Macroeconomic Theory and Stabilization Policy
Prof. Dr. Surajit Sinha
Department of Humanities and Social Sciences
India Institute of Technology, Kanpur

Lecture – 18

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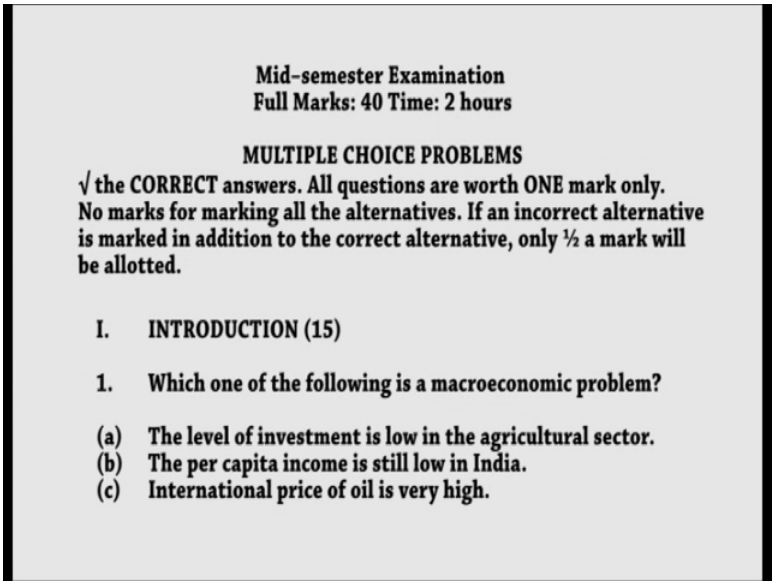

Which of the one of the following is the macroeconomic problem what was your answer a, only agriculture sector is one part of the macroeconomic b, answer is b, which one is the answer b international price of oil I want consider to macroeconomic problem it has economic consequences is one item. There of course is a kind of an important industry which has a global industry spread all over the world I do not consider to be macroeconomic problem in that sense because it concerns only one industry.

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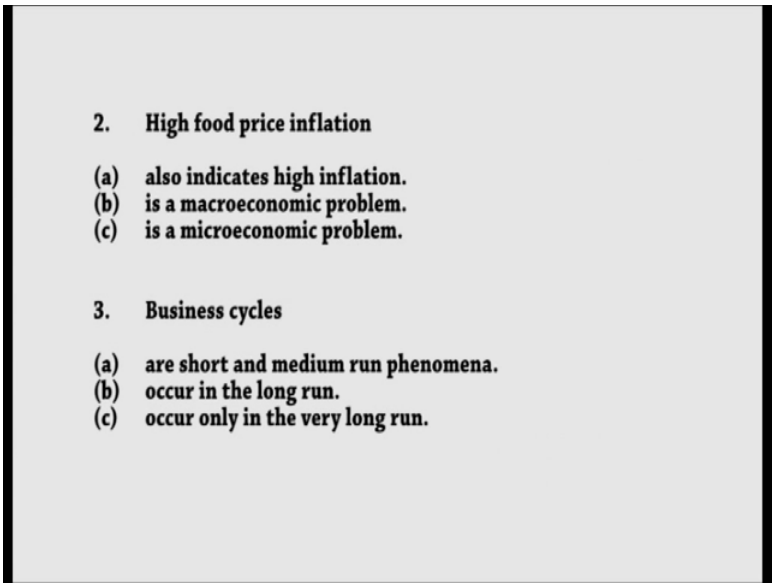

High food price inflations also indicates high inflation is a macroeconomic problem is a microeconomic problem which one did you c, all right business cycles are short and medium run phenomena which one did you write, a.

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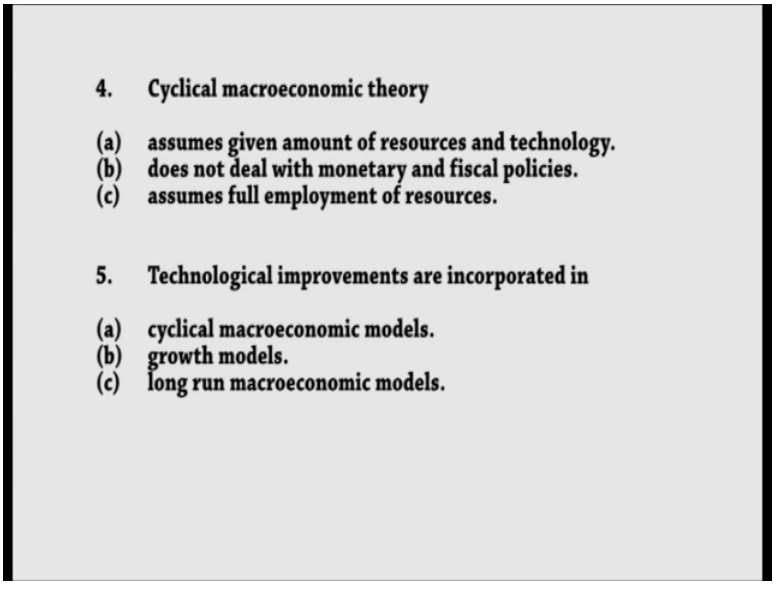

