Problem 1 [20%]

Mobile Safety is producing and selling bicycle components. All processing is initiated when an order is received. Mobile Safety orders direct materials from a high-quality supplier, SuperTech. Direct Materials are purchased under a just-in-time system. Backflush costing is used. Any under-or overallocation of conversion costs are written off monthly to Cost of Goods Sold. For October, there were no beginning inventories of direct materials, no beginning or ending work in process, and no beginning finished goods. Additional information for October is as follows:

Direct materials purchased	$1,516,800
Standard materials costs per unit	$184
Actual conversion costs	$696,000
Standard conversion cost per unit	$136
Number of Finished Units produced	12,640
Number of Finished Units sold	12,160

Required:

(1) If backflush costing is used with three trigger points in the accounting system:

i. Purchase of direct materials and incurring of conversion costs.
ii. Completion of good finished units of product.
iii. Sale of finished goods.

Determine the Cost of Goods Sold for October **(10%)**

(2) If backflush costing is used with two trigger points in the accounting system:

i. Purchase of direct materials and incurring of conversion costs.
ii. Sale of finished goods.

Determine the Cost of Goods Sold for October **(10%)**

Problem 2 [20%]

Silver Cross Hospital is noted for emergency center specifically designed to treat seniors who had acute health problems that were not life-threatening. The hospital provides food services for patients and the food court, but has been hit with a number of complaints about its food service from patients, employees, and food court customers. These complaints, coupled with concerns of growing demand for food safety, have prompted the organization to contact Formosa Food Service about the possibility of an outsourcing arrangement.

The hospital's financial office has prepared the following information for food service for the year just ended:

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Food court sales revenue	$200,000
Food costs	$2,225,000
Labor costs	$2,125,000
Variable overhead	$875,000
Allocated fixed overhead	$150,000

Meetings with representatives from Formosa revealed the following information:

- Formosa will charge Silver Cross Hospital $20 per day for each patient served. Note: This figure has been "marked up" by Formosa to reflect the firm's cost of operating the hospital food court.
- Silver Cross Hospital's 625-bed facility operates throughout the year and typically has an average occupancy rate of 80%.
- Labor cost is the primary driver for variable overhead. If an outsourcing agreement is reached, hospital labor costs will drop by 80%.
- Formosa plans to use Silver Cross food facilities for meal preparation.
- Food court sales revenue is expected to increase by 18% because Formosa will offer an improved menu selection.

Required:

(1) Should Silver Cross outsource its food-service operation to Formosa? Show detailed computation. **(10%)**

(2) As another scenario, Silver Cross will rent out food facilities for rental revenue $30,000 if food services is outsourced to Formosa. Formosa will then raise its charge from $20 to $25 per day for each patient served to reflect investment in new facilities. Should Silver Cross outsource its food-service operation to Formosa? Show detailed computation. **(10%)**

Problem 3 [20%]

TTP Health Center runs two programs: emergency program and counseling program. TTP currently allocate indirect costs to each program by patient-years of services. The director of TTP has recently become aware of activity-based costing as a method to refine costing systems. In order to apply this technique, the center asks the accountant to summarize the following budgeted costs and activity information for 2018:

			Program	
Direct Costs to Each Program			**Emergency**	**Counseling**
Professional Salaries:		**Professional Employees**		
12 physicians*$300,000	$3,600,000	Number of Physicians	12	0
36 psychologists*$150,000	5,400,000	Number of Psychologists	12	24
48 nurses*$60,000	2,880,000	Number of Nurses	18	30
Indirect Costs		**Cost Allocation Bases**		
Medical supplies	484,000	Patient-years of services	150	180
Rent and clinic maintenance	277,200	Square feet occupied by program	27,000	36,000
Administrative costs	968,000	Patient-years of services	150	180
Laboratory services	184,800	Number of laboratory tests	4,200	2,100
Total	$13,794,000			

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Required:

(1) Based on the current costing system, which allocates indirect cost to each program by patient-years of services, calculate the budgeted cost per patient-year of the drug program and the aftercare program. **(10%)**

(2) Using an activity-based costing approach to cost analysis, calculate the budgeted cost per patient-year of the drug program and the aftercare program. **(10%)**

Problem 4 [20%]

Hamilton Company has two operation departments, Northern Department and Southern Department. Each of the operation departments uses the services of the company's two support departments, Maintenance and Human Resources. The base used to allocate maintenance is budgeted total maintenance hours. The base used to allocate human resources is number of labor hours for a department. The Maintenance budget is $595,000, while the Human Resources budget is $1,615,000. The following summarizes budgeted amounts and allocation-base amounts used by each department:

			Services Provided			
	Budget	**Allocation Base**	**Northern Department**	**Southern Department**	**Maintenance**	**Human Resources**
Maintenance	$595,000	Budgeted maintenance hours	3,400	1,700	---	8,500
Human Resources	$1,615,000	Budgeted labor hours	40,800	61,200	3,400	---

After the support department costs of Maintenance and Human Resources have been allocated using the reciprocal method, the total cost of the Northern Department is $3,329,909 and the Southern Department is $7,209,765.

Required:

(1) Use the direct method to allocate support department costs to each of the two principal operating departments. What are the total costs of the production departments, Northern Department and Southern Department, after the allocation of support department costs? **(10%)**

(2) Allocates support department costs using the step-down method with the sequence of allocation based on the highest-percentage support concept. What are the total costs of the production departments, Northern Department and Southern Department, after the allocation of support department costs? **(10%)**

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Problem 5 [20%]

Jurgensen Manufacturing Inc. specializes in the manufacture of vacuum equipment, a field that has become increasingly competitive. Two years ago, the president of Jurgensen decided to revise the bonus plan (based, at the time, entirely on operating income) to encourage division managers to focus on areas that were important to customers and that added value without increasing cost. In addition to a profitability incentive, the revised plan includes incentives for reduced rework costs, reduced sales returns, and on-time deliveries. The company calculates and rewards bonuses quarterly on the following basis: A base bonus is calculated at 1.8% of operating income; this amount is then made three adjustments as follows:

- Reduced by excess of rework costs over and above 2% of operating income; No adjustment if rework costs are less than or equal to 2% of operating income.
- Increased by $9,600 if more than 98% of deliveries are on time and by $3,600 if 95–98% of deliveries are on time; No adjustment if on-time deliveries are below 95%.
- Increased by $6,000 if sales returns are less than or equal to 1.5% of sales; Decreased by 50% of excess of sales returns over 1.5% of sales

If the calculation of the bonus results in a negative amount for a particular period, the manager simply receives no bonus, and the negative amount is not carried forward to the next period.

Results for Jurgensen's Express division and Turbo division for the first two quarters of 2018, the first year under the new bonus plan, follow. In 2017, under the old bonus plan, the Express division manager earned a bonus of $48,708 and the Turbo division manager received a bonus of $37,992.

	Express Division		**Turbo Division**	
	1st Quarter, 2018	**2nd Quarter, 2018**	**1st Quarter, 2018**	**2nd Quarter, 2018**
Rework costs	$20,700	$19,800	$10,800	$14,400
Revenues	$7,560,000	$7,920,000	$5,130,000	$5,220,000
On-time delivery	94.6%	97.1%	98.4%	94.8%
Sales returns	$151,200	$126,000	$80,544	$76,500
Operating income	$831,600	$792,000	$615,600	$730,800

Required: Calculate the bonus earned by each manager for the first and second quarters in 2018. **(20%)**

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