Managerial Accounting
Prof. Dr. Vardaraj Bapat
School of Management
Indian Institute of Technology, Bombay

Module - 13
Lecture - 28
New Product, Shut Down and Joint Products

Dear students, in last session we were discussing about decision making and various cost, related to decision making. If you remember, we have already discussed about relevant cost and sunk cost. Today, we will talk about introduction of new product. We will also talk about closing down a factory, temporarily; that is shut down cost, and then will discuss about joint products and whether, to process a joint product or no. To take a very brief recap, what do you understand by relevant cost and can you give any example of relevant cost? Just think over.

I think you are getting it right. So, relevant cost is that cost, which is relevant to the decision. In other words, that particular cost really, affects the decision making. For example, if company has spent lot of money on R and D of a product, a new product has been developed, technologically; market research has also been done. Now, the decision is to be taken about whether, to launch a product or no. So, what will be the relevant cost and what will be the sunk cost; can you think of? So, the cost on R and D, the cost on market research; both are sunk costs. Though they are very important, they have already been incurred; they should not have any role in deciding whether, the product should be commercially, launched or no. The decision about launching of the product should solely, depends on how much surplus the product will generate on its launching.

So, we will look at the cost of the product and the revenues from the product. Suppose you take a decision of make or buy, which also, we have discussed in the last session. We are making a particular product at say, 15 rupees per unit. There is an offer from the supplier; that is supplier willing to supply it at 12 rupees. Shall we go for buying or we should continue to make at 15 rupees? How will you take a call? Again, think of what is a relevant cost and what is sunk cost.

What is a relevant cost in this case is these 15 rupees. 15 rupees is the total cost of making verses, we have 12 rupees as the cost of buying. Is these 15 rupees relevant for

make or buy decision? The answer is no, because we already have facilities. We should not look at the total cost; we should rather, look at variable cost. So, if we break down this 15, and it is told to you to that 7 rupees is fixed and 8 is variable, and 12 rupees is the cost of buying; now, what is relevant? 8 rupees, which is a cost of variable cost of production, is a relevant cost and it should be compared with 12 rupees, which is a cost of buying. Now, you can see that 8 rupees becomes relevant for the decision and we may decide that we should make, rather than, buy at 12 rupees. 7 rupees, which is the fixed cost is to be considered as sunk cost in this case. So, sunk cost is that cost, which is already committed or which has already been incurred, and is not going to change, because of the decision. So, it should not be considered while, taking the decision. I hope it is clear to you, and make or buy decision is also clear to you. So, let us go ahead now.

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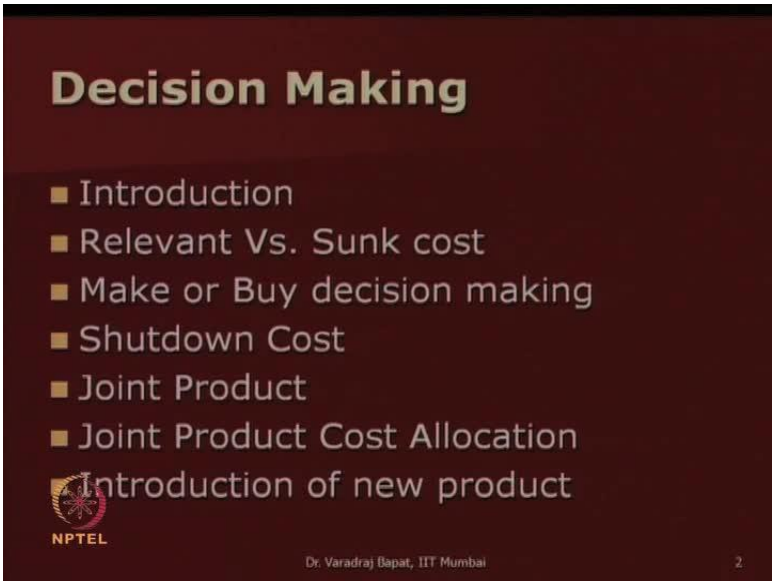

Let us go to shut down cost. Now, many times what happens in a business scenario; it becomes difficult to run a particular product, because of the temporary downturn.

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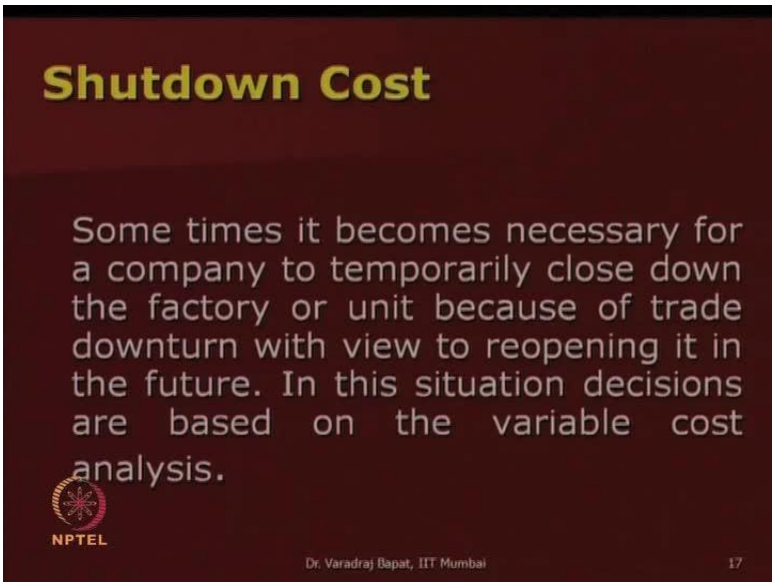

So, that the demand for the product falls, and once the demand falls, the product becomes loss making. In such case, company has to decide whether, the production should continue or not. If so happens that the revenues you are generating, are below the total cost; is it advisable to continue the production? Answer will be yes, because we do not look at the total cost; we should rather, look at variable cost. If we continue our example that 7 rupees is a fixed cost, 8 rupees is variable cost. So, 15 rupees is the total cost. We use to sell the product at say, 18 rupees, initially. Now, the selling price of the product comes down to 15. So, we are not making any profit. It further comes down to say, 13. Shall we make it? Answer is yes, because we are able to produce at 8. So, even if you sell at 13, we at least, generate some contribution. We will be in loss, but if we close it, the losses will be to the tune of 7 rupees per unit, which is the fixed cost.

So, since the fixed cost does not change, as long as the product contributes to the fixed cost, it may be advisable to make it, but further, what may happen is if we decide to temporarily close the product; close the product line or the production of a particular product; there is some change in the fixed cost. How will you define fixed cost? In the normal course, we will say that fixed cost is that cost, which does not change with the level of activity. So, irrespective of units, certain costs like rent, say maintenance, are incurred, but what happens is if we close down the productions facility, temporarily; we are not talking of permanent decision, but when we temporarily close down the production facility, some of the fixed costs may go down. For example, some of the

employees working there; we can transfer through other divisions. We may decide to keep the plant off. So, our fixed power cost may go down and so on.

But some of the fixed cost may increase like, we may need more security, because even if the plant is closed, some amount of security is required to ensure that plant and machinery is properly secured. So, there might be some changes in the fixed cost. What we have to look is the fixed cost, which is incurred, in case the production is on, and fixed cost, if we shut down. The difference in this fixed cost also becomes relevant. So, will look at this difference plus, the variable cost and that is compared with the revenue for taking a decision on shut down. Now, let us see what is the formula?

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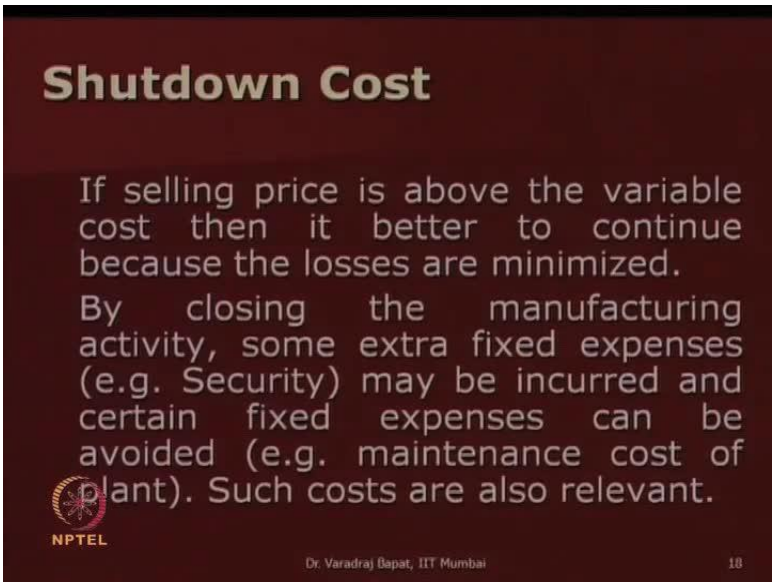

Here, we can see that the selling price is above the variable cost. Then, it is better to continue, but as we discussed, some of the fixed cost also, slightly changes.