Cyclical macroeconomic theory assumes given amount of resources and technology does not deal with monetary and fiscal policies assumes full employment of resources. What do you b, a cyclical macroeconomic always deals with civilization polices fiscal or matrix policies. So, answer is a, that is why you have cyclic changes and you got to

control them all right technological improvements are in corporate in cyclic on models are both models. Long run models growth models technological improvements are usually not consider they are given technology resources are always are given is long run and short run models. They are not part of a continuous process the way it will be model on growth model problem is you have seen the growth model.

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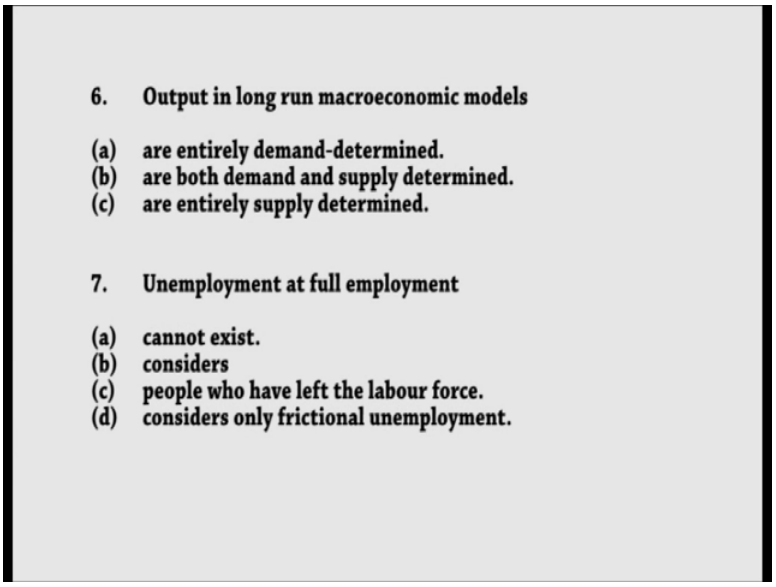

Output in long run macroeconomic model, so remember it was a long run macroeconomic economic model as a verticals axis supply curve. So, it will be entirely demand determined answer is an output in long run matrix economic models answer is a, unemployment at full employment considers only frictional unemployment.

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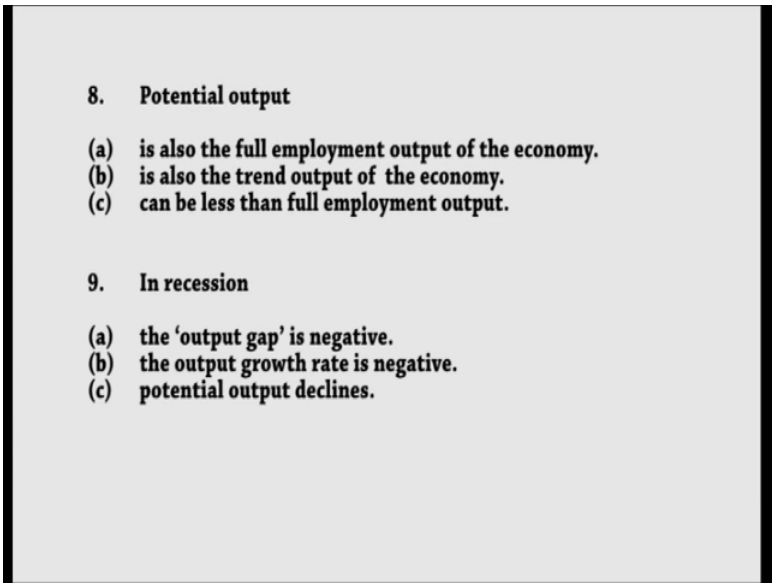

Potential output is also the full employment output of the economy a, in recession the output gap is negative true output growth put is the negative not always we have in India recession. Now, growth rate still positive around 5 percent it has come down from 9 percent we have recession, but growth still not negative all right.

