Management of Inventory Systems
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Lecture- 55
Value Engineering / Analysis and Stores Management (Contd.)

So, this is the 5th lecture sessions on the Value Engineering and the Stores Management. And, if you remember in the last lecture session, we have referred to the inventory valuation. And, primarily the inventory valuation is the responsibility of the of the stores management.

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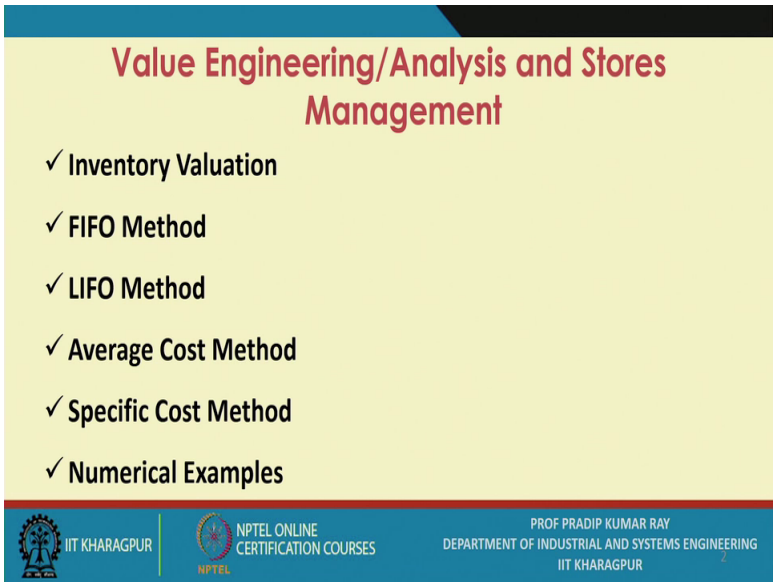

And, what we have mentioned that that inventory valuation, for inventory valuation certain accounting method you have to follow. And, the not a single method not is just that one single method you follow for inventory valuation. And, but the key question is why valuation of inventory is a critical issue.

If you remember that the inventory management system is assist with respect to the several performance measures. And, and these assessment you need to do at any point in time. So, there are 3 important out of many possible measures. So, the 3 important performance measures, we always refer to. The first one is at any point in time, what is the amount of under stock? At the same point in time what is the amount of say the overstock or certain other items? Item wise you can have a these information. And, the

third one is very important; that means, overall at this point in time what is the inventory investment?

And; obviously, the inventory investment becomes a function of time. So, and usually all these values are given in monetary terms. So, how do you get this values in monetary terms? Obviously, you need to follow certain valuation method. And so, right now we are discussing those valuation methods. Any, company you name with must follow say a must follow a particular valuation method. And this is this is statutory and this is obligatory on the part of the management to use a particular method or a select a particular method the most scientifically. So, depending on the kind of items; so, the kind of the consumption patterns you have are the kinds of use you have, say you may a select a particular method for a valuation.

So, during this the lecture sessions I will be referring to an inventory valuation. And what are the main methods are you may use. So, I will discuss first in first out method. Last in first out method for inventory valuation, I will discuss the average cost method and I will also discuss the specific cost method. These are the 4 types of methods. Normally recommended for inventory valuation and then we will discuss a few numerical examples.

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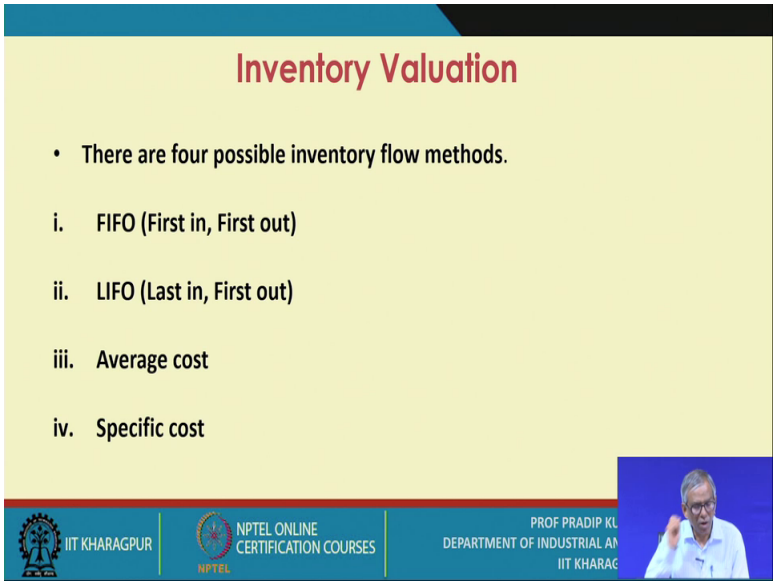

Now, there are 4 possible inventory flow methods. So, essentially you are tracking the flow of the materials. So, that is why this inventory valuation method is also referred to

as inventory flow methods. So, the first one is first in first out, the second one is the last in first out, third one is the average cost and the fourth one is the specific cost.

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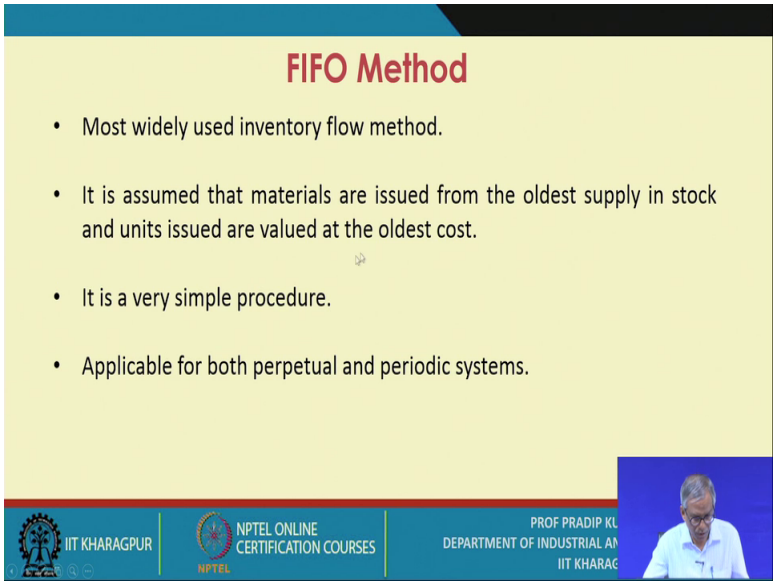

So, what is this first method called FIFO or First In First Out Method is very simple, is mostly used, most widely used inventory flow method, that is point number 1, point number 2 is it is assumed that the materials are issued from the oldest supply in stock and units issued are valued at the oldest cost. What is the first in first out? That means, the items which are the consider the oldest supply.