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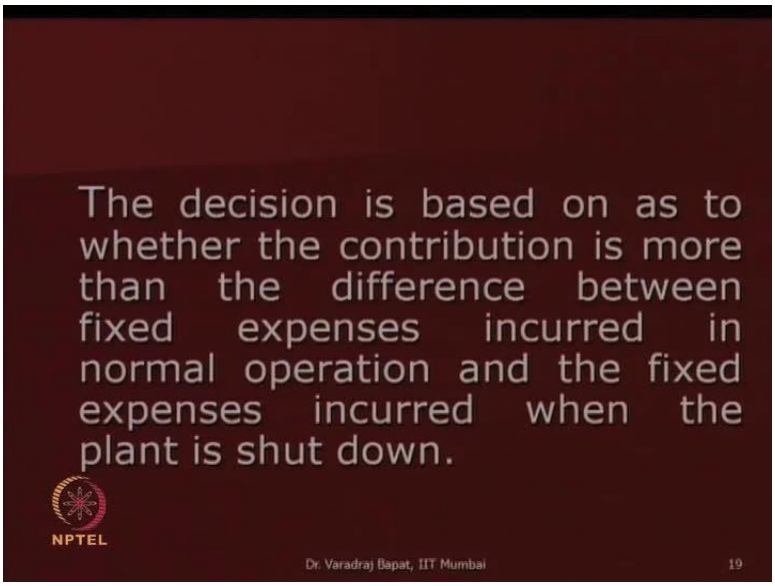

Now, the decision is based on the contribution, after adjusting the difference in fixed cost. Now, let us try to do one or two problems on the same, so that it is little more clear to you.

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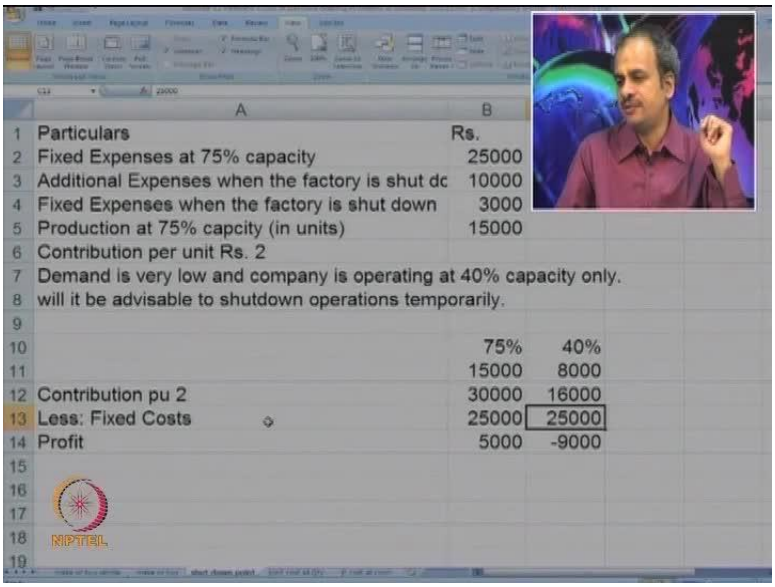

Here, you can see in the excel sheet, the details of the problem. The fixed cost at 75 percent capacity is rupees 25000. Additional fixed expenses if the factory is shut, is 10000 and fixed expenses with the factory is shut down is 3000. Production at 75 percent capacity is 15000 unit; contribution per unit is 2. Now, what has happened is demand is

very low, and company is able to operate at only 40 percent of the capacity. Is it advisable to shut down, temporarily; that is the question. So, how will you take a call? Now, here you can see that as long as we are operating at 75 percent capacity, our fixed cost are 25, and as you know, fixed costs do not change with the level of activity.

So, even if the capacity is 50 percent or 40 percent or 30 percent, the fixed cost will remain the same, but if we completely, close down the facility for temporary time, then the fixed cost will come down to just 3000, because we may transfer our fixed employees; we may close down our power facility; we may close down some extra cost, which are incurred on cleaning of the plant; the time of manger, etc. will get saved.

But we have to incur some extra fixed cost, which are to the tune of 10000. Let us first, try to look at the profitability, in case, we continue to operate. Now, you know that the contribution per unit is 2 rupees. Now, let us look at what happens at a different levels of activities. Suppose we work at 75 percent, then how many number of units do we make? They have given that production at 75 percent capacity is 15000. So, how much contribution do we generate? 15000 into 2; so 30000 come to the kitty of the company; that is a contribution. I will write in full for more clarity. From this contribution, we have to pay our fixed cost. How much are the fixed costs? It is given that the fixed costs are 25000. So, at 75 percent capacity, the unit of operates at a profit of 5000. I hope it is clear to everyone.

Now, currently, they are not able to operate at that capacity. The production is down and it is only at 40 percent. So, first, we have to calculate what will be the number of units at 40 percent. So, number of units come to 8000; is it right? So, how much will be the contribution? 2000 per unit; so it comes to 16, correct. What will be the fixed cost? Fixed cost remains at 25. So, the profit is minus 9, or in other words, there is a loss of 9; is it right? Now, it is looking like it is almost impossible to increase the level of activity to a level of taking the plant to profit. So, if you operate at 30 percent 40 percent or even 50 percent, we are likely to be at loss always, right. So, one option company has is instead of running the plant, temporarily close it down, which will bring down the fixed cost from 25 to 3, but there will be additional fixed cost to the tune of 10. So, how will you decide? Are able to take a call? So, by closing down, we lose that 2 rupees per unit contribution, but we save on fixed cost, but we also incur 10000 more on fixed cost.

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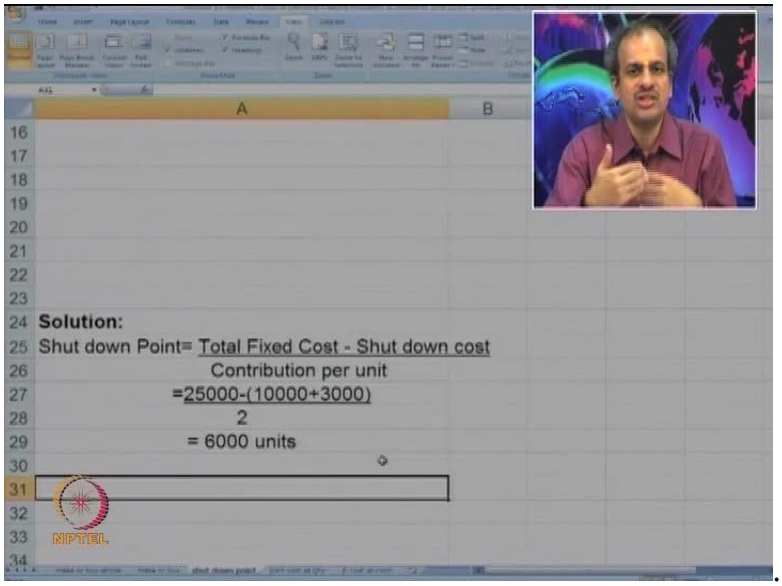

Let us look at the solution. We calculate the revised fixed cost. You know that the total fixed cost currently, is 25. It will reduce to 3, right, but extra fixed cost of 10 is incurred. So, essentially, we are reducing 7000 from it. So, 25 minus 10 plus 3; that is 25 minus 13. So, we will continue to incur 12000 and a contribution per unit is 2 rupees. So, 6000 units become that level of activity where, whether, we operate or not operate; the cost will remain the same, right. So, that is considered as the shutdown point; are you getting? Now, carefully, look at the formula. We say that total fixed cost minus shutdown cost. What is shutdown cost? Because after the closure, the fixed cost will come down to 3 plus, extra fixed cost of 10. So, essentially, 13 is the fixed cost on shutdown; 25 is the normal fixed cost. So, we saved 12000 by taking a decision of closing down, and we divide it by per unit, which is per unit contribution, which is 2. So, equivalent to 6000 units, we were able to generate a contribution of 12, which we are saving. We can just go back and check what we have done.

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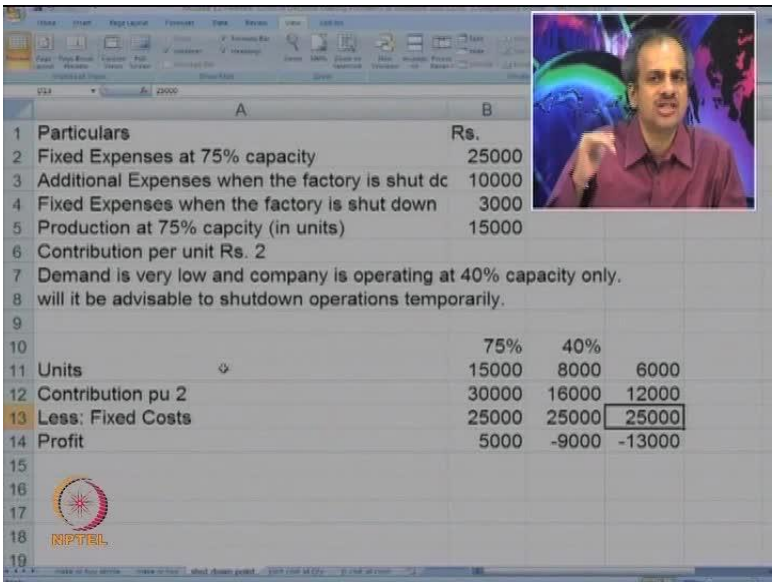

Suppose, if we take units at 6000, what will be the profitability? At 6000, what will happen is the contribution will be 12; fixed cost will continue to be 25. So, it leads to a profit of minus 13. In other words, it leads us to loss of 13. Now, by taking a decision of closure, we have been able to bring down our fixed cost to 3 plus 10; that is 13. So, even if you close, the loss will be 13 and if you continue also, the loss will be 13. So, 6000 units is that level; this is the number of units. So, 6000 units is the level where, we run or not run; our losses remain at 13. Suppose our number of units are more than 6; let us say our number of units at 8, then our loss is 9. So, the loss will go on increasing as the number of units fall. At 6000, the loss becomes 13000. If the number of units fall below 6, then our loss will be more than 13. So, it may be better to keep our plant shut, rather than, continue to incur losses more than 13000.

