amount of personnel costs would be allocated to Department B (round to the nearest dollar)?

A) $7,585
B) $8,733
C) $9,866
D) $10,477
E) None of the above **(2 marks)**

17. LLS Inc. produces various lighting products, including lamps and lampshades. The following data pertains to the direct labour costs associated with the production of 3,000 lampshades during January:

Actual direct labour costs incurred	$14,685
Standard direct labour cost allowed for actual units produced	$12,375
Direct labour efficiency variance	$3,300 unfavourable

The actual direct labour rate was $2 per hour lower than the budgeted direct labour rate. What was the actual amount of direct labour time used to produce one lampshade in January?

A) 0.385 hour per unit
B) 1.1 hours per unit
C) 0.165 hour per unit
D) 0.935 hour per unit
E) 0.55 hour per unit **(1.5 marks)**

18. Dundas Company uses an activity-based costing system. Consider the following information:

Manufacturing Activity Area	Cost Driver Used As Application Base	Conversion Cost per Unit of Application Base
Machine setup	Number of setups	$100
Material handling	Number of parts	5
Milling	Machine hours	40
Assembly	Direct labour hours	20

During the past month, 40 units of a component were produced. Two setups were required. Each unit needs 25 parts, 3 direct labour hours and 5 machine hours. Direct materials cost $125 per finished unit. All other costs are classified as conversion costs.

The manufacturing cost per unit of the component is

A. $139.63.
B. $290.00.
C. $390.00.
D. $515.00.
E. $710.00. **(1 mark)**

19. Balto Company budgeted production and sales of 63,000 units of Xeron in June, but produced and sold only 60,000 units. Variable costs of $125,000 were incurred during this period. Variable manufacturing cost was budgeted at $2.25 per unit. What is the flexible budget variance for the variable manufacturing cost?

A) $10,000 F
B) $10,000 U
C) $16,750 F
D) $16,750 U
E) None of the above. **(1 mark)**

20. Lampco has determined that, for its "Slender" model of lamp, the direct materials cost is $5 per unit and the direct labour cost is $4 per unit. Based on 20 monthly observations, the company ran a regression that projected the overhead associated with this model of lamp as follows:

Overhead = 16,500 + .75X, where X is the direct labour cost.

The selling price for the Slender lamp is $17 per unit. What is the expected gross margin from sales of the Slender lamp next month if sales volume is estimated to be 5,000 units?

A) $36,250
B) $23,500
C) $8,500
D) $19,750
E) $25,000 **(1.5 marks)**

Question 2 (20-24 minutes) **(16 marks)**

Modial, Inc. has two alternative means of manufacturing its product. Process A has fixed costs of $20,000 per period and a variable cost of $6 per unit produced. Process B requires fixed costs of $45,000 per period plus a variable cost of $4 per unit produced. The product sells for $8 per unit. The firm has forecast sales to be as follows:

Sales units = 8,000 units per period + 0.0002 X (Disposable income)

The equation was determined by fitting a regression line to 25 pairs of data relating sales to the disposable income of residents in various marketing areas. The standard error of the estimate is 700 units. The firm estimates that the disposable income of residents in a new marketing area is $25,000,000 for the next period.

Required: YOU MUST Provide all the detailed supporting computations.

a. If the firm uses process B in this new area, what is the probability of losing money in the next period?

(2.5 marks)

b. What is the range of sales in units the firm can expect in the new area with confidence of 90% for the next period?

(2 marks)

c. What is the probability that sales in this area will exceed 14,964 units per period?

(2.5 marks)

d. Assume that based on market surveys, the company expects to sell 14,000 units during next period, and accordingly made the appropriate investment. Also, assume that the management expects the demand will be equally likely over a range of 8,000 to 28,000 units during the next period. Now, compute the expected cost of prediction error for next period. **(9 marks)**

Question 3 (50-55 minutes) **(30 marks)**

Mike Jerguson, the president of Jerguson Foundry Limited (JFL), sat in his office early on June 2, 2004, reviewing the financial statements of JFL for the fiscal year ended May 31, 2004. The results for the year were both a shock and a disappointment. JFL produces two types of wood stoves: Basic and Deluxe. Mr. Jerguson presented to you the statement of budgeted and actual results (Exhibit 1), as well as a statement of standard costs (Exhibit 2), plus some market and job-cost data (Exhibit 3). He approached you for some advice and described to you his concerns to profit declining, despite the increase in sales volume.

