1.

	New Engine	Existing Engine Used by Assembly
Sales price	$ 375	
Savings in purchase costs by making engines in-house		$ 400
Manufacturing costs:		
Direct materials	$ 100	$ 125
Direct manufacturing labor	$ 40	$ 50
Variable manufacturing overhead	$ 25	$ 25
Total variable costs of manufacturing	$ 165	$ 200
Contribution margin from New Engine	$ 210	
Net Savings in costs by making existing engine in-house		$ 200

If order for the new engine is accepted, San Ramon earns a contribution margin of $ 210 x 2000 = $ 420,000

In this case, Engine Division will only be in a position to supply 2,000 units to Assembly and Assembly will have to purchase 1,200 engines from outside. The incremental cost of buying engines from outside is $ 200 x 1,200 = $ 240,000

Net benefit from accepting order $ 180,000

An alternative approach is to compare relevant costs of the accept order and reject order alternatives.

		Accept Order	Reject
1. Contribution margin from selling 2,000 units of new engine	$ 210 × 2,000	$ (420,000)	
2. Incremental cost of making and transferring 2,000 units of old engine	$ 200 × 2,000	$ 400,000	$ 640,000
3. Incremental costs of purchasing 1,200 units from outside	$ 400 × 1,200	$ 480,000	
		$ 460,000	$ 640,000

San Ramon Corporation should

a. make 2,000 units of the new engine in the Engine Division
b. make 2,000 units of the existing engine for the Assembly Division
c. have the Assembly Division purchase 1,200 engines that it requires from the outside market.

2

Alternative 1

	2,000 units of the special order	2,000 units for the Assembly transfer
Revenue		
Variable cost	$ 210	$ 200
CM	$ 420,000	$ 400,000 transfer - $ 400,000

Alternative 2

	3,200 units for the Assembly Division transfer
Revenue	
Variable cost	$ 200
CM	$ 640,000 transfer - $ 640,000

Minimum transfer pric	=	Additional incremental or outlay costs per unit incurred up to the point of transfer	+	Best Profit without transfer	-	Best Profit with transfer

For 2,000 units	=	$	400,000	+		$	420,000	-	$	420,000	
Transfer price		=	$	400,000	÷	2,000	=	$	200		

For 3,200 units	=	$	640,000	+		$	420,000	-	$	-	
Transfer price		=	$	1,060,000	÷	3,200	=	$	331		

Though the price for 3,200 units is less than the market price, the Assembly is division is better off with the following option:

Buy	2,000	units from Engine division	×	$	200	= $ 400,000
Buy	1,200	units from outside	×	$	400	= $ 480,000
						$ 880,000

Another way of seeing this is as follows

For 1,200 units after transferring the first 2,000 units	=	$	240,000	+		$	420,000	-	$	-	
Transfer price		=	$	660,000	÷	1,200	=	$	550		

As this price is more than the market cost for for the Assembly Division, it will not take this layer.

For transfer prices below $550 , the Engine Division gets more by selling 2,000 units outside and transferring 2,000 units to Assembly Division. It will not transfer more than 2,000 units to Assembly even though the transfer price is greater than the variable costs of manufacturing the existing engine, $200 plus the contribution margin per unit from accepting the special order of $210 equal to $410 ($500,say). Why? Because by transferring an additional 1,200 units (say) it will have to give up $420,000 ($210 * 2,000) of contribution margin by not accepting the special order. The Engine Division manager would be willing to transfer the remaining 2,000 unit for which it has capacity to the Assembly Division provided the transfer price covers the Engine Division's variable costs. So the range of transfer price that will induce the Engine Division manager to implement the optimal solution in requirement 1 is:

200	<=	TP	<	550

The Assembly Division manager would be willing to buy from the Engine Division so long as the transfer price is less than or equal to the price at which the Assembly Division can buy the engines on the outside market.

		TP	<	400

It will not buy the engines from the Engine Division if TP > $400. The range of TP that will result in both managers favoring the optimal actions in requirement 1 are TPs that satisfy the respective constraints described above.

200	<=	TP	<	400	for the first 2,000 units
400	<=	TP	<	550	for any additional units

this transfer pricing scheme will induce both managers to transfer 2,000 units

between the Engine and Assembly Divisions, but no more.