So, 6000 is the shut down point. In other words, it is that level of activity where, we need not have to run the plant; it is better to shutdown at that level and below that level. So, only if we feel that demand is likely to be more than 6, then we take a call to continue. Of course, nobody would like to run in loss. This is a temporary measure. The demand is very low. So, only in such cases, the decision on shutdown point becomes relevant. Now, let us look at the next concept.

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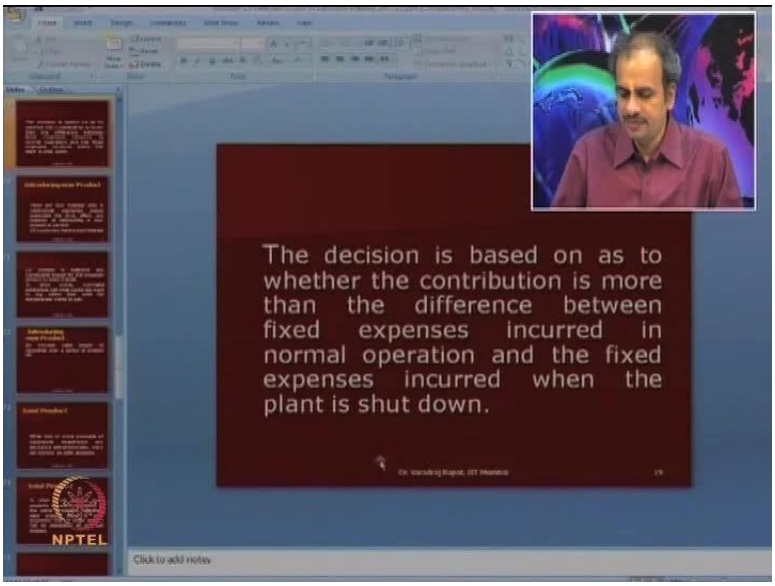

I hope the shutdown point issue is now, very clear to you. Now, the next is about introducing of a new product.

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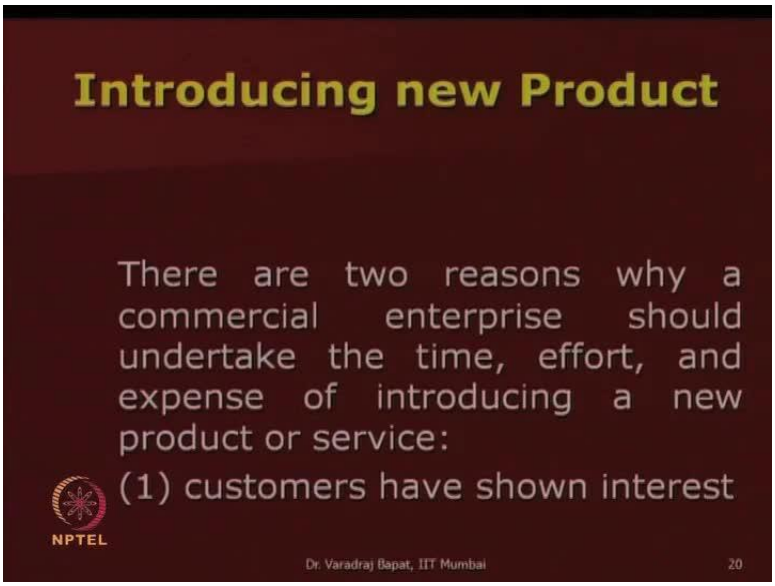

Now, what happens is after certain time, the life cycle of the old product; product is no longer; the old product remains profitable for a long time and company has to decide on launching of a new product. So, what are the factors considered? The first is customer should have interest.

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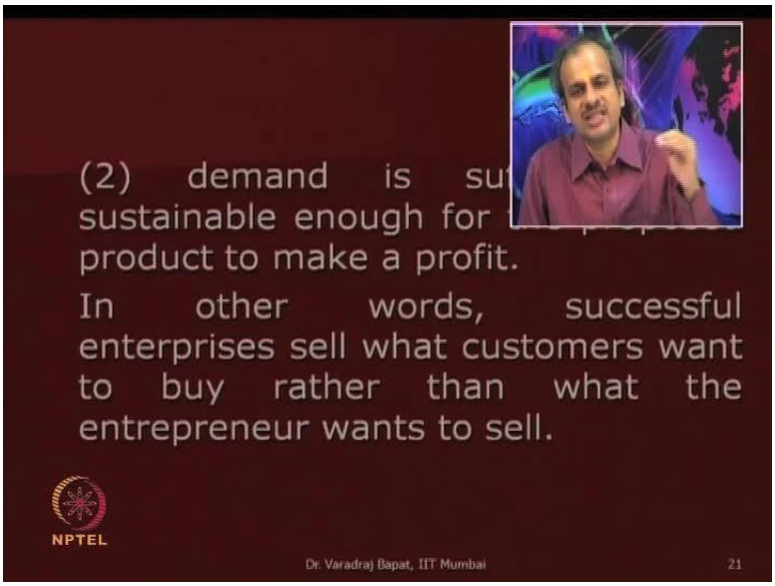

So, we will look at the market research and see whether, the customers have interest. Second; there should be sufficient and sustainable demand, because only once in a while, customers have interest, is not enough. We should have sustainable demand of such level where, we are able to make profit. If both the conditions are met, then it may make sense to introduce a new product.

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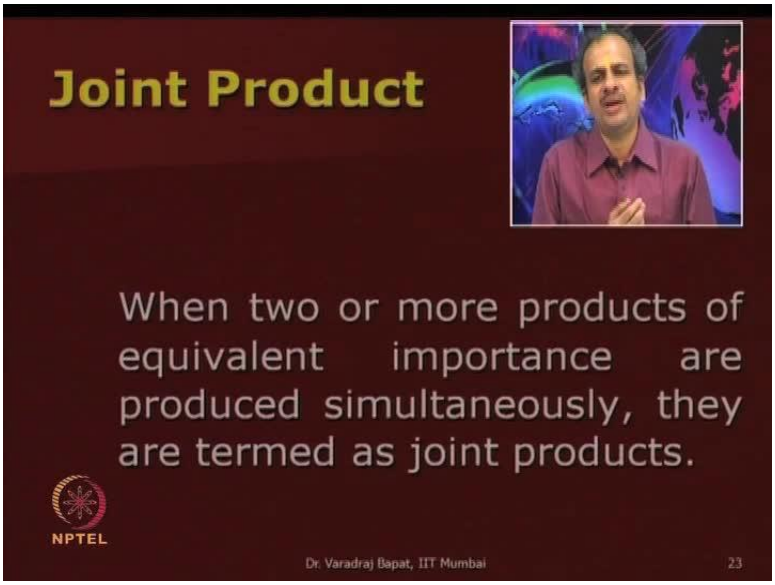

This is a very simple decision. Earlier, we have discussed it, when we talked about relevant cost and sunk cost. So, I think it will be clear to you. Now, the next concept

which, we discuss is known as joint products. Many times, what happens is from one production process, instead of one product coming out; two or more products come out, and most of them are of similar importance. Then, they are called as joint products. Can you think of any example of one production process giving more than one products? Each one of us operates or uses some vehicle. Vehicle runs on which fuel; either, petrol or diesel in most cases. In some case, may be gas.

Where all from we get this petrol, diesel or gas? Of course, for us, it is from petrol pump, but where does it get manufactured? I think you all know it gets manufactured in a refinery. So, crude oil is refined and we get petroleum products, but is there a separate process for petrol or separate process for diesel? The answer is no. From the crude oil, when the refining activities done, simultaneously, number of products emerge. They include petrol; they include diesel; they include gas; sometime, they include other petro chemicals. Of course, they may require slight further processing, but basic process is common. So, these are the examples of joint products. Can you think of any other example?

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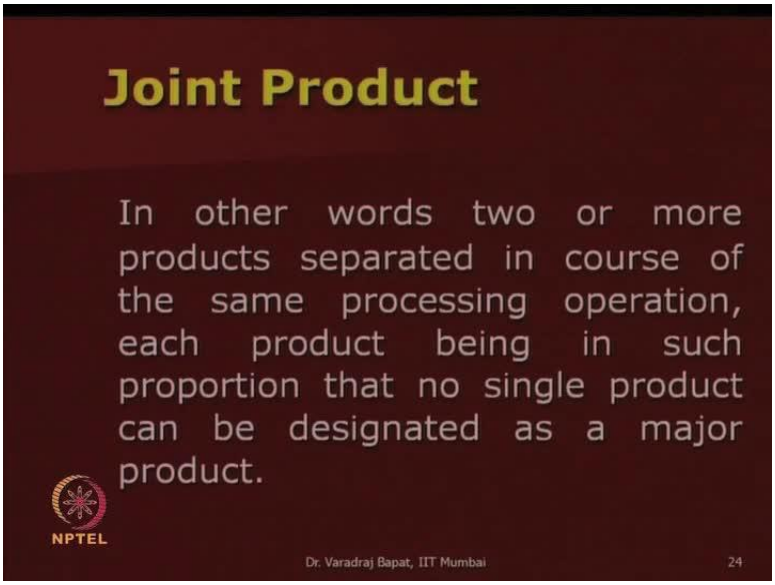

When one or more product is separated in the course of same processing operation and not that only one product is important; many products are important. Then, it is considered as joint product.