So, they are to be used first. This is the consideration here it is a very simple procedure. So, when you take up one example. So, will come to know how simple it is? Applicable for both perpetual and periodic systems, what are this? These are to say you know inventory control systems. So, the perpetual or so, the continuous review system is also known as the Q systems of inventory control. And periodic review system is also referred to as the P systems of inventory control, your aware of modeling of these 2 kinds of inventory control systems.

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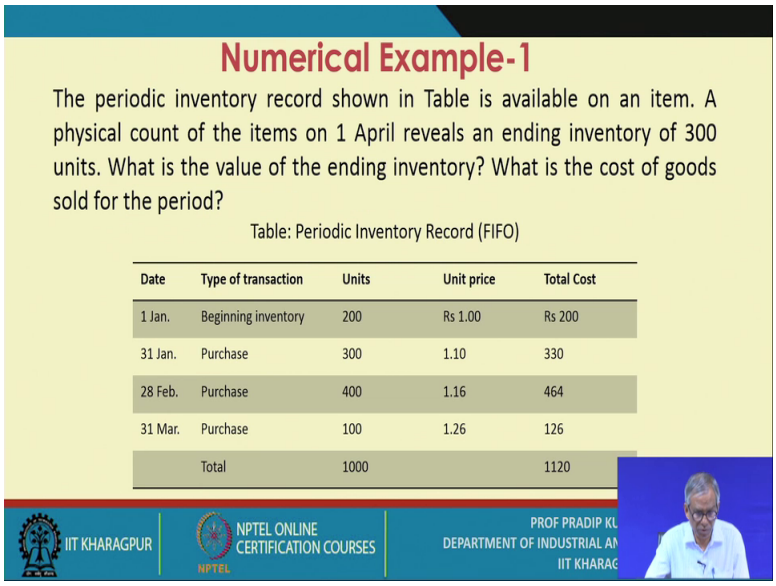

Now, let us first take 1 numerical example; 2 numerical examples related to first in first out method. The periodic inventory record shown in table is available on an item. A physical count of the items on 1st April reveals and ending inventory of 300 units what is the value of the ending inventory? What is the cost of goods sold for the period?

So; that means, this 300 units are the physical units. So, what you need to do? You need to determined the value of this 300 units. So, while you determine the value of these 300 units you need to so, the select a particular unit price. So, what is the basis of selecting this unit price; that is the question to be answered? And, while you answer to these questions you apply the first in first out method.

So, the 1st January beginning inventory is 200 units unit price is 1. So, the total cost is 200, 31st January after one month you again take stock of the situation, you find the total purchase is 300 units and with a price of 1.10. That means the total is 300 and 30. And, then again after 1 month on 28th February, again the purchase amount is 400 units with a price of 1.16 per unit. So, the total will be 400 into 1.16, that is the total cost in might a returns that is 400 and 64.

And, similarly after 1 month on 31st March, you have this purchase amount of 100 units and corresponding price is 1.26; that means, as a time passes what happens that unit price also changing, is it ok? So, this value is 126. So, on 31st March, you have calculated that

is the total value of the stock is 1120. And, that is on 1st April; that means, the next day first April the early morning this is the stock value.

Now, what do you find? That an ending inventory of 300 units you have on the first of April. So, what is this? Monetary value.

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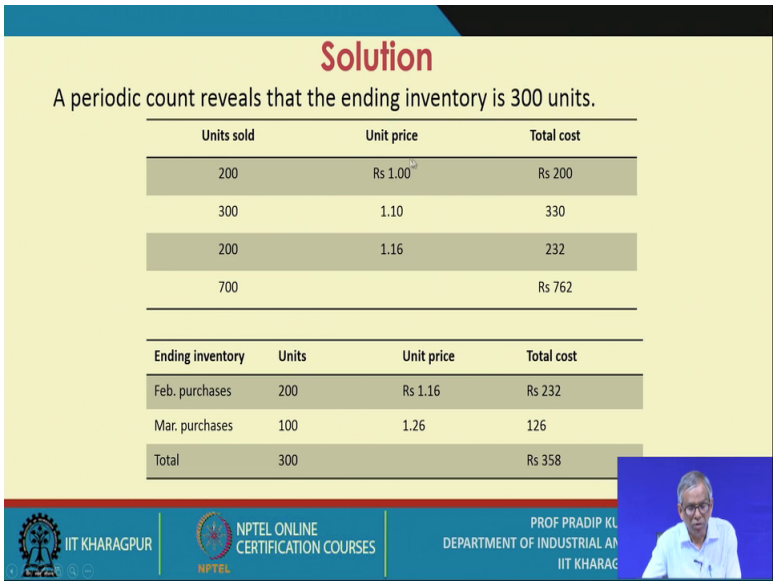

So, what do you have over here? That means, to; that means, 300 and the total amount you have received, that is 1000. That means, 7000 700 units you have consumed, during this 3 months period.

So, out of these 700 units the first 200 units; that means, the earliest stock you charged with rupee 1, that is 200. Next is 300 stocks these arrived the next time, with the price of 1.10. So, that is 300 and 30 and then you just take 200 units out of the remaining stock and it is prices 1.16. So, that is 232. If, you add all this 3 values, you get a value of 762 for 700 units. So, the ending inventory will be say the 200 over here and 100 for the March purchases.

So, this will be charged at 1.16 the remaining 200 out of 400, you have and this is 100 already arrived and it will be charged at 1.26. So, it is 1 and 126 and this is 232 that is 352. So, the ending inventory will be a rupees 358.