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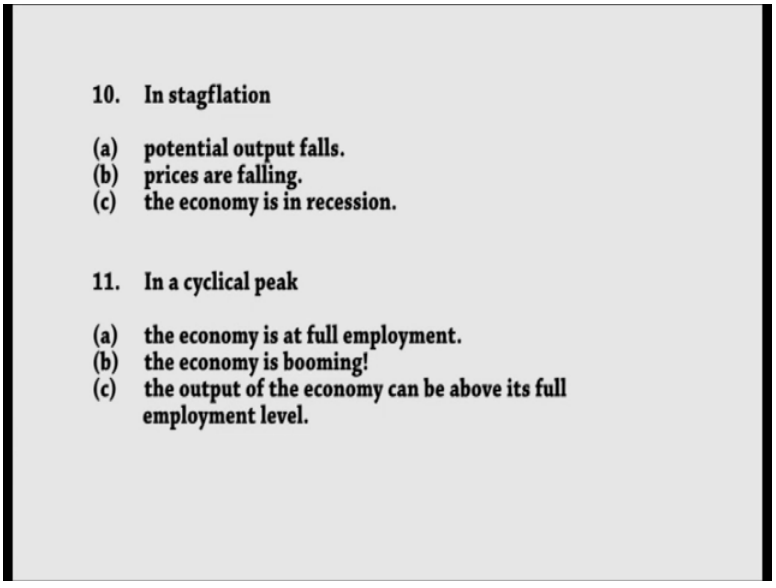

In stagflation potential output fall prices of falling economics in recession c, stagflation may economic in recession in a cyclical peak the economy is a full employment not necessarily. You can reach a shorter peak temporarily near full employment may be less

than full employment and then you come down again. So, answer is c, the output of economic can be above with full employment level in a cyclical peak over full employment the word over full employment is used there.

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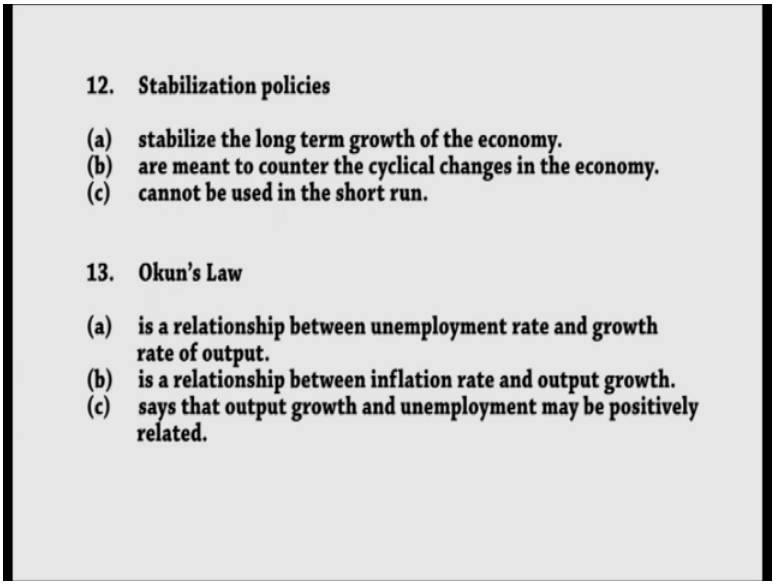

Stabilization policy is just same old question in some sense connected answer will be b, are main to counter the cyclical changes in the economy stabilizations policies Okun's law. Answer is a, is a relationship between unemployment rate and growth rate of output if you have any problem raise your hand we will stop and have a discussion.

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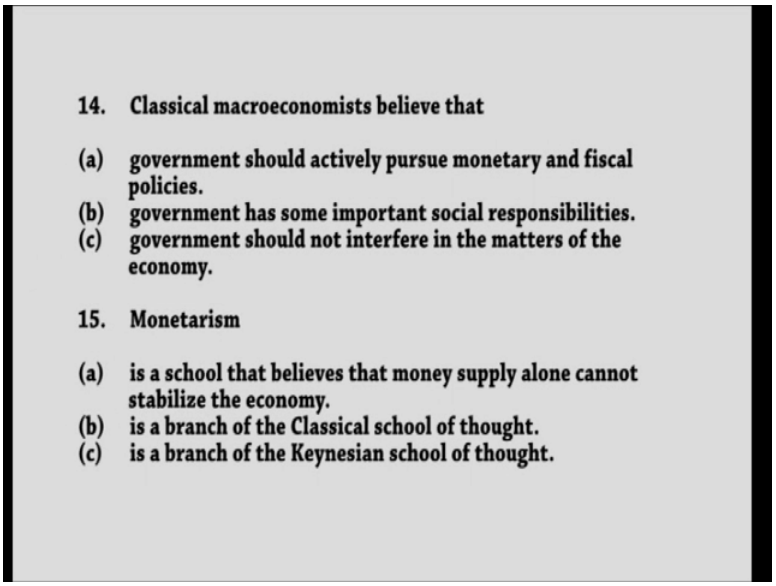

Classical macroeconomist believes that c, government should not interfere the matters of the economy monetarism is a branch of the classical school of thought.