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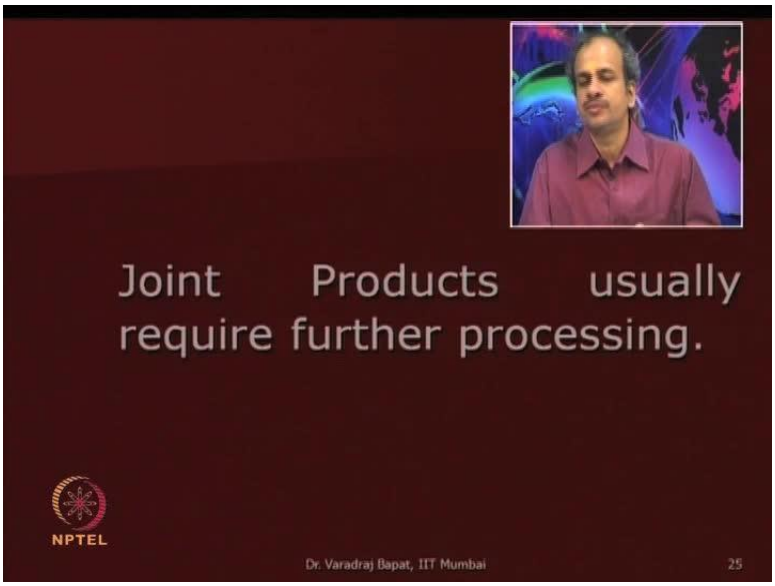

They will generally required further processing.

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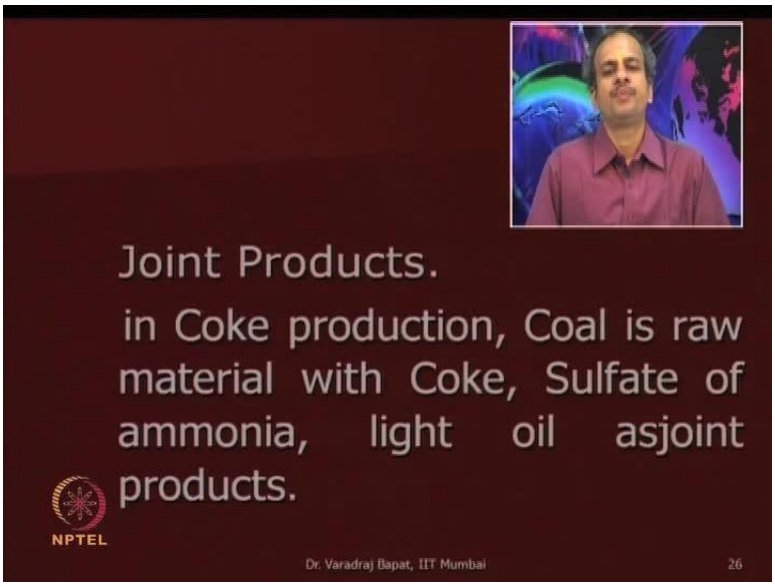

Here is one more example. In coke production, coal becomes a raw material, and not just coke; usually, sulfate of ammonia, light oil. So, we get also emerged from the same process. So, coke, sulfate of ammonia and light oil; all three are considered as joint products.

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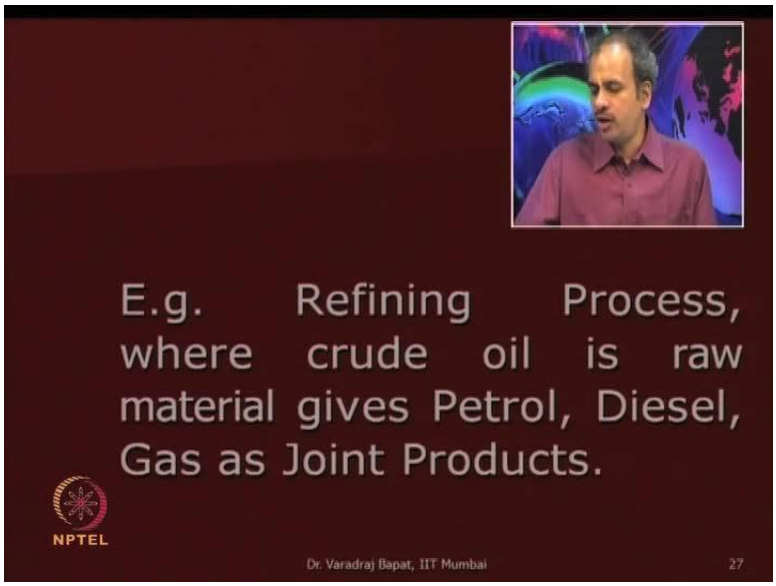

Refining process; we have already discussed. We get petrol, diesel, gas as joint products.

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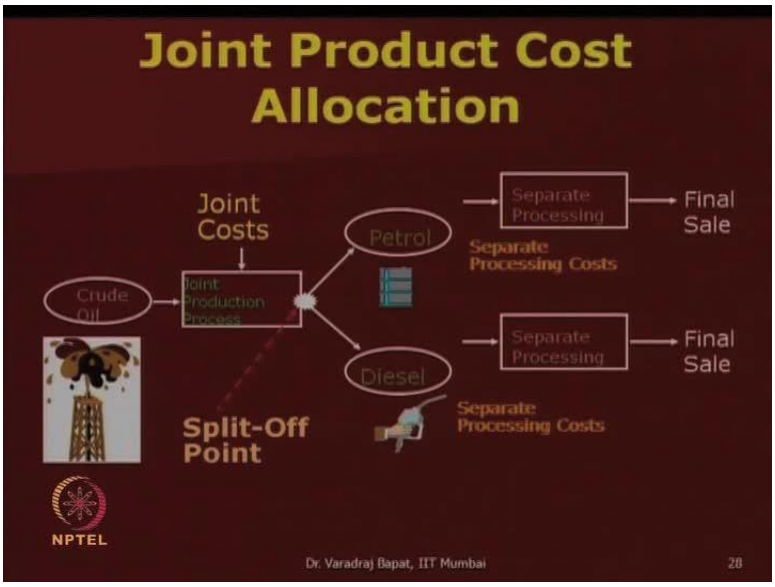

Here, pictorially, it is shown. We get crude oil, which is extracted from the earth; either, below the sea or above the sea. We get the crude oil. Then, it is refined in the refinery. At the refining, up to the split of point, some joint costs are incurred in the refinery. Then, we get petrol and diesel and other products like gas. Then, they may require slight refining. May be it is led is taken out, some more process are done and then we get finally, syllable form of petrol and diesel. So, we have two set of costs. One are the joint

costs, which are common for petrol, diesel, gas. Then, on each product, separate costs are incurred. So, it becomes necessary that the joint costs, which are the cost of refining process are properly, charged to petrol and diesel. We will see how they are charged. So, after separation point, then there is some processing and the products are ready for sell.

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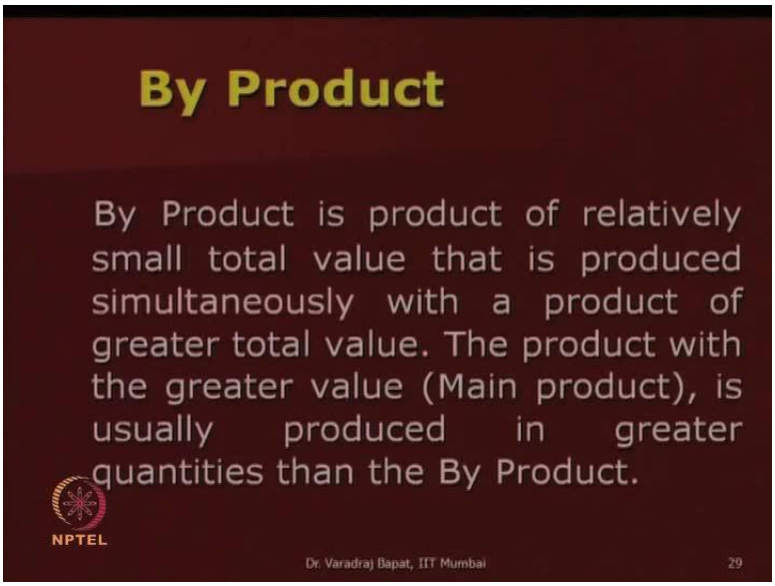

Now, what happens is sometimes, from the same process, more than one products emerge, but they are not of equal economic importance. So, one product is very important. In such case, that one product, which is important, is called as main product. Other products will also emerge, but they are of subsidiary importance; they are not so important. Those products are called as by products. Can you think of example of a by product?