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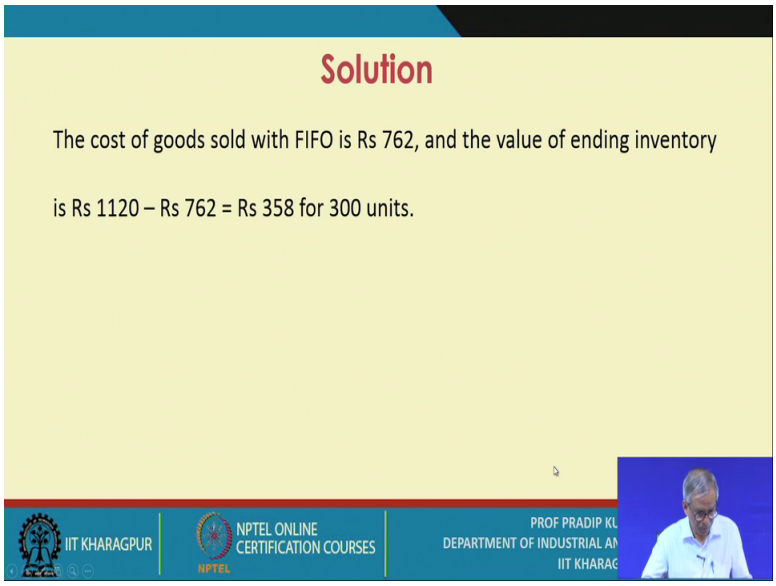

So, the cost of goods sold with FIFO is rupees 762 already you have completed you know the procedures. And, the value of ending inventory is 1120 minus 762, that is rupees 358 for 300 units is it. So, these are the 2 parameters you need to calculate the value of which you need to calculate; one is the ending inventory at a particular point in time on a particular day, as well as the cost of goods sold.

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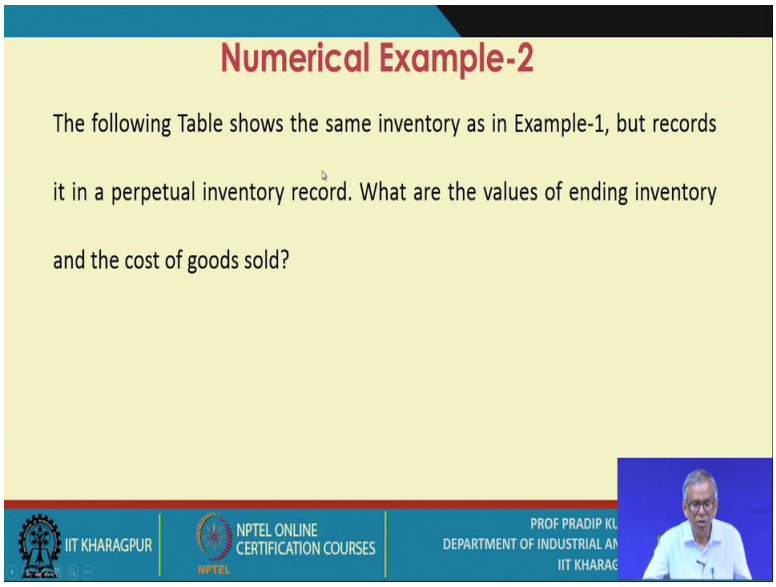

So, this is the second example; now here what do you find that the following data shows the same inventory as an example 1. That means, you refer to the same table, but records it in a perpetual inventory.

So, now you are moving from say the periodic to perpetual record. What are the values of ending inventory and the cost of goods sold?

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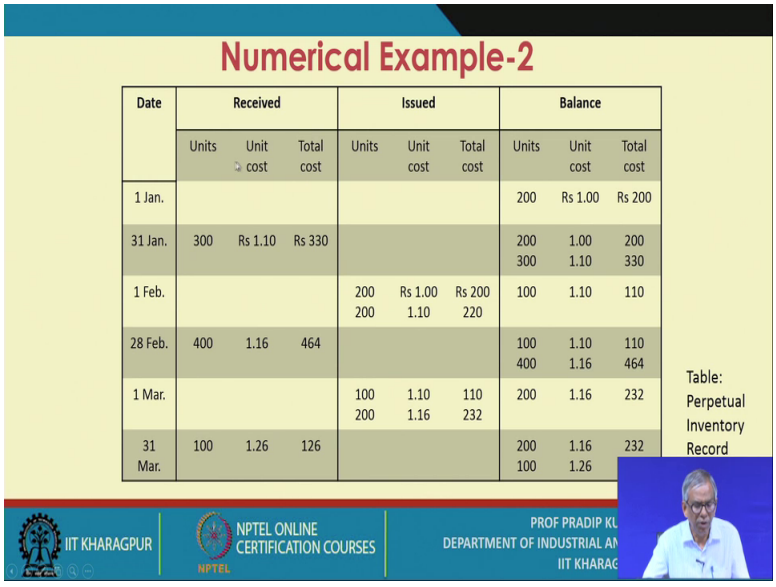

So, here these transactions, you note down all these transactions; that means, there are 3 columns we have; one is the receipt column, again is the issued column and then you have the balance one. So, on 1st January this is your starting inventory; that means you have a balance amount of 200 units. And, the corresponding the price unit price is 1 and this is the total cost is 200.

Now, on 31st January you have received you have purchase 300 units with a price of 100 1.1 per unit. So, the total cost 300 330.

So, this cost is added; that means, it becomes 200 to plus say 330 on 1st February there is some issued amount of 200 units. So, the 200 units are issued with a price of 1; that is the oldest price. So, the 200 units and the 200 units with price of say 1.1 ok. So, that means 220, now you have say out of 300 you have the issue 200 units.

So, you have the remaining 100 units and so, how do you get the total cost for the remaining and remaining units that is 100 units, that is 100 into 1.10 that is 110. So, again you receive 400 units the units price is 1.16. So, the total value is 400 and 64.

So, already you have 100 units now you add 400 units with it is value of 464 is it ok. So, everywhere you apply the FIFO method. And, similarly you consider the issued amounts; that means, you are issuing 300 units over here; that means, 100 units from the stock, you exhaust the stock with a price of 1.10 and the remaining 200 units, you get it from this stock with price charged at 1.16. So, this 2 are calculated separately 100 and 10 and 232. And so, the remaining amount will be; obviously, the balance amount will be 200 from here and it will be charged for the prices 1.16 that is the latest price. And so, the amount so, the balance is 232. So, similarly on 31st March you are receiving 100 units with the price of 1.26. So, the cost is 126.