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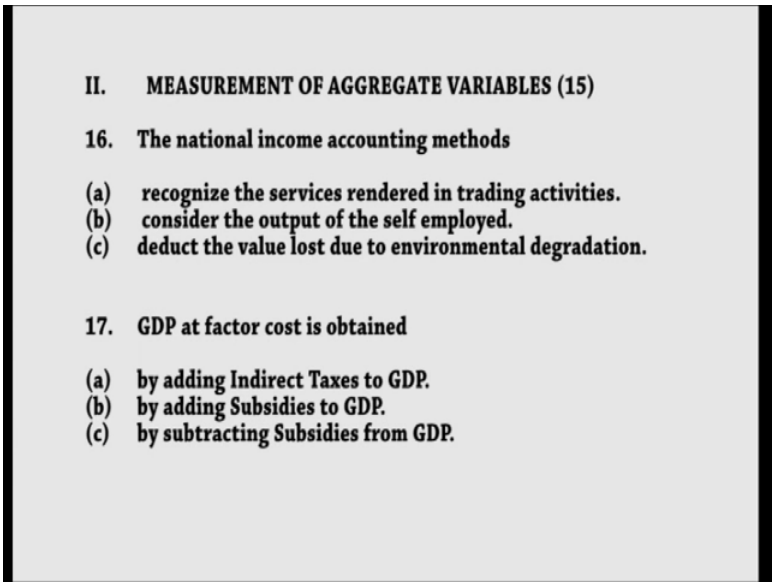

Next is topic 2, measurement of aggregate variables, the national income accounting methods recognizing the services rendered trading activities is correct. Consider the output of the self employed is not correct it ignores the output of the self employed housewives etcetera deduct the value loss due to environmental degradation that is also not true, I have not heard that some social accounting may be going on.

But, not national income accounting methods depreciation is basically depreciation of capital only which is machines tools factories buildings G D P at factor cost is obtained by adding indirect taxes to G D P. Deducting indirect tax not adding by adding subsidies is to G D P, yes subsidies are not part of G D P by subtracting subsidies from G D P is not correct, so answer is b, very good.

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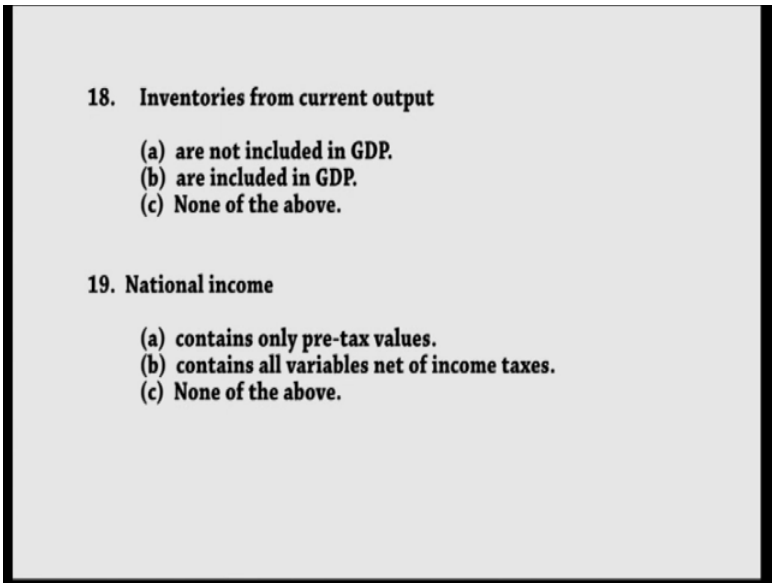

Inventories from current output are included in G D P, I told you read men que men, que as the lovely description of a baker what does with the unsollowed wheat or bread or whatever he considers them. The part of current output in future when he sells it he does not add sells value to his income basically what he does the consider that sold to self. If I have something produce which I cannot sell in accounting sense I show the amount as I have got it myself but actually I produce that I did not really buy it. But, in future I will sell it off national income contains only pre tax values, absolutely correct I told you repeat at the national income contains only pre tax values number 19, national income does not contain any variable after tax deduction all gross numbers.

