Student name:\_\_\_\_\_\_\_\_\_\_

**ESSAY. Write your answer in the space provided or on a separate sheet of paper.  
1)** The management of Michaeli Corporation would like to investigate the possibility of basing its predetermined overhead rate on activity at capacity rather than on the estimated amount of activity for the year. The company's controller has provided an example to illustrate how this new system would work.

|  |  |
| --- | --- |
| **Estimated activity for the upcoming year** | 43,000 machine-hours |
| **Capacity** | 50,000 machine-hours |
| **Actual activity for the year** | 45,400 machine-hours |
| **Manufacturing overhead (all fixed)** | $989,000 per year |

**Required:**  
 Determine the cost of unused capacity for the year if the predetermined overhead rate is based on activity at capacity.

**2)** The management of Michaeli Corporation would like to investigate the possibility of basing its predetermined overhead rate on activity at capacity rather than on the estimated amount of activity for the year. The company's controller has provided an example to illustrate how this new system would work.

|  |  |
| --- | --- |
| **Estimated activity for the upcoming year** | 51,000 machine-hours |
| **Capacity** | 62,000 machine-hours |
| **Actual activity for the year** | 53,000 machine-hours |
| **Manufacturing overhead (all fixed)** | $1,395,000 per year |

**Required:**  
 Determine the cost of unused capacity for the year if the predetermined overhead rate is based on activity at capacity.

**3)** Marder Woodworking Corporation produces fine cabinets. The company uses a job-order costing system in which its predetermined overhead rate is based on capacity. The capacity of the factory is determined by the capacity of its constraint, which is an automated jointer. Additional information is provided below for the most recent month:

|  |  |
| --- | --- |
| **Estimates at the beginning of the month:** |  |
| **Estimated total fixed manufacturing overhead** | $24,500 |
| **Capacity of the jointer** | 250 hours |
| **Actual results:** |  |
| **Sales** | $71,706 |
| **Direct materials** | $12,500 |
| **Direct labor** | $17,900 |
| **Actual total fixed manufacturing overhead** | $24,500 |
| **Selling and administrative expense** | $ 9,700 |
| **Actual hours of jointer use** | 200 hours |

**Required:**  
 a. Calculate the predetermined overhead rate based on capacity.  
 b. Calculate the manufacturing overhead applied.  
 c. Determine the Gross Margin for the month.  
 d. Calculate the cost of unused capacity.

**4)** Knipple Woodworking Corporation produces fine cabinets. The company uses a job-order costing system in which its predetermined overhead rate is based on capacity. The capacity of the factory is determined by the capacity of its constraint, which is an automated bandsaw. Additional information is provided below for the most recent month:

|  |  |
| --- | --- |
| **Estimates at the beginning of the month:** |  |
| **Estimated total fixed manufacturing overhead** | $24,288 |
| **Capacity of the bandsaw** | 240 hours |
| **Actual results:** |  |
| **Sales** | $71,473 |
| **Direct materials** | $10,400 |
| **Direct labor** | $17,300 |
| **Actual total fixed manufacturing overhead** | $24,288 |
| **Selling and administrative expense** | $ 9,100 |
| **Actual hours of bandsaw use** | 230 hours |

**Required:**  
 Prepare an income statement following the Example in Appendix 2B in which any cost of unused capacity is directly recorded on the income statement as a period expense.

**5)** Danaher Woodworking Corporation produces fine furniture. The company uses a job-order costing system in which its predetermined overhead rate is based on capacity. The capacity of the factory is determined by the capacity of its constraint, which is an automated lathe. Additional information is provided below for the most recent month:

|  |  |
| --- | --- |
| **Estimates at the beginning of the month:** |  |
| **Estimated total fixed manufacturing overhead** | $22,701 |
| **Capacity of the lathe** | 230 hours |
| **Actual results:** |  |
| **Actual total fixed manufacturing overhead** | $22,701 |
| **Actual hours of lathe use** | 210 hours |

**Required:**  
 a. Calculate the predetermined overhead rate based on capacity.  
 b. Calculate the manufacturing overhead applied.  
 c. Calculate the cost of unused capacity.