So, now what you do you have 200 units, you add 100 units over here with a value of 126. So, this is basically the perpetual inventory record is it ok? So, all the points are made very clear.

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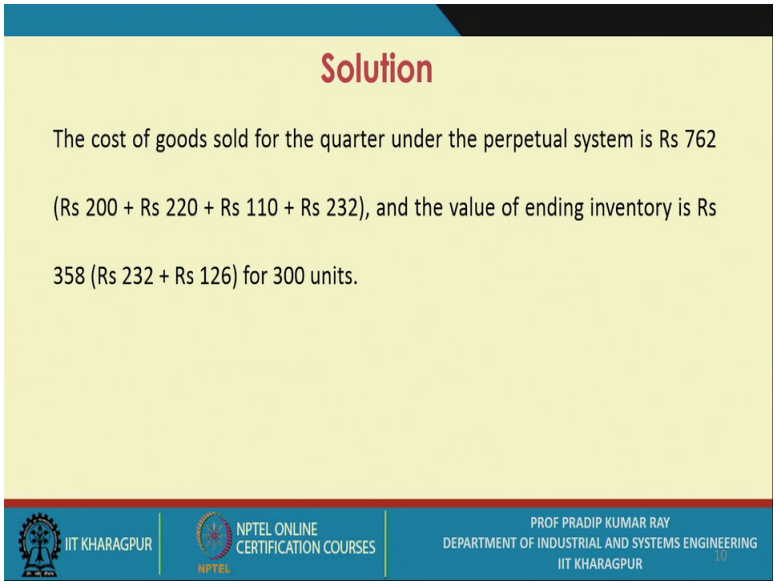

So, I do not think there will be any doubt on this. So, here the cost of goods sold for the quarter under the perpetual system quarter means 3 months, we are considering 3 months. So, this value is rupees 762 and the value of ending inventory is 358.

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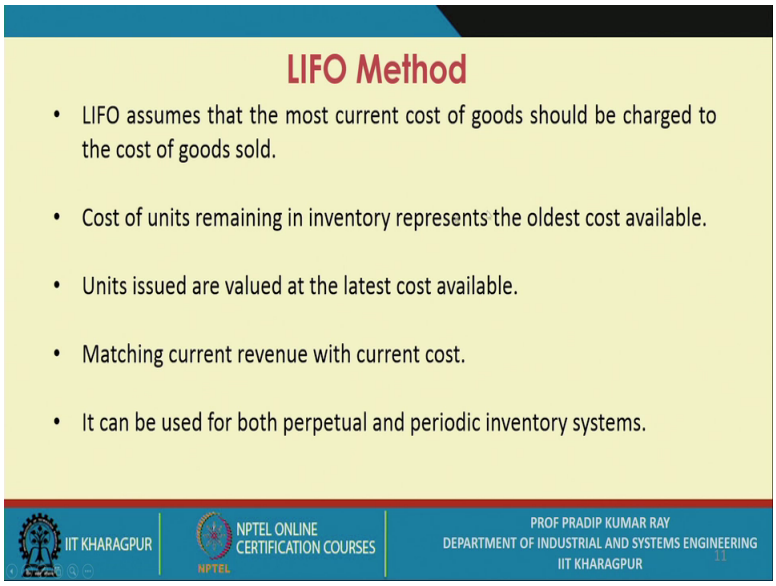

Now, if you opt for last in first out method. So, there are certain points you should keep in mind that is the LIFO assumes. That the most current cost of goods should be charged to the cost of goods sold, that is why it is referred to as the last in first out.

Cost of units remaining in inventory represents the oldest cost available is just the opposite to are the FIFO method, units issued are valued at the latest cost available, matching current revenue with the current cost. It can be used for both perpetual and periodic inventory control systems.

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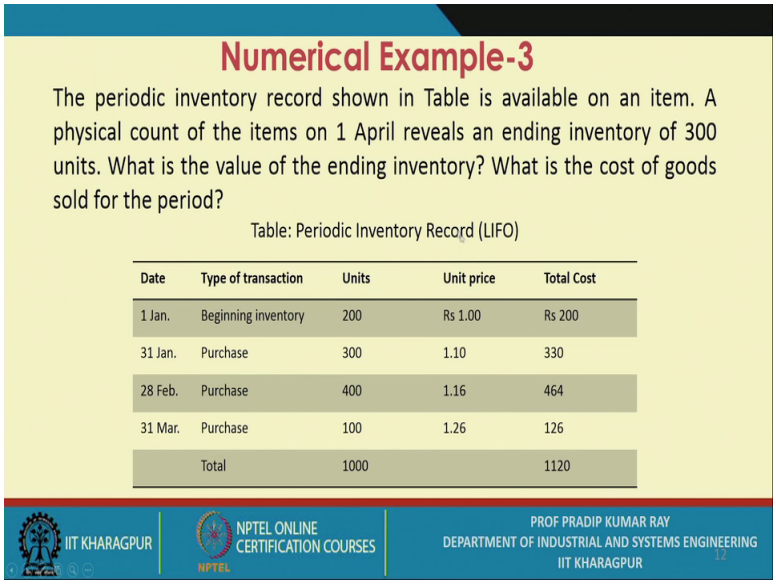

So, this is the numerical example. And, again what do you need to do? You find say you need to calculate the ending inventory value of ending inventory on first of April. Almost have the same set of data.

Now the beginning inventory, then these are the purchase amounts and once a month you record this values, that is why it is a periodic a review system. So, you have this data with you. So, again you did you need to determine the value of the ending inventory on 1st of April and what is the cost of goods sold for the period? For the entire period this period is one quarter, that is 3 months.