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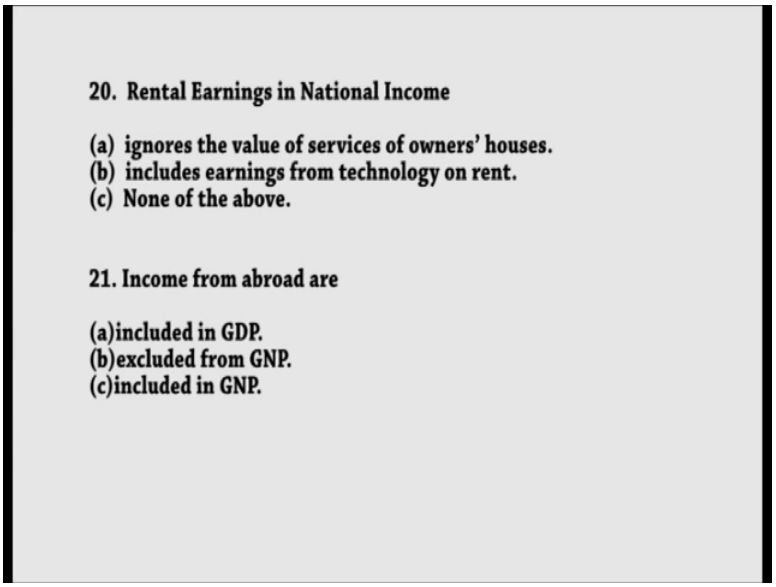

Rental earnings in national income includes earnings from technology on rent rental earnings is just not house rent only the few more items which are included under the income group called rent. Suppose you develop a technology tomorrow then you rented to a company earn it will come under earning rental earning according to national income conventions of practices. But, then every individual country will have a way to calculate them and group them that is also true what Indian statistician doing not be exactly what the American statistician would do with the same item.

They have the freedom to do whatever they want to do, so often for inter country comparison what we do, we go to and international body like I am a world bank or united nation development program U N D P to look for data because their data is based on one set of definition. Then they go every country and then they collected and compile them and therefore, comparison is possible. But, if you simply take American data, Chinese data, south Korean data, Indian data and then convert that into and international currency like dollar through an exchange to enhance.

Now, I am comparing them that is very incorrect because these numbers these countries have been computed using very different methods and this is theory. So, theory says one and the countries practice them differently, all right income from abroad area included in G D P excluded from G N P included in G N P of course they are part of G N P, income from aboard then you get from you travel from G D P to G N P.

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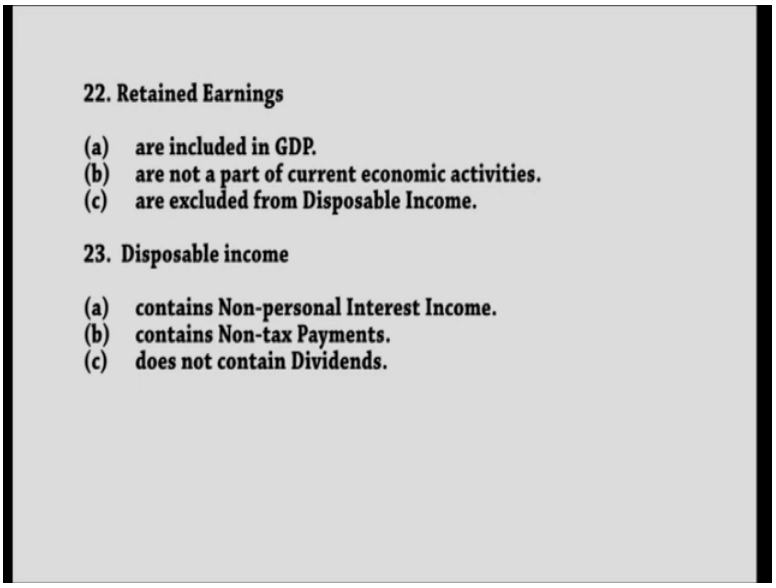

Retained earnings are included in G D P of course they are part of corporate profits are not part of current economics activities incorrect and c are excluded from disposable become income. Incorrect disposable income only excludes corporate profit taxes retain earnings and dividends both are part of disposable income disposable income contains no personal interesting income, absolutely correct. Non personal interest income is deducted in personally disposable income or personally income is not there, but under disposable income non personal interest income is there. The area where most people lost marks was national income accounting methods when you get back the exam paper you will see, here is the place where you have lost marks 23, answer is a.