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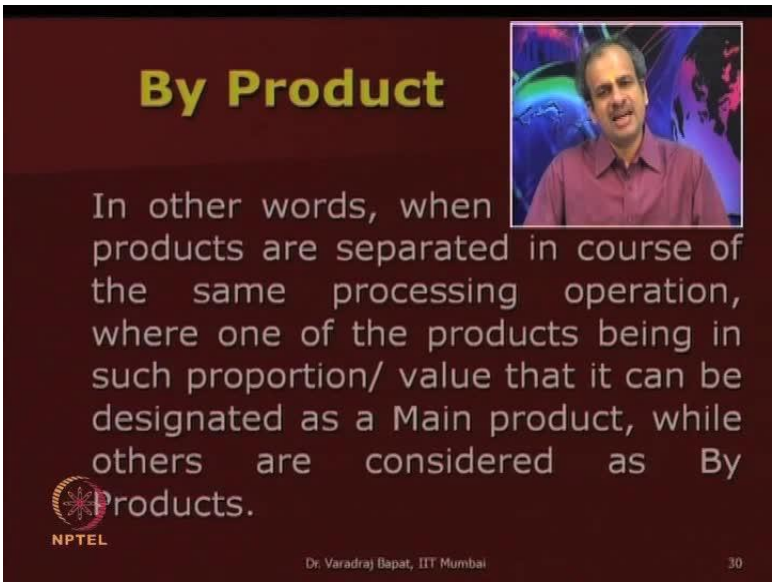

Sometimes, main product could be joint products, like from refining, you get petrol, diesel, gas; they are the main products, but you may also get some other products, which are not so important, economically. Their prices are much lesser. So, they become by products. Can you think of any example of a by product? If you have seen any machine shop, whenever, any machining activities done on lathe or any other equipment, usually, some scrap gets generated. The scrap consists of metal. So, it has a sellable value, but that value is no way comparable to our finished goods. It is more like a raw material or more like scrap to be disposed of at relatively, less value. So, that metallic powder, which get generated, is a by product; whereas, the product, which we are making from the lathe is the main product.

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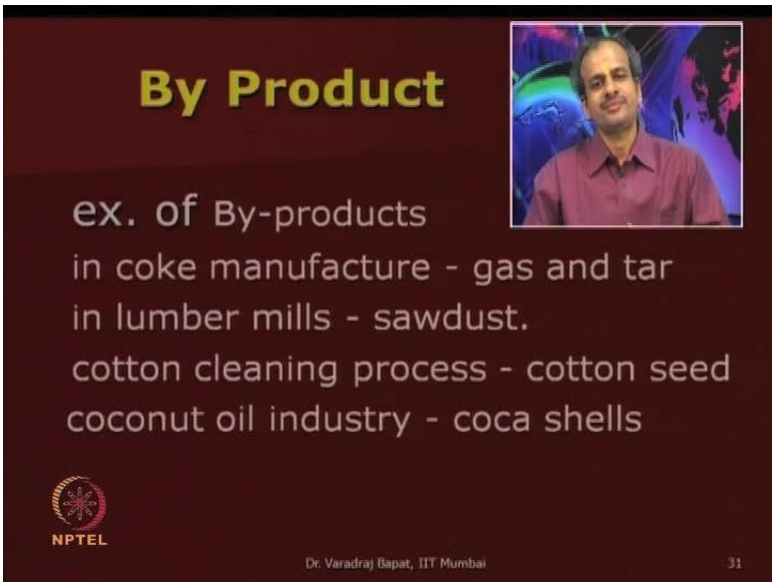

One more example; we were talking of the coke manufacture. We discussed that while, we manufacture coke, here we have seen it.

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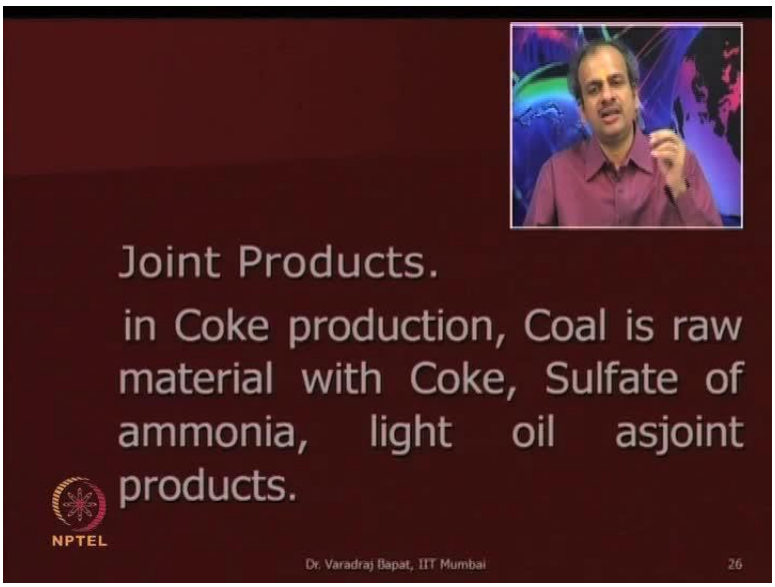

So, in coke manufacturing, we get sulfate of ammonia and light oil, which are considered as joint products, but simultaneously, gas and tar also, comes out; that is not so important. So, it is considered as a by-product. In lumber mills, you know where, the wood is cut; lot of sawdust get generated and it can be sold out. That sawdust is a by-product. Again, in a cotton cleaning process, when the cotton is being cleaned, the cotton

seed is taken out and then from the cotton seed, oil is extracted and then the remains become good food for animal, but that cotton seed, which is removed from the cotton in the cotton cleaning process is usually, considered as a by-product.

Same way, when the coconut oil is taken, then the coca shells, which remain; they become the by-products. So, variety of examples can be given. In fact, most of the manufacturing processes do give some scrap or do give some minor important products; they are considered as by-products.

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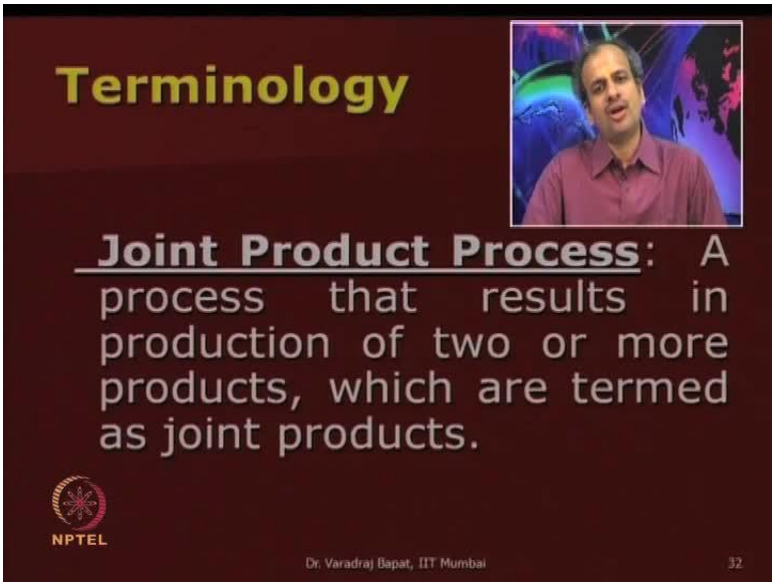

Here are some of the important terminologies. Any process that generates two or more equally or equivalent important products, then such are called as joint products, and that process is called as joint product process.

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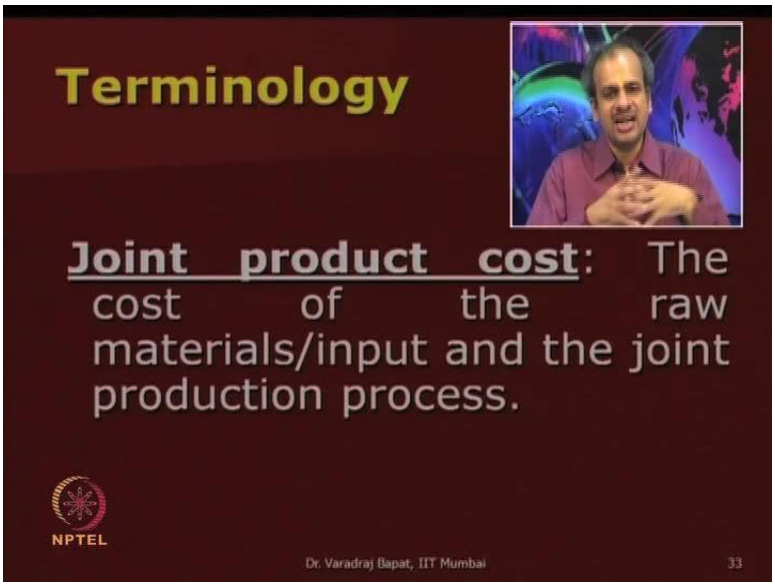

The cost, which are incurred for the joint process, before split off point; they are considered as joint product cost.