**6)** Danaher Woodworking Corporation produces fine furniture. The company uses a job-order costing system in which its predetermined overhead rate is based on capacity. The capacity of the factory is determined by the capacity of its constraint, which is an automated lathe. Additional information is provided below for the most recent month:

|  |  |
| --- | --- |
| **Estimates at the beginning of the month:** |  |
| **Estimated total fixed manufacturing overhead** | $26,700 |
| **Capacity of the lathe** | 300 hours |
| **Actual results:** |  |
| **Actual total fixed manufacturing overhead** | $26,700 |
| **Actual hours of lathe use** | 250 hours |

**Required:**  
 a. Calculate the predetermined overhead rate based on capacity.  
 b. Calculate the manufacturing overhead applied.  
 c. Calculate the cost of unused capacity.

**Answer Key**Test name: ch 2B

1) Predetermined overhead rate = Estimated total manufacturing overhead ÷ Estimated total amount of the allocation base = $989,000 ÷ 50,000 machine-hours = $19.78 per machine-hour

|  |  |
| --- | --- |
| **Actual manufacturing overhead cost incurred** | $989,000 |
| **Manufacturing overhead applied to jobs:** |  |
| **Predetermined overhead rate** | $ 19.78 per machine-hour |
| **Actual hours** | 45,400 machine-hours |
| **Manufacturing overhead applied to jobs** | $898,012 |
| **Cost of unused capacity** | $ 90,988 |

2) Predetermined overhead rate = Estimated total manufacturing overhead at capacity ÷ Estimated total amount of the allocation baseat capacity = $1,395,000 ÷ 62,000 machine-hours = $22.50 per machine-hour

|  |  |
| --- | --- |
| **Actual manufacturing overhead cost incurred** | $1,395,000 |
| **Manufacturing overhead applied to jobs:** |  |
| **Predetermined overhead rate** | $ 22.50 per machine-hour |
| **Actual hours** | 53,000 machine-hours |
| **Manufacturing overhead applied to jobs** | $1,192,500 |
| **Cost of unused capacity** | $ 202,500 |

3) a.

|  |  |
| --- | --- |
| **Estimated total fixed manufacturing overhead** | $24,500 |
| **Estimated activity level** | 250 hours |
| **Predetermined overhead rate** | $98.00 per hour |

b. Manufacturing overhead applied = 200 hours × $98.00 per hour = $19,600  
   
 c.

|  |  |  |
| --- | --- | --- |
| **Sales** |  | $71,706 |
| **Cost of Goods Sold:** |  |  |
| **Direct materials** | $12,500 |  |
| **Direct labor** | 17,900 |  |
| **Manufacturing overhead applied** | 19,600 | 50,000 |
| **Gross margin** |  | 21,706 |

d. Cost of unused capacity = (250 hours − 200 hours) × $98.00 per hour = $4,900

4)

|  |  |
| --- | --- |
| **Estimated total fixed manufacturing overhead** | $24,288 |
| **Estimated activity level** | 240 hours |
| **Predetermined overhead rate** | $101.20 per hour |

|  |  |  |
| --- | --- | --- |
| **Sales** |  | $71,473 |
| **Cost of Goods Sold:** |  |  |
| **Direct materials** | $10,400 |  |
| **Direct labor** | 17,300 |  |
| **Manufacturing overhead applied 230 hours × $101.20 per hour** | 23,276 | 50,976 |
| **Gross margin** |  | 20,497 |
| **Cost of unused capacity (240 hours − 230 hours) × $101.20 per hour** | $ 1,012 |  |
| **Selling and administrative expense** | 9,100 | 10,112 |
| **Net operating income** |  | $10,385 |

5) a.

|  |  |
| --- | --- |
| **Estimated total fixed manufacturing overhead** | $22,701 |
| **Estimated activity level** | 230 hours |
| **Predetermined overhead rate** | $ 98.70 per hour |

b. Manufacturing overhead applied = 210 hours × $98.70 per hour = $20,727  
 c. Cost of unused capacity = (230 hours − 210 hours) × $98.70 per hour = $1,974

6) a.

|  |  |
| --- | --- |
| **Estimated total fixed manufacturing overhead** | $26,700 |
| **Estimated activity level** | 300 hours |
| **Predetermined overhead rate** | $ 89 per hour |

b. Manufacturing overhead applied = 250 hours × $89 per hour = $22,250  
 c. Cost of unused capacity = (300 hours − 250 hours) × $89 per hour = $4,450