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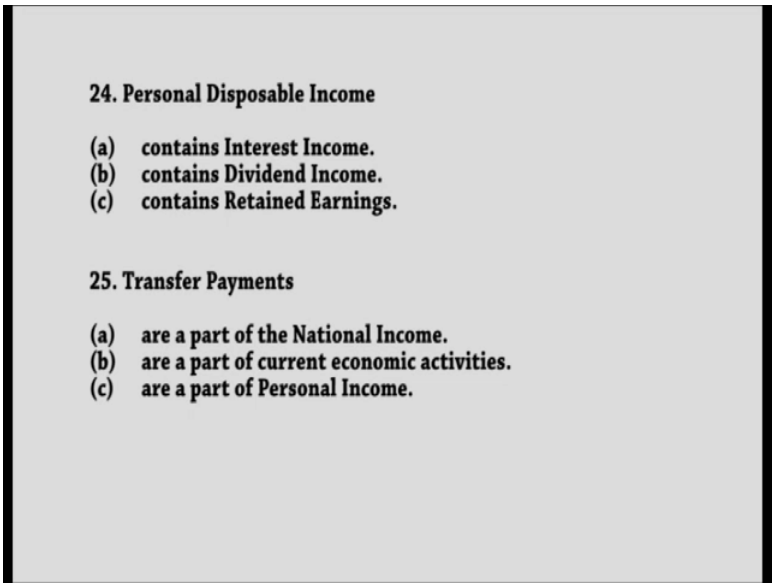

Personal disposable income contains interest income is incorrect, now because the non personal interested income is not there in personal income. Personal disposable income contains dividend income is absolutely correct because what you do for personal income you deduct corporate profits then add back only dividends. So, you live out corporate profit tax retain earnings everything transfer payments are a part of national income not true they become part of personal income or disposable income.

But, transfer payments are a part of past economic activities the savings I made they will aligned with somebody government. Then after determine government hand over to me in the form of monthly cheque or whatever government transfer payments pension for instance in other country you many have other transform payments. You have unemployment insurance well fare payments also those things we do not have them, so transfer payments are part of national income is incorrect part of current economy activities incorrect part of personal income. Yes, definitely a retired person has a personal income and his income is transform payments often.

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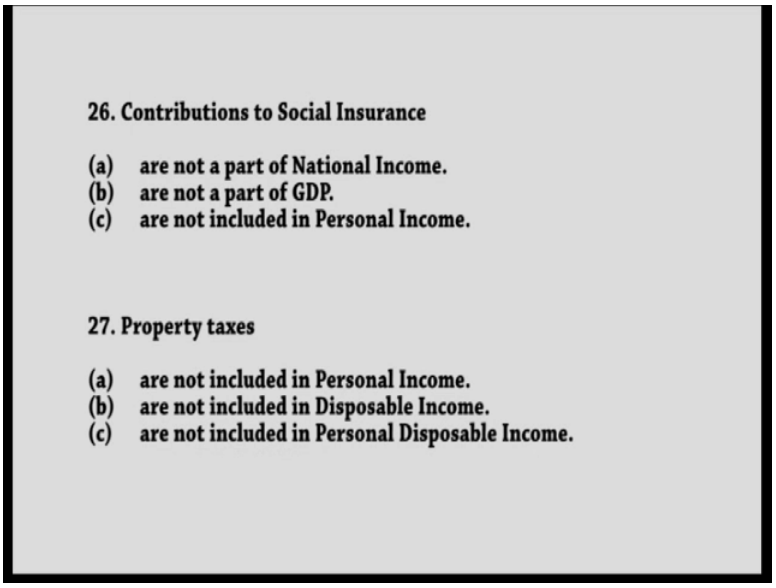

26, contribution social insurance is when you active working are not a part of national income while contribution insurance are differently part of national income because out of my total income I contribute to unemployment insurance provident funds. Whatever are not part of G D P are not of included in personal income, yes to included personal income have to deduct contribution to social insurance correct. So, the answer is 26, c if anybody having any problem raise your hand I will stop anybody is that deprecation part clear deprecation relax to capital, so it is called c, c a capital consumption aliens.

Did you see the 9 the national income environmental degradation can be show many things starting with human life to national natural vegetation quality of land anything. It can be partly man made degradation man created it can be nature created national income raise to the total output basically is very selfish.