Exhibit 1
Jerguson Foundry Limited
Static Budget and Actual Results
For the year Ended May 31, 2004

	Static Budget		
	Basic	**Deluxe**	**Total**
Sales volume (in units)	4,500	5,500	10,000
Sales Revenue	$1,350,000	$4,400,000	$5,750,000
Variable Costs:			
Direct materials	315,000	1,045,000	1,360,000
Direct labor	405,000	1,320,000	1,725,000
Overhead	202,500	660,000	862,500
Selling and administration	67,500	220,000	287,500
Contribution margin	$360,000	$1,155,000	$1,515,000
Fixed costs:			
Manufacturing			750,000
Selling and administration			132,500
Operating income			$632,500

	Actual Results		
	Basic	**Deluxe**	**Total**
Sales volume (in units)	7,200	4,800	12,000
Sales Revenue	$2,340,000	$3,360,000	$5,700,000
Variable Costs:			
Direct materials	486,000	820,800	1,306,800
Direct labor	748,800	1,190,400	1,939,200
Overhead	374,400	595,200	969,600
Selling and administration	108,000	192,000	300,000
Contribution margin	$622,800	$561,600	$1,184,400
Fixed costs:			
Manufacturing			780,000
Selling and administration			139,500
Operating income			$264,900

Question 3 (... continued)

Exhibit 2
Jerguson Foundry Limited
Unit Cost Standards
For the year Ended May 31, 2004

	Basic Stove	**Deluxe Stove**
Direct materials:		
Standard quantity per unit	70 kg	190 kg
Standard price per kilogram	$1.00	$1.00
Direct labor:		
Standard hours per unit	6 hrs	16 hrs
Standard rate per hour	$15.00	$15.00
Variable overhead:		
Standard hours per unit	6 hrs	16 hrs
Standard rate per hour	$7.50	$7.50
Variable selling and administrative rate per unit	$15.00	$40.00

Exhibit 3
Jerguson Foundry Limited
Market and Job-Cost Data
For the year Ended May 31, 2004

Market Data:		
Expected total market sales of wood stoves	100,000 units	
Actual total market sales of wood stoves	133,333 units	
Summary of Job Cost Sheets:		
	Basic	**Deluxe**
Units of wood stoves produced	7,200	4,800
Direct materials:		
Actual quantity used in kilograms	540,000	912,000
Actual price per kilogram	$0.90	$0.90
Direct labor:		
Actual direct labor hours worked	46,800	74,400
Actual rate per hour	$16.00	$16.00
Actual Variable overhead	$374,400	$595,200

Required: YOU MUST Provide all the detailed supporting computations.

a. For the fiscal year 2004, reconcile JFL budgeted operating income to actual operating income by computing all meaningful variances *by product*, wherever feasible. **(26 marks)**

b. Based on your variance analysis, briefly provide *four* specific reasons to the *decline* in the actual operating income of JFL for the fiscal year 2004 compared to the budget. **(4 marks)**

Question 4 (14-18 minutes) **(10 marks)**

Paradox Manufacturing Limited (PML) produces a chemical, Paradox, which is used to kill budworms. Analysis has shown that a 10-litre container of Paradox is made from 5 litres of Deet and 6 litres of Balox. For fiscal 2003, Deet was forecast to cost $12 per litre and Balox was expected to retail for $6 per litre.

The manufacture of Paradox involves heating the Deet and Balox to exactly 110°C and then mixing the two together. As a result of heating the ingredients, some input is lost due to evaporation.

The budget for 2003 estimated that sales and production volume would be 150,000 litres of Paradox. Due to the massive and unexpected infestation of the budworm in Northern Ontario, the sales and production volume was actually 206,000 litres. PML buys the necessary ingredients and produces Paradox to order; the risk of environmental damage resulting from the storage of Paradox (and the related liability insurance costs) is too high for the company to consider any other policy. Because of the increase in expected sales volume on January 1, 2003, the price of Balox increased to $9 per litre, and the price of Deet decreased to $11 per litre.

The results for 2003 were interesting. Due to the increase in the price of Balox, every effort was made to reduce Balox evaporation. Less care was devoted to the Deet. The actual quantities used were 123,826 litres of Deet and 115,083 litres of Balox.

The president of PML was very pleased with the results for the year. With sales increasing, profits were of course greater than expected. Paradox sells for $32 per litre; standard costs for materials, labour, and overhead amount to $20 per litre. With selling and administrative costs of $1,320,000 (all fixed), profit was estimated to be $480,000. Actual profits earned were $731,767. All revenues and expenses were as predicted with the exception of raw materials. A large bonus was planned for workers and management and the president planned to propose a large dividend for shareholders at the next meeting of the board of directors.

Required

a. For the fiscal year 2003, compute the price and usage variances for each of the two raw materials used to produce Paradox: Deet and Balox. **(4 marks)**

b. For the fiscal year 2003, divide the total raw materials usage variance into yield and mix components. **(3 marks)**

c. For the fiscal year 2003, provide specific comments on the raw materials variances and their effect on PML's profit. **(3 marks)**

Question 5 (28-33 minutes) **(20 marks)**

AMC is a semiconductor firm that specializes in the production of extended life memory chips. The first stage of the manufacturing operation is fabrication in which raw silicon wafers are first photolithographed and then baked at high temperatures. This process yields three individual products at a common split-off point. For each batch of 1,600 raw silicon wafers, these products are:

1. 300 high-density (HD) memory chips
2. 900 low-density (LD) memory chips
3. 400 defective memory chips.