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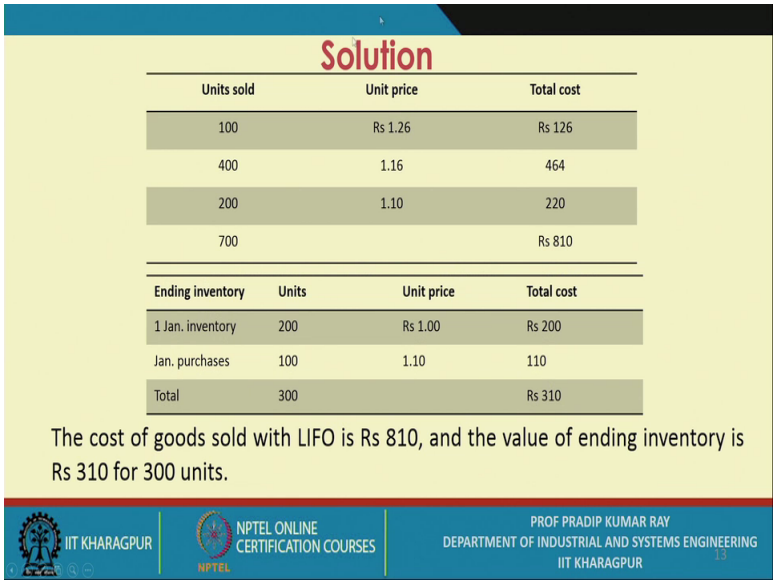

So, what do you try to do? That means, the units sold is 100, then 400 and then 200 this just the in the reverse direction.

So, the 100 units you have received just now with a price of say 1.26. So, this is charged 126; then the next amount is 400. And, because the 700 units, you need to you have consumed and that is why you are remaining with the 300 units on 1st of April.

So, the first stock is exhausted the latest one, next you exhaust next stock of 400 units. And, the value is 464 and then the remaining amount is 200 units, because the total amount that you have consumed that is 700. So, this price is the oldest price that is 1.10, that is 220; that means the total value is 810.

So, ending inventory now you can calculate; that means, here the 200 units remaining with 100 that is the oldest stock. And, the next oldest stock you keep that is 101, that is the price is 1.10, that is 110 that is the value. So, the total value is 310. So, the cost of goods sold with LIFO is 810 ok, you refer to this value. And, the value of inventory ending inventory on first of April is rupees say 310 for 300 units.

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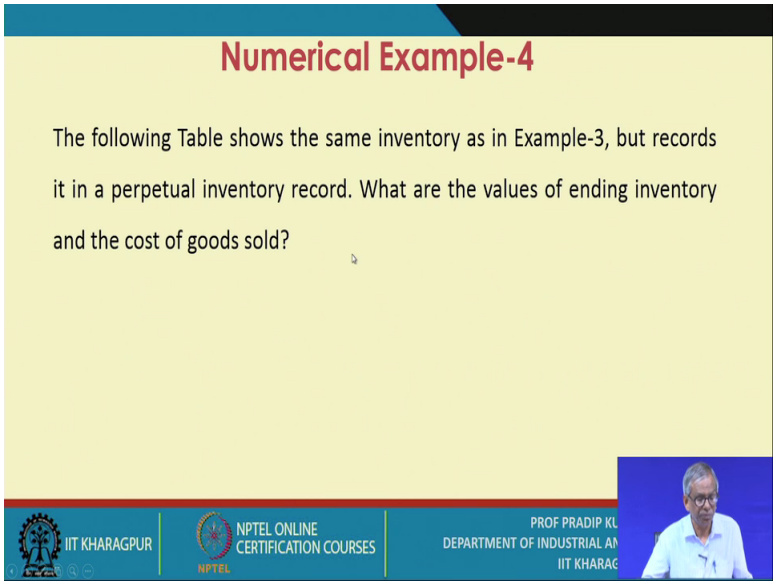

So, this is another example numerical example. Now, the here the following table shows the same inventory as an example 3. So, you refer to the same table, but record sheet in a perpetual inventory record. What are the values of ending inventory and the cost of goods sold?

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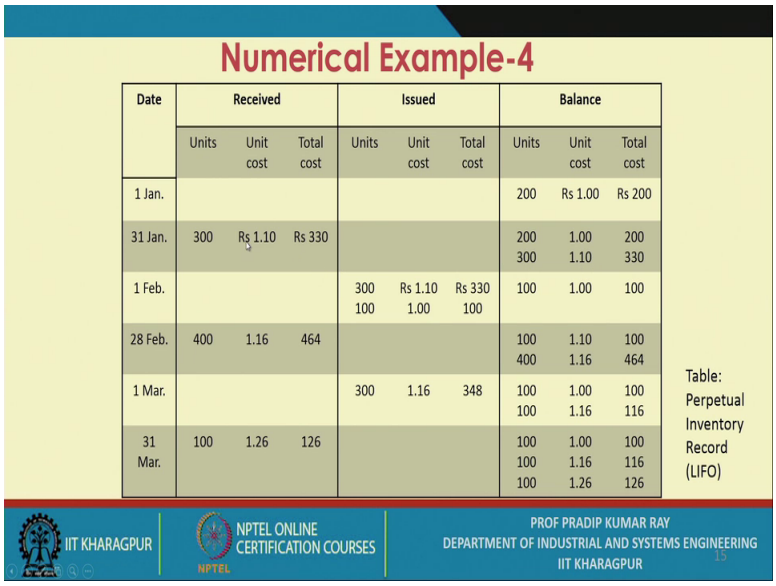

Date	Received			Issued			Balance		
	Units	Unit cost	Total cost	Units	Unit cost	Total cost	Units	Unit cost	Total cost
1 Jan.							200	Rs 1.00	Rs 200
31 Jan.	300	Rs 1.10	Rs 330				200 300	1.00 1.10	200 330
1 Feb.				300 100	Rs 1.10 1.00	Rs 330 100	100	1.00	100
28 Feb.	400	1.16	464				100 400	1.10 1.16	100 464
1 Mar.				300	1.16	348	100 100	1.00 1.16	100 116
31 Mar.	100	1.26	126				100 100 100	1.00 1.16 1.26	100 116 126

So, here so, again you have all these details like this is the balance amount. So, the first of January, then the 31st January you have this receives. So, you calculate the total balance ok. And, the latest say the value considered that is 1.10 ok. Along, with 200 then on first February you have some issued amount ok. So, 300 with the latest one, latest price, and the remaining 100 with the price of 1; that means, 400 units you are issued. And, then you are getting received amounts of 400 units on 28th February. And, then the balance amount changes 200 plus 464. And, then again on first of March you have 300 units are issued are so, the latest price is 1.16 per unit.

So, that you consider to get the total cost and the remaining amount will be show the 100, which the oldest price, that is one and the remaining 100 with the next oldest price that is 1.16 which is available 1.10 is not available. So, the latest one is 1.16 that is why it is charged with 1.16 unit price.