It does not care with the environment has been destroy or not in the parts looking it you creating something take the mining sector classic example moning sector output is part of I I P, let me give you this example. Now, watch T V when they show my times and there is load of news halla bolla on T V in government's circles etcetera what illegal mining there is a illegal mining in Rajasthan. There illegal mining in Madhya Pradesh, there is illegal mining going on in Karnataka one minister is jail even a B J P minister still in jail and I heard of theft a lot because I grew of west Bengal.

Where there is a west Bengal, Bihar has lot of a coal reserves and theft I heard so many times forget about theft now when mining is going on you have to remove the top. So, all the vegetation gone top soil gone environment is degrading of course, but what you show in as part of national income I I P what is the total mine output, no minus at just it for losses are there if they had done that. They would done a different thing a very good thing long time back they never do that still do not do that problem social income in practices may have developed the details I do not have where they may be doing it that you say this is the positive amount.

But, also to create the positive and negatives are there value are negatives deduct get a net value only not the gross value or output, they were showing the other day Brazil, Brazil has famous thing called rain forest. Then they took aerial view the rain forest suddenly there is a scar from the top at a height its look likes a white batch brown batch and forest gone completely again a huge they cut out taking the locks sold it off. Now, they find is lot of iron ore which is also happening in India a illegal mining lot is going on in the iron ore areas Karnataka illegal mining is primarily in iron ore various space.

Various things in Karnataka is in iron ore, in Rajasthan something else etcetera [fl] contribution to and then pollutions of industry pollutant destroying the river locals waters supply. You know that stuff nothing is accounted in G N P they only show how much you have produce and income earn is very selfish is very not its very in proper [fl]property taxes are essentially these taxes that you pay on earning a flat. Earning a house have been a land municipality taxes etcetera are not included in personal income while in personal income property tax etcetera are not counted are not include for this.

Disposable income are not included, in personal disposable income property taxes that deducted only in case of dispose income not in case of personal disposable, sorry yes not in case of personal disposable income. But, in case of disposable income if you open personal disposable income after contribution to social insurance has been deducted when you arrived the personal income then you deduct two types of taxes and the non tax payments no direct taxes are deducted other than this. Besides, this no direct tax are deducted, no direct taxes are deducted in case of personal disposable income in case of disposable income you will see long less stalk direct taxes etcetera.

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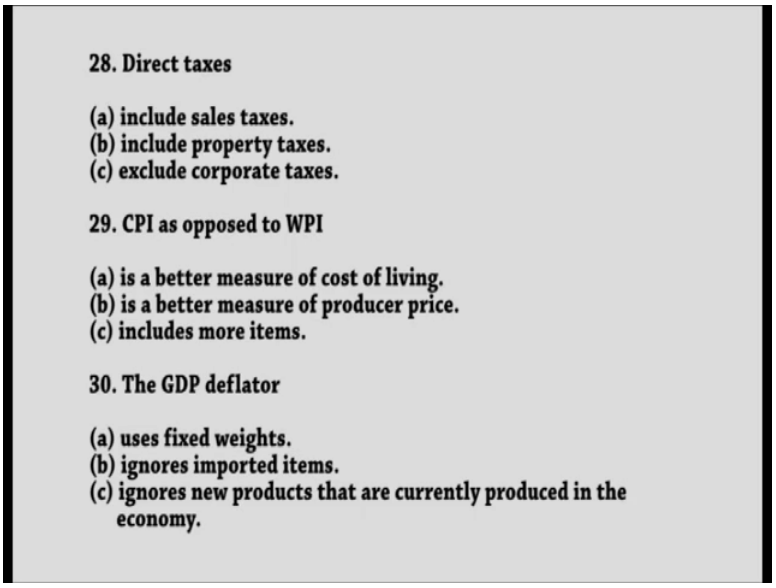

Now, direct taxes number 28 direct taxes includes sales tax property taxes corporate tax exclude corporate taxes what are the direct taxes simple definitional question what is the direct tax sales tax, what are direct tax sells tax part of indirect tax. You do not pay directly the taxes tax you pay to the seller that is why the seller is the biggest cheat in India because the seller does handle over the tax ability government.

They do not even ask taxes from us even if they do the collect they do not hand over then corporate tax is a part of direct taxes is any income taxes part of income taxes property taxes are part of direct taxes state duty direct taxes. Then many other direct taxes custom taxes duties is paid that when you go abroad come abroad from abroad with goods the duties is you pay at the airport and the port are all part of direct taxes C P I as opposed to W P I. So, the answer was include property taxes b, answer was b for 28 answer was b 29 C P I as oppose to W P I is a better method cost of living or is a better measure to produce price or includes more items which one a not c, a C P I includes lesser items.