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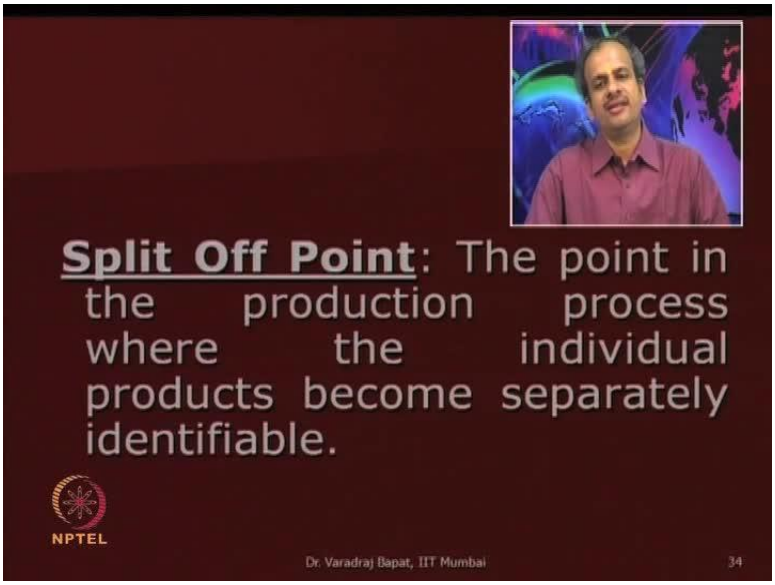

Split off point; it is that point where, those individual products can be identified and they are separated. So, up to that point you have one process. From there, two or three products become separate, and some more processing may be done. That point is called as split off point.

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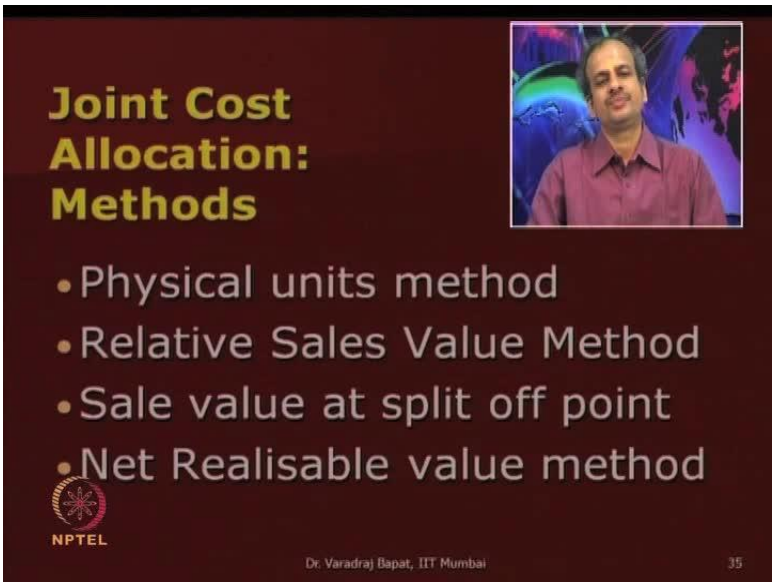

As we were discussing, what happens is up to joint product level, the cost come together. So, it becomes necessary that, that cost is appropriately charged to the joint products. It is not possible to identify them on one-to-one basis; we have one joint cost that requires to be extracted. So, what are the different methods? The easiest method is physical units. So, if we know that from a refinery process, let us say petrol and diesel come out. Only two products come out, and we know that petrol, say, 1 lakh litres of petrol is manufactured and 130000 litres of diesel is manufactured. Then, the total joint product, joint cost may be charged in the ratio of 1 lakh to 130000 to petrol and diesel, respectively; this is one method.

But the problem is with this method is that both the products then get the same cost per litre or per unit, which may not be fair. So, petrol may be more costly; diesel may be less costly. We may also get a very refined form of fuel known as aviation fuel, which is for airlines. That may be even far more costly, but physical unit method allocates the cost, same cost per unit basis. Though it is very simple, the cost which is charged, may not be appropriate, considering the economic realities. So, there is another method, which is known as relative sale value. Here, the sale value is taken as base and from the sale value, post processing cost or after split off cost are reduced. So, we get the relative sale value. Sometimes, we know sale value is at split off point. Then, it is good; we can directly charge the cost based on the sale value of split off point. When the sale values are not known, we may calculate relative sale value. Sometimes, relative sale values are

also tough to calculate, but net realizable value can be found. So, all the three; I mean physical units is, of course, based on the physical units; remaining three are based on the sale value of those products. Here is a little bit of comparison.

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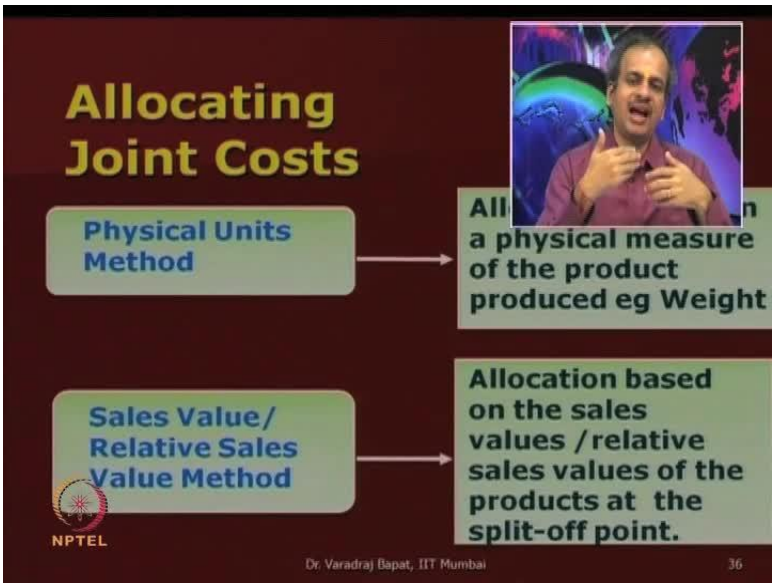

We have already discussed it. Physical unit methods actually, goes by number of litres or weights; whereas, a sale value or relative sale value method look at the economic value at split off point and then economic value is estimated using either, the sale value at split off or calculating the relative sale value at split off.

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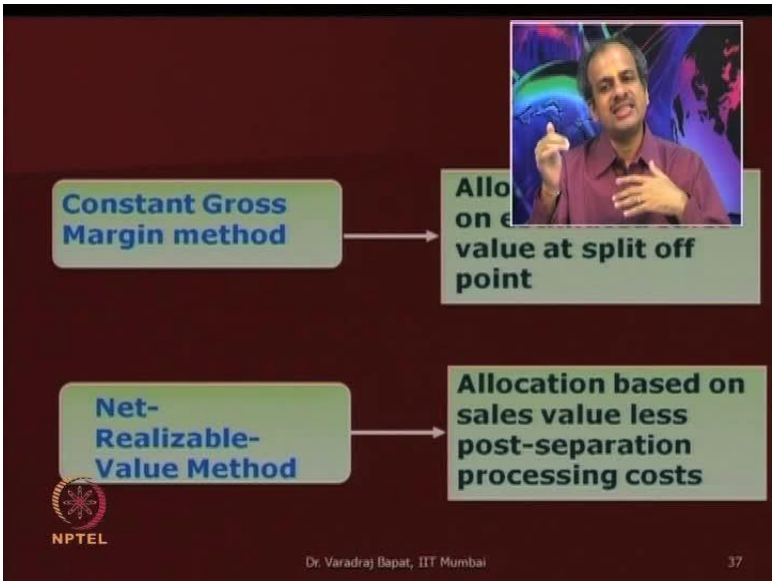

There are also other methods like constant gross profit method. We will look at the gross profit of the earlier period and that gross profit is reduced from the final sale value to arrive at an estimated sale value. In case of net realizable value, what is done is post separation cost, since they are known; they are removed from the sale value. So, we get that the realizable value at split off point, and then that is used as a basis for separation. So, this was about the discussion about joint products. Now, let us look at some of the problems. That will make it more clear to you how are the joint cost charged.

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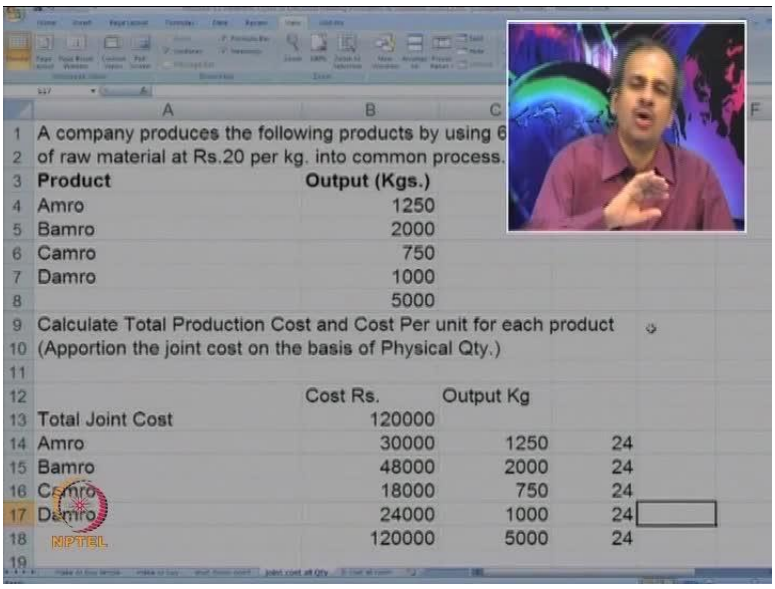

Now, here, you can see that company produces the following products by using 6000 litres. The raw material cost is 20 per kg and four products emerge; amro, bamro, camro and damro. The total output you can see is 5000. The total production cost and cost per unit is required to be calculated. Now, here, the basis given is only the physical units or the weights in kgs. So, it is very simplistic. We can get the total cost and then divide it appropriately, based on the output. So, how much is total r m cost? We will say it is a joint cost. It is 6000 into 20 or 5000 into 20? It is 6000 into 20, because the cost will be incurred on all the units and now, this cost of 120000 should be charged in the ratio of output. So, these are number of kgs of output. We know that the total cost is 120000 for output of 5000, right. Now, we will try to charge the cost in the proportion of weights. I think there is some problem with the formula; numerator should, I should add the dollar and now, will try to take sum; is it right?