So, the total balance you calculate and again when you received and amount of 100 units. So, again 100 units are added with the latest unit price of 1.26. So, the total you add and you have this balance.

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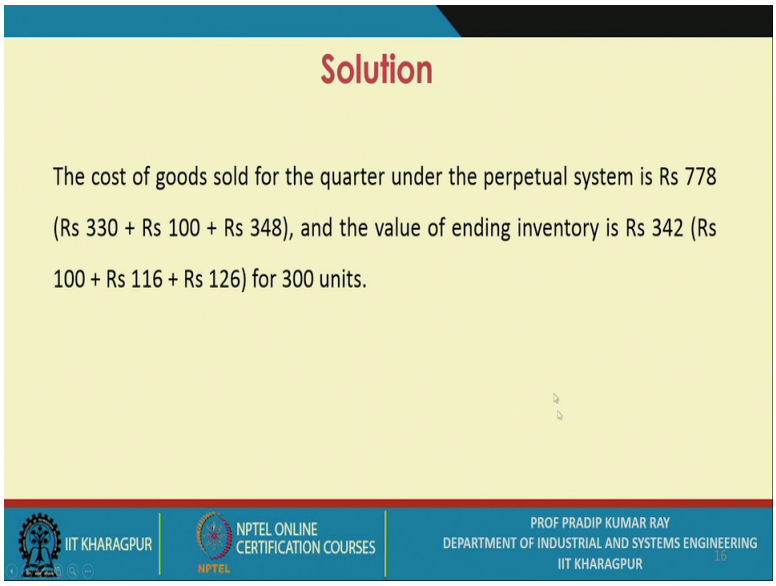

So, the cost of goods sold for the quarter under the perpetual system is rupees 778. So, this is the breakup and the value of so, the ending inventory is rupees 342. And so, you get this one like. So, how do you get 342 first you get 100 and then 116, and then the third term is 126 for 300 units.

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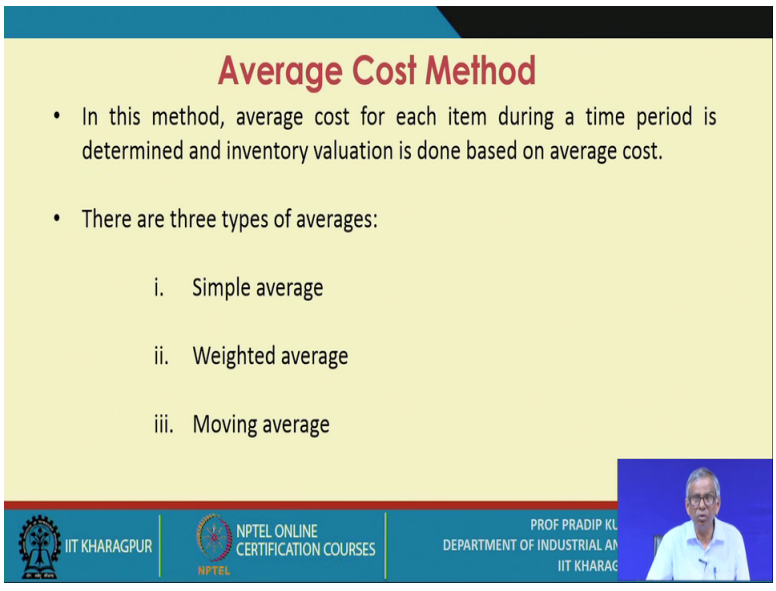

So, I think that you have clearly understood that what is the FIFO method, what is say the LIFO method. And for both the cases if you apply say the periodic are the reviews systems. As, well as or if you apply say you know the perpetual review system. So, what

is how do you calculate the ending inventory on a particular day? And, how do you calculate the cost of goods sold for the period considered. Now, what is the average cost method? The in this method, the average cost for each item during a time period is determined. And, the inventory valuation is done based on average cost ok.

So, the time period is to be specified. And the so, there are 3 types of averages as you may be aware of one is the simple average, the second one is the weighted average; that means, here the weighted is basically the quantity for the item at a particular price.

So, that quantity when you consider then in order to calculate the average price, then it is it is referred to as the weighted average and the last one is the moving average.

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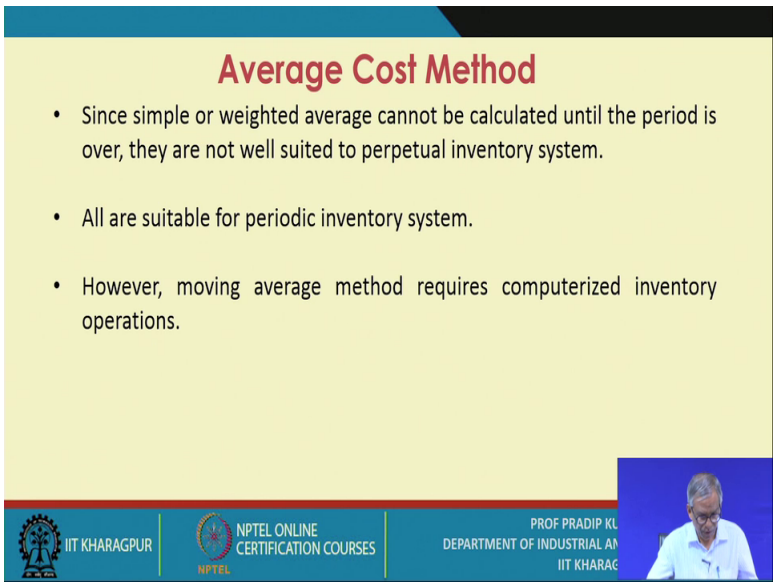

So, since a simple or weighted average cannot be calculate until the period is over. So, this point is to be noted. There they are not well suited to perpetual inventory system ok. So, this point you must note down all are all are suitable for periodic inventory systems, because as soon as you say that is based on the average cost; that means, the time period is to be known.

So, it just cannot be at any period of time is it instant of time. So, it is essentially a method applicable for the period of time not instant of time. So, that is why it is applicable or not for the perpetual inventory control systems, but it is applicable for the periodic review system.

However, moving average method requires computerized inventory operations ok. So, this is a must when you deal with say the large number of inventory items.

