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第一題 (18%)

Memory Company is a manufacturer of picture frames. Every picture frame passes through two departments: assembly and finishing. Each department has one direct-cost category (direct materials) and one indirect-cost category (conversion costs). As work in assembly is completed, each unit is transferred to the finishing department. As each unit is completed in the finishing department, it is transferred to finished goods. This problem focuses on the finishing department. For the finishing department, direct materials are added when the process is 90% complete, and conversion costs are added evenly during the process. Spoiled units are detected upon inspection at the 80% stage of production and are disposed of with a net disposal value of zero. Normal spoilage is 5% of the good units that pass inspection. Data for the finishing department for October 2024 are as follows:

	Physical units	Transferred-in costs	Direct materials	Conversion costs
Work-in-process inventory, October 1 [a]	10,000	$ 195,800	$ 0	$ 111,600
Transferred-in during October	24,000			
Good units completed and transferred out during October	26,000			
Work-in-process inventory, October 31 [b]	6,000			
Total costs added during October		$ 637,200	$ 143,000	$ 329,400

[a] Degree of completion: conversion costs, 50%.
[b] Degree of completion: conversion costs, 30%.

Required:

1. Using the FIFO method of process costing, what is the cost of goods completed and transferred to finished goods during October? (5%)
2. Using the weighted-average method of process costing, calculate the cost per good unit completed and transferred to finished goods during October. (5%)
3. Use your previous calculations to comment on the cost performance of the finishing department. (4%)
4. Assuming all spoilage is detected at the 20% of the process rather than the 80% of the process, calculate the physical units of abnormal spoilage incurred in October. (4%)

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第二題 (15%)

Alpha Company has two divisions, AA and BB, organized as decentralized profit centers. Managers are free to decide if they will participate in any internal transfers. All transfer prices are negotiated. Division AA produces television screens, and Division BB buys television screens and assembles the TV sets. There is a market for both the screens and the TV sets. Division AA has the capacity to produce 80,000 units of screens and can sell 69,000 units annually to the external market at a price of $200 per unit. Division BB has the capacity to produce 20,000 units of TV sets and can sell 16,000 units annually to the external market at $800 per unit. Division BB needs a screen to produce a TV set, and is currently purchasing screens from an outside supplier at a cost of $140 each. The following information is known about the two divisions:

	Division AA (per screen)	Division BB (per TV set)
Variable manufacturing costs per unit	$60	$370
Fixed manufacturing costs per unit	25	60
Variable operating expenses per unit	10	35
Fixed operating expenses per unit	20	100

The manager of Division BB believes that a 5% reduction in the selling price of the TV sets will increase the sales volume of 16,000 by 15%. He wants all screens Division BB uses to come from one supplier and has offered to pay Division AA $100 for each unit. If Division AA refuses to meet the $100 price, Division BB will still have to purchase screens from an outside supplier at $140 each. Division AA currently manufactures a screen that is similar to the screen used by Division BB. The specifications for Division BB are slightly different. To manufacture the new screens, Division AA would have to reduce production of its regular screens. On the other hand, Division AA can reduce direct material costs by $5 per unit and variable operating expenses by $8 per unit on intracompany transactions.

Required:

1. Compute the estimated effect on the annual profits of Division BB, if it reduces its sales price by 5% and can acquire 18,400 screens internally at $100 each. (5%)
2. From Division AA's perspective, what is the minimum transfer price at which Division AA would be willing to sell 18,400 screens to Division BB? (Please round your answer to the nearest dollar.) (5%)
3. If Division BB acquires 18,400 screens from Division AA at $100 each instead of purchasing them from the outside supplier, what will be the effect on the company's annual profits as a whole? (5%)

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第三題 (8%)

For the quarter ending June 30, TD manufacturing Company reported the following account balances (unless specified otherwise):