So, we are able to charge 30000, 48000, 18000 and 24000. This is in the proportion of the output in kgs, right, and this is the cost in rupees. Now, is it a good way, good method or there is some problem with this method? What is the short coming of this method? Shorting coming is that per unit cost will be same. We will see how much is per unit cost. It is 24 rupees for amro, and you can see that for bamro, camro and damro; all the products, it is exactly same, 24 rupees. So, here, there is a problem that it might be that a product say, amro, may be more important, but we come out with a cost, which is same, because we charge it on the basis of number of units or the weights. Let us see another method also.

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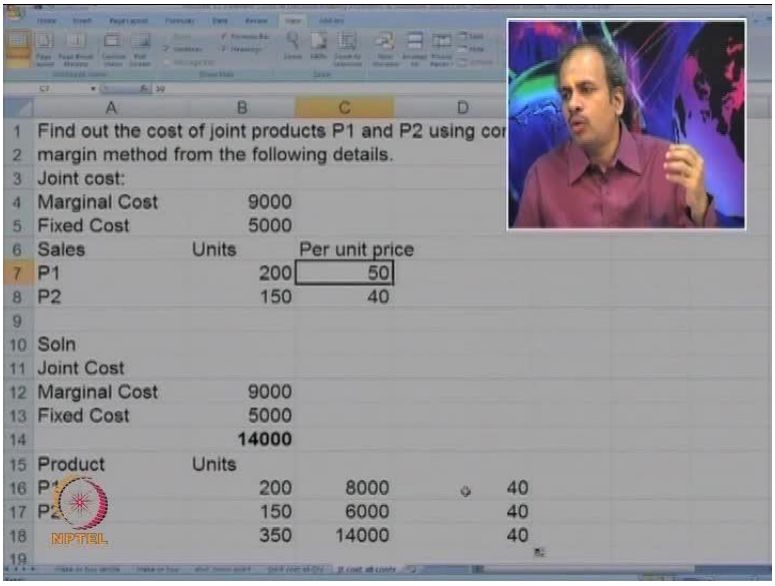

Now, one more problem; here, we have two products; p1 and p2. We are going to use the contribution margin method. The joint costs are given. Marginal cost is 9000; marginal or variable cost. Fixed cost is 5000. Now, here, the two products are there; number of units is 200; for p2, it is 150. Per unit price; that is the selling price is 50 and 40. Now, let us try to solve it. How to solve; any one can think of something? First, we will try to find out how much is the joint cost?

We are given that the joint cost is 9 and 5. If we make a sum, you can readily, see, it is 14. Now, the issue is how to charge this 14. One method which, we have already seen is going by number of units. So, let us try to see what happens if we go by number of units. We know that for the product p1, the number of units are 200. For p2, it is 150. So, the

easiest way is to charge 14000 on the basis of numbers. So, total is 350 and the total cost is 14000. So, 14000 upon 350, into 200. So, we are able to charge 8000 to p2 and 6000 to p1. Exactly, 14000 is allocated, but is it a fair method; not so because if we try to go be per unit, we can see that per unit cost is 40; p1 also 40; p2 also 40 and total is 40. Now, you can see that p 2, selling price is only 40; p1, the selling price is 50. Perhaps, p1 has more economic value, but is not reflected on per unit method. So, we have to do something. So, an improvisation is done in the form of what is known as contribution margin method. In contribution margin method, what is done is what we do is we know separately, the marginal cost and variable cost.

Now, marginal cost; that is variable cost and fixed cost. Now, marginal cost is more linked to the quantity. So, marginal cost; that is here, you can see, marginal cost was 9 and fixed cost was 5. So, marginal cost is charged on the basis of number of units, which is 250 and 150. So, it is more a raw material cost. So, 9000, we have divided has 200 by 350. So, you get 5143 and for p2, you get 3857, right. Fixed cost, instead of apportioning on the basis of number of units, it is apportioned on the basis of their contribution margin. Now, how will you know the contribution margin? You know that it is selling price minus variable cost. Here, there is working note. First, we have calculated the revenue of the products. So, revenue; we are aware that 200 units are sold at 50. So, if you multiply, you will get 10000 here, and 150 into 40; you will get 6000.

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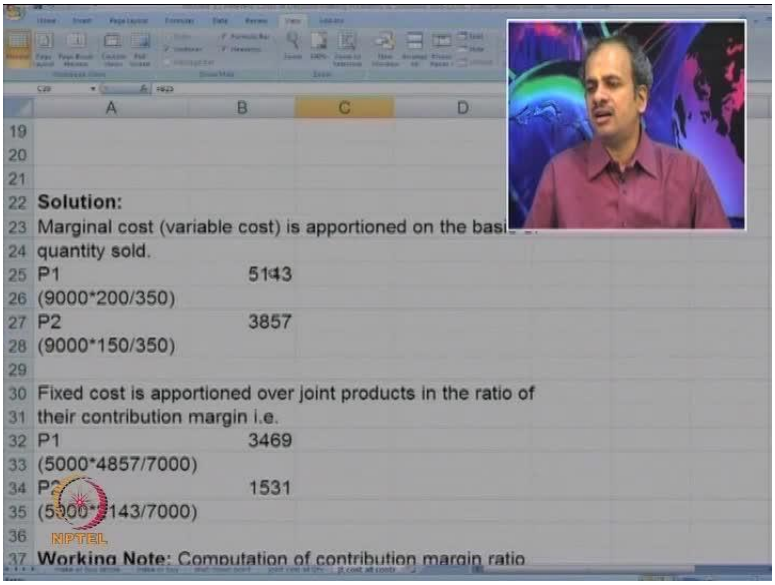

So, for products p1 and p2, the sale revenue is 10 and 6. Then, we have calculated the marginal cost, which is charged on the basis of number of units. So, from sale revenue, the marginal cost is reduced or the variable cost is reduced, which gives us a contribution. Now, here, you can see the contribution is 4857 and 3143; the total is 7000. Can we verify this total? Answer is yes, we will just try to verify it, right now. So, 10 plus 6; 16000 is total revenue, and 9000 is the total marginal cost, which was anyway, known to us. So, we know that from 16000, 9 is the marginal cost. So, 7000 is 16 minus 9; that is 7000 is our contribution. Now, this is a surplus, which is coming from each of the products. Then, we will charge it.

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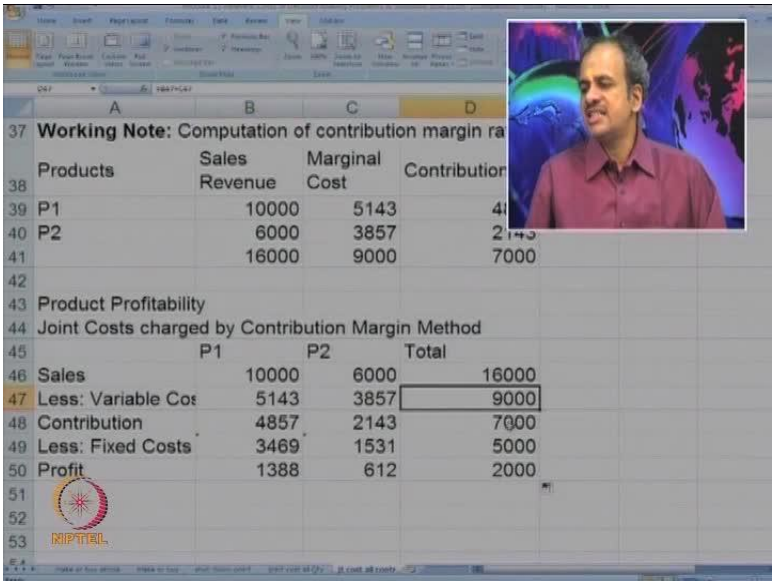

We will take that as base and based on 4857 and 3127, will try to allocate the fixed cost, which is 5000. So, fixed cost is allocated. Now, let us try to work out the profit. If you now, calculate the product profitability, we are doing it by (( )). So, joint cost are charged by contribution margin method which, we have just learnt. You know how to calculate profitability. We do sales minus variable cost; that gives us the contribution and contribution less fixed cost gives us the profit. Now, how much is the variable cost of p? Actually speaking, we do not know, but we have worked it out. We have estimated. So, we will go by that. For p1 and for p2, you have calculated it as 5143 and 3857 and we also know their sales, which is 10000 and 6000. We will also do total, parallely. We have already done it, but I am just showing it more clearly.