3a. The full manufacturing costs of the engines transferred to the Assembly division are:

Direct materials				$ 125
Direct manufacturing labor				$ 50
Variable manufacturing overheads				$ 25
Fixed manufacturing overheads				
$ 520,000	÷	2 =	$ 260,000	
$ 260,000	÷	2000	engines	
since the engines transferred to the Assembly				
Division use up half the Engine Division's capacity				$ 130
Total manufacturing cost				$ 330

b. A transfer price of $330 is in the optimal range identified in requirement 2 and ,so, will achieve the optimal actions of selling 2,000 engines under the outside offer and transferring 2,000 engines to the Assembly Division as identified in requirement 1. (If we also want the Assembly Division as to not ask for any additional engines beyond 2,000 units, the transfer price for any additional engines would have to be set such that $400 <TP<$550.) If the transfer price is set at $330, the Assembly Division manager will want more engines but the Engine Division manager will not be incented to transfer anything more than 2,000 units, preferring to supply 2,000 units for the special order.

c. One advantage of full cost transfer pricing is that it is useful for the firm's long-run pricing decisions.

One disadvantage of full cost transfer pricing is that costs that are fixed for the corporation as a whole look like variable costs from the viewpoint of the Assembly Division manager. This is because by choosing not to have a unit transferred from the Engine Division, the Assembly Division manager would appear to save both the variable and fixed costs of the engine. This could lead to suboptimal decisions.

4a. To minimize taxes, San Ramon should transfer the engines at the market price of $400. The Engine Division would pay no taxes on any income that it would report. By setting the transfer price as high as possible, the Assembly Division would minimize the income it would report and, hence, the taxes it would pay.

b. Yes, as in part 3b, the transfer price of $400 is also within the range identified in requirement 2 and so will achieve the outcome desired in requirement 1 (sell 2,000 engines under the outside offer and transfer 2,000 engines to the Assembly Division).

5 San Ramon should use a transfer price of $400 for transferring engines from the Engine Division to the Assembly Division. This transfer price minimizes tax payments for the San Ramon Corporation as a whole and also achieves goal congruence. That is, at a transfer price of $400 for all engines transferred from the Engine Division to the Assembly Division, both Divisions will be content with the following arrangement:

a. The Engine Division will make 2,000 engines for outside customers and 2,000 engines for the Assembly Division
b. The Assembly Division will take 2,000 engines from the Engine Division and 1,200 engines from the outside market

Of course , the Assembly Division manager would like to negotiate a price lower than $400

(but greater than $200) for the 2,000 engines from the Engine Division, but this would increase San Ramon's tax payments.

At a transfer price of $400, it would still be alright to evaluate each division's performance on the basis of division operating income because the transfer price of $400 approximates the market prices for the engines transferred from the Engine Division to the Assembly Division. Market-based transfer prices give top management a reasonably good picture of the contributions of the individual divisions to overall companywide profitability.

Part 2 Redone with Fixed manufacturing costs can be avoided if production is closed.

Alternative 1

	2,000 units of the special order		2,000 units for the Assembly	
Revenue			transfer	
Variable cost			$ 200	$ 400,000
CM	$ 210	$ 420,000	transfer -	$ 400,000
Fixed Costs		$ 260,000	$ 260,000	
Profit		$ 160,000	transfer -	$ 660,000

Alternative 2

	3,200 units for the Assembly	
Revenue	transfer	
Variable cost	$ 200	$ 640,000
CM	transfer -	$ 640,000
Fixed Costs	$ 520,000	
Profit	transfer -	$ 1,160,000

Alternative 3

	2,000 units of the special order	
Revenue		
Variable cost		
CM	$ 210	$ 420,000
Fixed Csots		$ 520,000
Profit		$ (100,000)

Alternative 4 0

For 2,000 units	=	$	660,000	+		$	-	-	$	160,000
Transfer price =				$	500,000	÷	2,000	=	$	250

For 3,200 units	=	$	1,160,000	+		$	-	-	$	-
Transfer price =				$	1,160,000	÷	3,200	=	$	363

For 1,200 units after transferring the first	=	$	500,000	+		$	160,000	-	$	-
Transfer price =				$	660,000	÷	1,200	=	$	550

0 units