Sales revenue	$ 2,500,000
Work-in-process inventory (April 1)	140,400
Work-in-process inventory (June 30)	171,000
Finished goods inventory (April 1)	540,000
Finished goods inventory (June 30)	510,000
Direct materials used	420,000
Indirect materials used	84,000
Direct manufacturing labor	480,000
Indirect manufacturing labor	186,000
Property taxes on manufacturing plant building	28,800
Salespersons' company vehicle costs	12,000
Depreciation of manufacturing equipment	264,000
Depreciation of office equipment	123,600
Miscellaneous plant overhead	135,000
Plant utilities	92,400
General office expenses	305,400
Marketing distribution costs	30,000

Required:

1. What's the cost of goods manufactured for the quarter? (4%)
2. What's the operating income for the quarter? (4%)

第四題 (8%)

Blessing Corporation produces two types of soft drinks: 12 Qiang and Gold Medal. The budgeted and actual operating data for the year 2024 are as follows:

Budgeted result	**12Qiang**	**Gold medal**	**Total**
Sales volume in units	22,500	90,000	112,500
Contribution margin	$5,625,000	$18,000,000	$23,625,000

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Actual result	12Qiang	Gold medal	Total
Sales volume in units	24,750	57,750	82,500
Contribution margin	$9,300,000	$15,300,000	$24,600,000

Required:

1. Determine the total flexible-budget variance and the total sales-volume variance in terms of the contribution margin. (4%)
2. Determine the total sales-mix variance and the total sales-quantity variance in terms of the contribution margin. (4%)

第五題 (17%)

Donky Corp. has decided to venture into central processing unit (CPU) manufacturing. The company recently acquired a new machine capable of producing two types of CPUs: BETA and POWER. The POWER CPU outperforms the BETA CPU; however, due to intense market competition, Donky remains uncertain about the timing and quantity of customer orders for the upcoming year, even though overall market demand is projected to increase by 1,000 units compared to this year. The new machine has an annual capacity of 8,000 hours. The following information pertains to this year:

Type	Annual Average Number of Orders	Manufacturing Time Required	Selling Price per Order If Average Manufacturing Cycle Time per Order Is More Than 150 Hours	Variable Cost per Order	Inventory Carrying Cost per Order per Hour
BETA	150	40 hours	$19,400	$15,000	$0.60
POWER	20	50 hours	18,100	14,000	0.55

For BETA, if the average manufacturing cycle time per order is less than 150 hours, its selling price is $600 higher than when the average manufacturing cycle time per order exceeds 150 hours. For POWER, if the average manufacturing cycle time per order is less than 150 hours, its selling price is $400 higher than when the average manufacturing cycle time per order exceeds 150 hours.

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Required:

(1) Calculate the average manufacturing cycle time per order if Donky manufactures only BETA. (2%)
(2) Calculate the average manufacturing cycle time per order if Donky manufactures both BETA and POWER. (2%)
(3) Given the intense market competition and uncertainty, Donky's managers are assessing whether the company should focus exclusively on producing and selling BETA or produce and sell both BETA and POWER. Which option will maximize Donky's operating income, and by how much? (5%)
(4) Due to intense market competition and high demand uncertainty, John, the manager of the manufacturing department, has advised the CEO that as the manufacturing cycle increases, sunk costs will decrease, opportunity costs will increase, and inventory carrying costs will rise. Based on this reasoning, John suggests that the new machine should maintain some excess capacity. The CEO has sought your opinion on John's recommendation. Please provide your comments on John's views and reasoning. (8%)

第六題 (34%)

Martin Toy Company Innovative Strategy Analysis (2025-2030)

Background Information (As of December 2024)

Martin Toy, a Taiwanese company established in 2005, has evolved into a mid-sized player in the digital toy market. The company has transformed from a traditional toy manufacturer to a provider of smart, connected play experiences.