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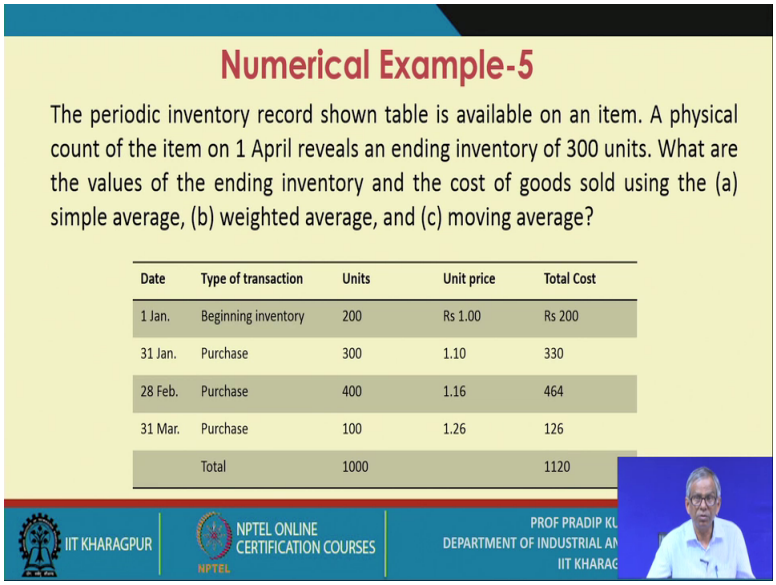

Now, you refer we are referring to one more example, the periodic inventory record shown in table is available on an item. A physical count of the item on first April reveals and again inventory of 300 unit same data, you have like you had in the previous the 2 cases. What are the values of the ending inventory and the cost of goods sold using simple average, weighted average and the moving average? So, these are the transactions you have. So, the types of transactions are mentioned, units are mentioned, unit price is mentioned, and the total cost is also mentioned in this table.

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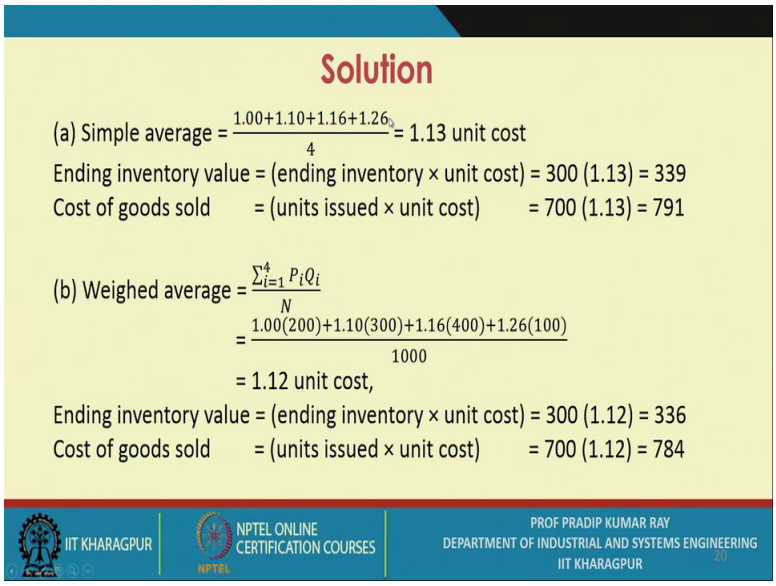

So, if you apply simple average what you try to do? You have all these 4 unit prices unit price that is 11.1 1.16 1.26. So, simple average divided by 4. So, you get an average value of 1.13 unit cost, ending inventory value inventory into unit cost 300 into 1.13, it is very simple that is 339. And, the cost of goods sold; that means, unit issued that is 700 into 1.137, 791. What is the weighted average? Weighted average actually unit price is to be weighted with the number of units, in respect of that particular unit price.

So, 1 into 200 plus 1.10 into 300 plus 1.16 into 400 and 1.26 with into 100 divided by 200 plus 300 plus 400 plus 100 that is 1000. So, this is weighted average. So, the value weighted average value is 1.12 unit cost so, what are the remaining steps are very simple, ending inventory value is 300 into 1.12 336 and the cost of goods sold is 700 into 1.12 that is 784.

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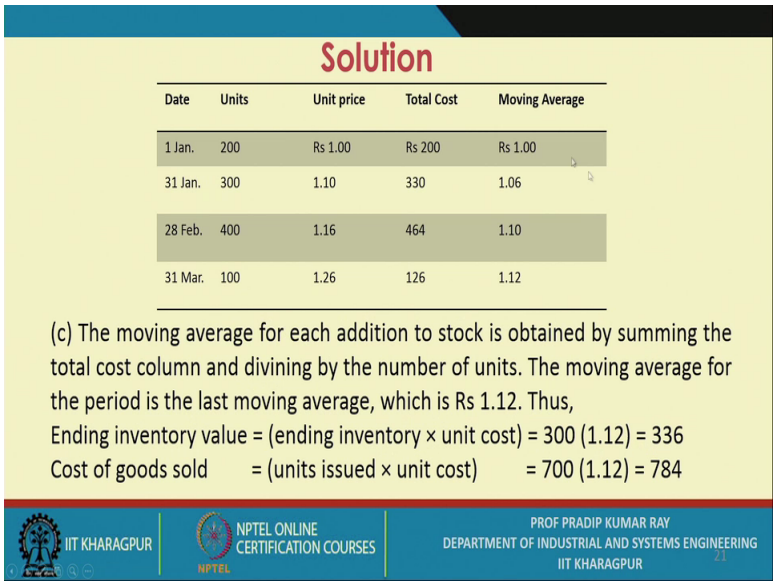

So, second this is a solution so, if you apply the moving average. So, the technique; that means, the moving average for each addition to stock is obtained by summing, the total cost column and dividing by the number of units.

The moving average for the period is the last moving average which is rupees 1.12 ok. So, this we have already calculated; that means, here the moving average this is 1 the for the next period for 1 month it is 1.1 plus 1, that is 1.06. And, this one is again you add this. So, this is 1.10 and this is one period this is 1.26. So, this becomes for this period for this month and this one is 1.12. So, the ending inventory calculate as 336 and the cost of goods sold you calculated as 784.