So, now, we get 4857 and 3123 as a contribution. From this, we will reduce the fixed cost. Again, basically, the product fixed costs were joint; they were not known individually, but we have worked it out on the basis of ratio, which was calculated. So, it is 3469 and 1531. You can see that the more fixed cost is now, borne by p1. Now, you can know the individual profitability of the product, which is 1388 and 618. Now, if we took total, we can see the totals, which were known to us, because from 16000 revenue, 9 was the variable cost. You can go up and 5 was the fixed cost. So, 16 minus 97 was the contribution minus 52 was the profit. How much profit from each product was not known? Now, by using the contribution method, we have calculated the profit from the products. Suppose we were to do by the 1 st method; what will be the answer? We will also try by the alternate method.

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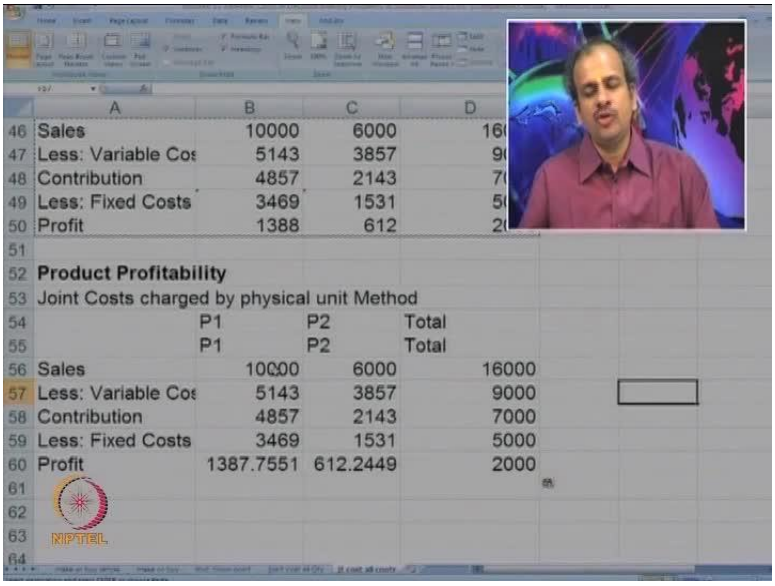

So, instead of joint cost charge by contribution method, if we charge on physical units method, then what will be the answer? Is anyone of you able to work out, what will be the answer if they are charged by physical units method? I will place the values and then will change, if required. In physical units method, what will happen is the distinction of total variable and fixed cost would not be there. We will have to take the total joint cost which, we have earlier calculated that our joint cost based on number of units 14000; we will able to charge 6 and 4. Now, sale is 10 and 6. So, we will charge the total joint cost. For p1, it is in the ratio of 200 to 150.

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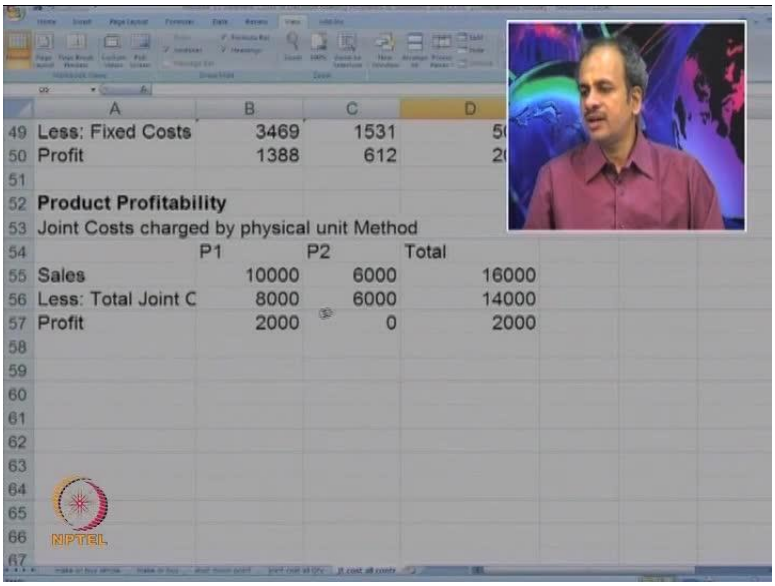

So, for p1, we got 8000 and for p2, we had got 6000; the total being 14000. Now, you can see here, what happens is the profit is 2000 for p1, and nil for p2. Why this happened? Because p2, you can see here, the selling price is much lower. It is just 50 rupees, and when we charge on per unit basis, we charge 40 rupees for both the products. So, there was a shortage. We were not able to charge the same amount. I mean we were charging the same amount, 40 rupees; whereas, the selling price of p2 is also 40. So, the profit was 0 for p2. All the profit was shown attributable to p1. So, contribution margin method gives a better way of charging the joint cost than physical unit method. I hope these methods are clear to you. Now, there is one more issue. What happens sometimes, in joint products is, at a joint product level, at a particular level, we get the output. We have to decide whether, we should further process it or not further process it.

Now, how will you take that decision? Just think over. Suppose we have these products p1 and p2, we know that the joint cost, as we have calculated it, is known to us, but we have to take a call on processing or not further processing it. How that will be done? How much is the joint cost? Let us say, we use the physical unit method, we know it is 40 rupees. If we use contribution margin method, then it comes something else, but right now, if you use the physical units method; it is 40 rupees. Now, there is an offer that we can further process it by spending say, 15 rupees and then the p1 product in advance form, can be sold at a higher level. Shall we take this call or no; how will you decide? What are the relevant costs? You will realize that 40 rupees or 43 rupees or 47 rupees

which, we calculate here, is a sunk cost; it is not relevant. What is relevant is how much is a further processing cost, and how much is incremental revenue generated by further processing. I will give you an example. Let us extend this example. So, this fax continue. Now, what is further given is instead of selling p1 at 50 rupees and p2 at 40 rupees, it is possible to sell the advanced version of p1 and p2.

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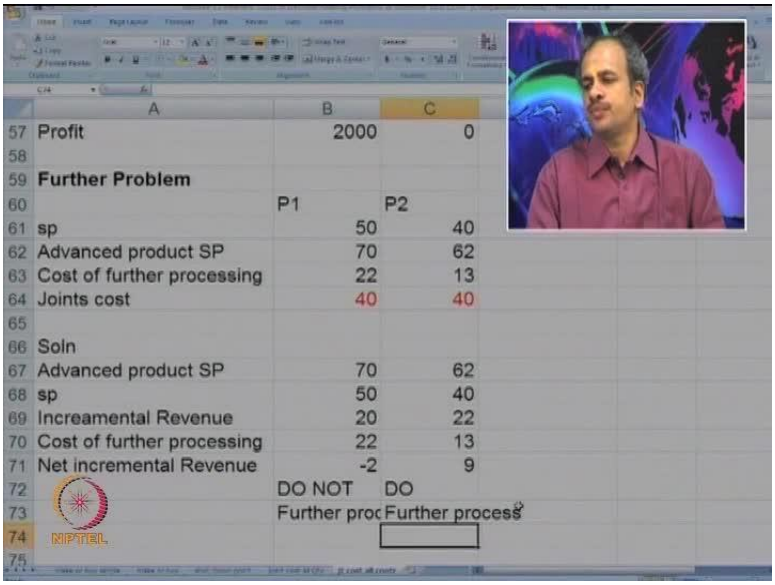

Now, it is given; I will just specifically write, so that, it is more clear to you. So, we are adding a further problem. We have two products, which you know; they are p1 and p2. Current selling price is 50 and 40. Now, it is possible to make some advancements; some more refinements in those products and then I can perhaps, sell them at 70 rupees and 62 rupees, but to make it an advance product, I will have to spend on further processing, and a further processing cost are given to be 22 rupees and 13 rupees. Now, does it make sense to sell or not sell? We already know that the joint costs are 40 and 40, if we use the physical unit method. Shall we sell or not sell? Now, what happens is for this decision, this 40 and 40 is totally, irrelevant. We should ignore it, because these costs are already committed. What is important is the further processing cost and the incremental selling price.

So, if we are, as this is given that advance product, we are able to sell at 70 rupees and advance product p2, we are able to sell at 62 rupees. We will compare this with their original selling prices. Original selling price is 50 and 40. By further processing, how

much is the incremental revenue we were able to generate? It is 20 rupees for p1 and it is 22 rupees for p2. How much is the cost of further processing? It is 22 and 13. How much is the net incremental revenue? It is minus 2 for p1 and it is 9 rupees for p2. Otherwise, our p2 was being sold at 40 rupees. After further processing, we are able to get 62 rupees; so 22 rupees of value addition for an extra cost of 13.

So, it is very good to further process p2. We will get 9 rupees more; whereas, if you come to p1, the incremental price was 20 rupees; that is from 50, we were able to take it to 70, but the additional processing cost was also very heavy, 22. So, the incremental revenue was minus 2. We should not further process it. This is the decision that in case of p1; it is not good to go for further processing; while for p 2, it is good for further processing. I think now, the concepts of relevant costs and decision making are clear to you. We have discussed relevant costs, sunk costs, decisions like make or buy decision. Then, we have also discussed shutdown point. We have now, discussed the joint products, various methods of allocation of joint products cost and in the end, we have also seen further processing or not further processing of joint products. So, let us stop here. In the next session, we will go for budgeting and some more issues.

Thank you so much.