Current Market Position

- Revenue (2024E): $45 million
- Market share: 3% of European digital toy market
- Product portfolio: 50 smart toys and digital play platforms
- Geographic presence: Europe (65%), North America (20%), Asia (15%)
- Key product segments:
  - Connected learning toys (ages 3-5)
  - Smart gaming devices (ages 5-8)
  - Educational robotics (ages 6-12)

Industry Context 2024

1. Market Trends:

- Increasing demand for AI-enabled learning toys
- Growing emphasis on sustainability in toy manufacturing
- Rise of mixed reality play experiences
- Integration of STEAM education in toys
- Heightened focus on data privacy and security

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2. Competitive Landscape:

- Traditional toy companies expanding into digital
- Tech giants entering educational toy market
- Emergence of direct-to-consumer toy brands
- Growing competition from Asian smart toy manufacturers

3. Technological Developments:

- Advanced AI and machine learning capabilities
- Improved battery and sustainable materials
- Enhanced connectivity (5G/6G integration)
- Advanced sensors and haptic feedback
- Cloud-based gaming and learning platforms

Company's Current Challenges

1. Digital Transformation:

- Need to upgrade legacy IT systems
- Data analytics capabilities require enhancement
- Cybersecurity concerns with connected toys

2. Market Expansion:

- Limited presence in emerging markets
- Need for localization of digital content
- Competition from larger tech-savvy competitors

3. Operational:

- Supply chain vulnerability
- Rising production costs
- Talent acquisition in tech roles
- Sustainability compliance requirements

Required:

Part 1: Strategic Analysis

Analyze Martin's innovation strategy for 2025-2030:

1. Evaluate Martin's advantages relative to its competitors (4%)
2. Assess the external opportunities available to Martin (3%)
3. Based on the above evaluations, what innovation strategies can Martin develop? (3%)

Part 2: Innovation Strategy Map

Develop a strategy Map for 2025-2030:

1. Create a balanced scorecard-based strategy map (including strategy theme and strategy target) (8%)
2. Explain how your proposed initiatives address future market needs (2%)

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Part 3: Financial Analysis

The following data is provided for evaluating one of your proposed innovations - the "AI Learning Companion" project:

Project Data (2025-2027):

- Initial Costs
  - Platform development cost: $2.5 million
  - Marketing and launch cost: $0.8 million
- Subscription revenue: $15/month per user received at the end of each month
- Operating cost: $5/month per user paid at the beginning of each month
- Required rate of return: 12%
- Discount factors:

Table 1: Present Value of 1

Rate(r)	1 yr	2 yrs	3 yrs	4 yrs	5 yrs
10%	0.909	0.826	0.751	0.683	0.621
11%	0.901	0.812	0.731	0.659	0.593
12%	0.893	0.797	0.712	0.636	0.567
13%	0.885	0.783	0.693	0.613	0.543
14%	0.877	0.769	0.675	0.592	0.519

Table 2: Present Value of an Ordinary Annuity of 1

Rate(r)	1 yr	2 yrs	3 yrs	4 yrs	5 yrs
10%	0.909	1.736	2.487	3.170	3.791
11%	0.901	1.713	2.444	3.102	3.696
12%	0.893	1.690	2.402	3.037	3.605
13%	0.885	1.668	2.361	2.974	3.517
14%	0.877	1.647	2.322	2.914	3.433

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Table 3: Present Value of an Annuity Due of 1

Rate(r)	1 yr	2 yrs	3 yrs	4 yrs	5 yrs
10%	1.000	1.909	2.736	3.487	4.170
11%	1.000	1.901	2.713	3.444	4.102
12%	1.000	1.893	2.690	3.402	4.037
13%	1.000	1.885	2.668	3.361	3.974
14%	1.000	1.877	2.647	3.322	3.914

Table 4: Subscription Forecasts

Scenario	Pessimistic (25%)	Realistic (50%)	Optimistic (25%)
Year 1	10,000	20,000	35,000
Year 2	15,000	30,000	50,000
Year 3	20,000	40,000	70,000

1. Calculate the expected NPV of the AI Learning Companion project and evaluate its feasibility (10%)
2. Evaluate how this project supports Martin's digital transformation strategy (4%)

備註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。