The density of a memory chip is based on the number of good memory bits on each chip, with HD chips having more memory bits per chip than LD chips. The 400 defective memory chips from each batch have zero salvage value and are considered normal spoilage. The joint cost of purchasing and processing the 1,600 raw silicon wafers to the split-off point is $5,000.

AMC has two options for each grade of good memory chip at the split-off point:

1. Sell immediately. HD chips have a sales price of $10 each. LD chips have a sales price of $5 each.

2. Process further into extended life memory chips. This processing step exposes the chips to extreme conditions (e.g., as to high temperature), and those that survive are sold as extended life memory chips. Data pertaining to this further processing stage include the following:

Extended life high-density (EL-HD) chips: From a batch of 300 HD chips, the yield is 200 EL-HD chips. The 100 defective chips from this further processing step have a salvage value of $3 each. All 100 defective chips are considered normal spoilage specific to EL-HD. The separable cost to further process the 300 HD chips is $1,300. The sales price for each EL-HD chips is $30.

Extended life low-density (EL-LD) chips: From a batch of 900 LD chips, the yield is 500 EL-LD chips. The 400 defective chips from this further processing step have a salvage value of $2 each. All 400 defective chips are considered normal spoilage specific to EL-LD. The separable cost to further process the 900 LD chips is $3,800. The sales price for each EL-LD chip is $18.

AMC has consistently followed the policy of further processing the entire output of both the HD and LD chips into their EL-HD and EL-LD forms.

Required: YOU MUST Provide all the detailed supporting computations.

a. Compute the unit cost of EL-HD and the unit cost of EL-LD under the two allocation methods:
(1) Physical measure method. **(7 marks)**
(2) The net realizable value (NRV) method. **(8 marks)**

b. Peach Computer Systems offers to buy 900 LD memory chips from AMC at $5 a chip. What is the effect on operating income of accepting this offer as opposed to AMC's current policy of further processing the LD chips into EL-LD form? **(5 marks)**

t-Distribution Table

df	p.15	p.10	p.05	p.025	p.005	p.0005
1	1.963	3.078	6.314	12.706	63.657	636.619
2	1.386	1.886	2.920	4.303	9.925	31.598
3	1.250	1.638	2.353	3.182	5.841	12.941
4	1.190	1.533	2.132	2.776	4.604	8.610
5	1.156	1.476	2.015	2.571	4.032	6.859
6	1.134	1.440	1.943	2.447	3.707	5.959
7	1.119	1.415	1.895	2.365	3.499	5.405
8	1.108	1.397	1.860	2.306	3.355	5.041
9	1.100	1.383	1.833	2.262	3.250	4.781
10	1.093	1.372	1.812	2.228	3.169	4.587
11	1.088	1.363	1.796	2.201	3.106	4.437
12	1.083	1.356	1.782	2.179	3.055	4.318
13	1.079	1.350	1.771	2.160	3.012	4.221
14	1.076	1.345	1.761	2.145	2.977	4.140
15	1.074	1.341	1.753	2.131	2.947	4.073
16	1.071	1.337	1.746	2.120	2.921	4.015
17	1.069	1.333	1.740	2.110	2.898	3.965
18	1.067	1.330	1.734	2.101	2.878	3.922
19	1.066	1.328	1.729	2.093	2.861	3.883
20	1.064	1.325	1.725	2.086	2.845	3.850
21	1.063	1.323	1.721	2.080	2.831	3.819
22	1.061	1.321	1.717	2.074	2.819	3.792
23	1.060	1.319	1.714	2.069	2.807	3.767
24	1.059	1.318	1.711	2.064	2.797	3.745
25	1.058	1.316	1.708	2.060	2.787	3.725
26	1.058	1.315	1.706	2.056	2.779	3.707
27	1.057	1.314	1.703	2.052	2.771	3.690
28	1.056	1.313	1.701	2.048	2.763	3.674
29	1.055	1.311	1.699	2.045	2.756	3.659
30	1.055	1.310	1.697	2.042	2.750	3.646
35	1.052	1.306	1.690	2.030	2.724	3.591
40	1.050	1.303	1.684	2.021	2.704	3.551
45	1.048	1.301	1.680	2.014	2.690	3.520
50	1.047	1.299	1.676	2.008	2.678	3.496
55	1.047	1.297	1.673	2.004	2.669	3.476
∞	1.036	1.282	1.645	1.960	2.576	3.290