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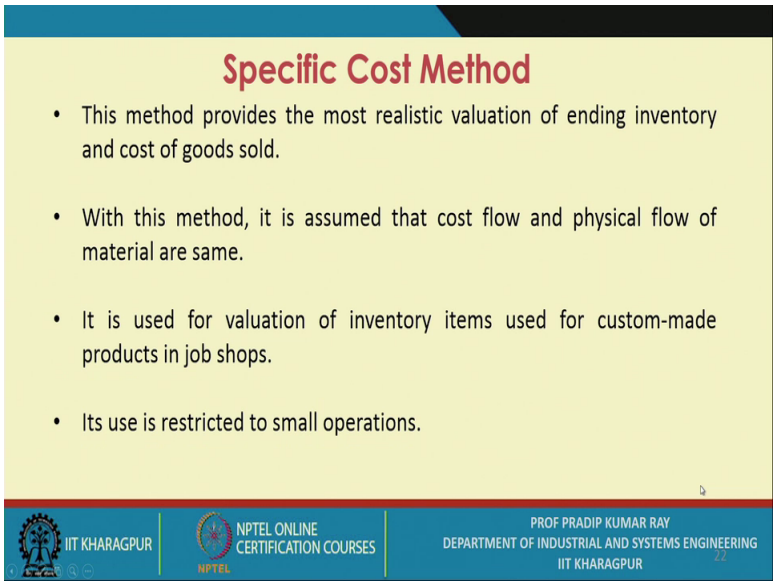

So, when you opt for the specific cost method. So, we conclude the these lectures sessions by referring to the specific cost method. Now, this method provides the most realistic say, you know realistic valuation of ending inventory and the cost of goods sold. And, with this method it is assume that the cost flow and physical flow of material are same.

So, that it should be so, if you have the data and if you know and if you analyze your systems in such a way, that a perfect system for evaluation of say the flow of materials. As well as the evolution of flow of cost of this the 2 systems are there then only you say that are that are you are following are you are using a specific cost method. So, it is used for valuation of inventory items used for custom made products in job shops, and it is use is restricted to small operations.

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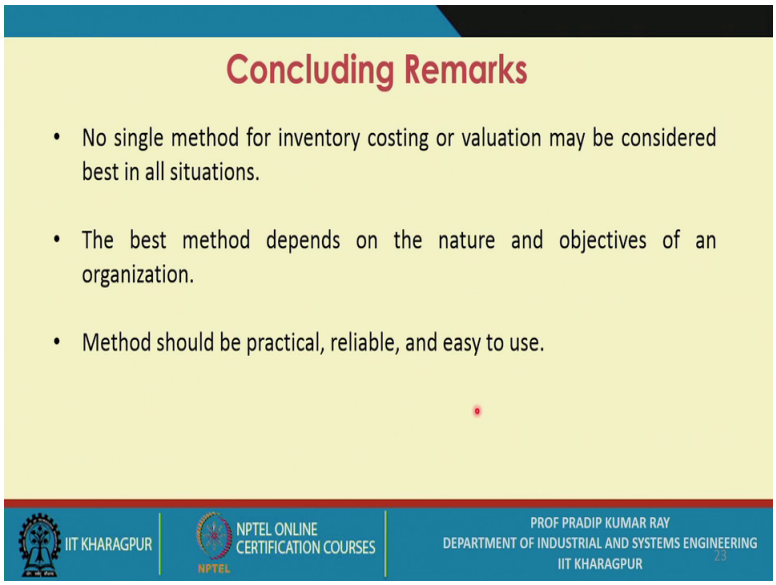

And, now what is the concluding remarks that you can make, no single method for inventory costing or valuation may be considered best in all situations, that is the one remark, you must remember. The best method depends on the nature and objectives of an organization and the method should be practical reliable and easy to use.

Now, when you compare between just one point I should highlight, that is when you compare between the FIFO and LIFO method, you might have noticed that you know the FIFO method is essentially you say conservative estimate, you will get conservative estimate. Whereas, if you apply you know say the LIFO method, this is a it may lead to over evolution; that means, there are 2 kinds of situations undervaluation or overvaluation.

So, there is a risk of undervaluation if you apply say the FIFO method, but there is also could be a risk of over evaluation overvaluation if you go for the LIFO method. Now the choice is yours if you feel that the FIFO method or say LIFO method for any method or the difference between say the flow of the materials and the flow of cost is minimum. So, you can continue with that particular method.

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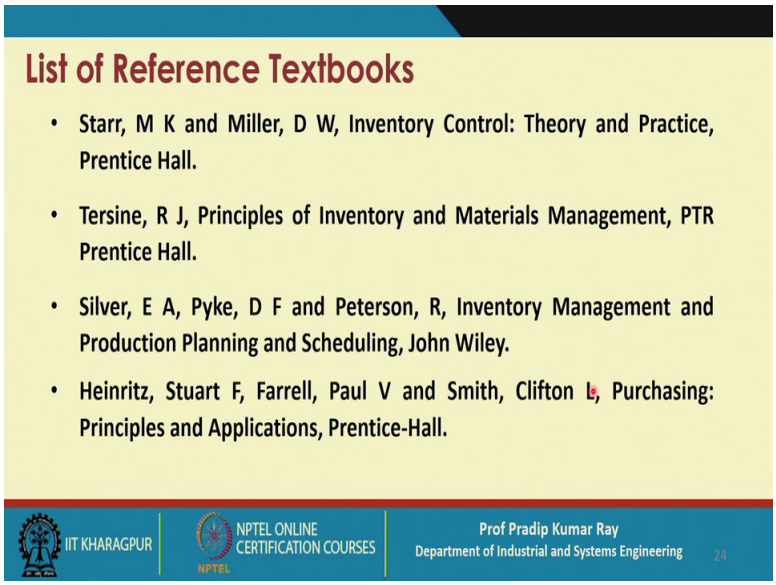

So, thank you and I conclude this particular say the topic and essentially we are referring to you know value engineering as well as the stores management. And so, the value engineering details are known to you as well as the details of the inventory valuation that is also elaborated. And, in course of time when you get when you get you know the numerical problems or the problems of the different types in the field of inventory management. So, definitely are if you like so, applying all these tools and techniques.

Thank you.