Number of items that W P I have been telling you because C P I includes only a typical consumers basket of consumptions and W P I takes in accounts industrial raw material semi finish goods a bundle of wheat even energy fuel etcetera alright is it clear. The G D P deflator uses fixed weights ignore imported items ignores new products that are current produced in the economy b, ignore imported items b.

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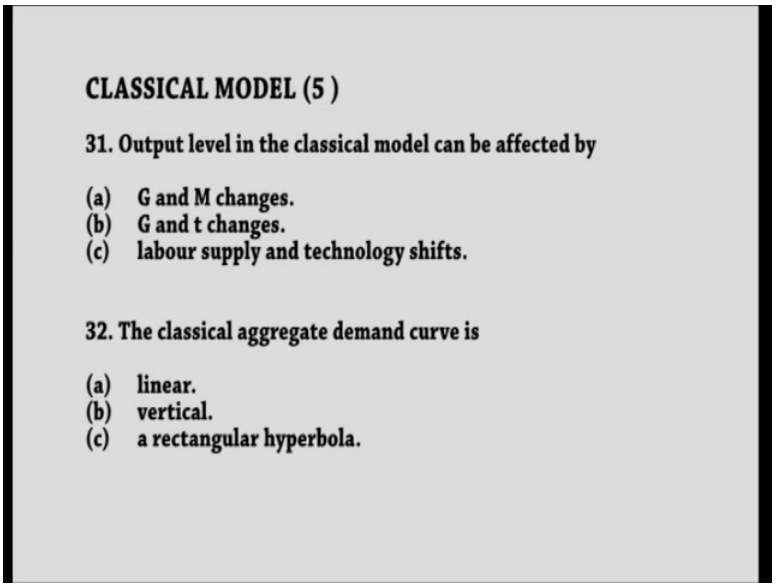

Now, let us go to classical model output level in the classical model can be affected by G and M changes there is no level in classical model M only effects nominal variables classical determine output is determined in the labor market with the production function supply side. So, answer will be c, if labor supply changes or technology shifts output can be effected no G and M changes, G and t changes these are possibilities is a keynesians model d Y d g, d Y d t, d Y d m I have done classical models.

These possibilities do not exist that is what I have thought some of you know at least I know not all of you I can see some people with the big frown looking at me and looking at the screen classical model may answer c [FL]. Some of you know alright 32, the classical aggregate demand curve is a rectangular hyperbola I told you coming from the money market equation straight forward question straight from your notes.

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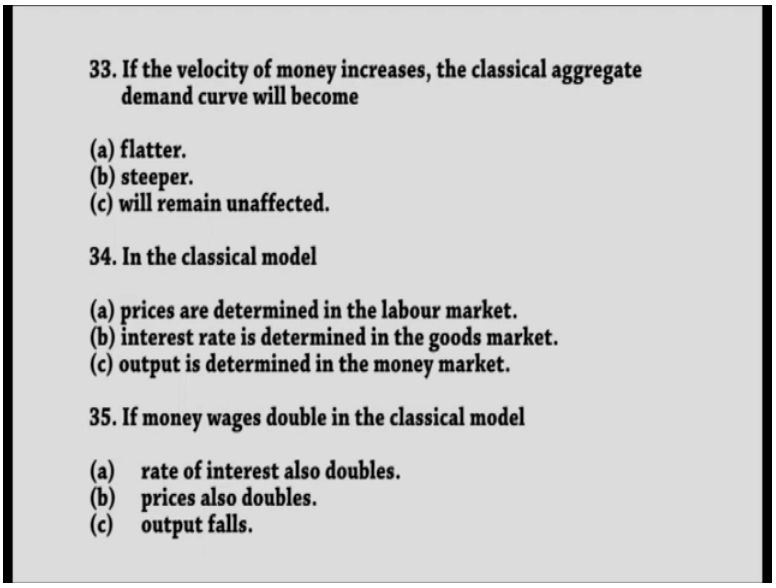

Velocity money increases the demand curve will be if you get the slope of demand curve it is very clear if you get flatter answer is a velocity increases or in correct call them either matter flatter [FL] d P d Y from the money market equation. Find out what happens to the velocity m v is equal to p y you bring p down there d p d Y [FL] is 1 over m v p square [FL] 1 over m v p square very simple v is in the denominated.

So, flatter 34 in the classical model prices are determine in the labor market interested is determine in the good market output is determine in the money market which one is correct very good, b very good 35. If money which is double in the classical model rate of interest also doubles prices are also doubles output is also doubles prices doubles question error [FL] any way. So, real wages are constant in the classical models labor demand labor supply interacts W over P get the value it cannot change when price is change.

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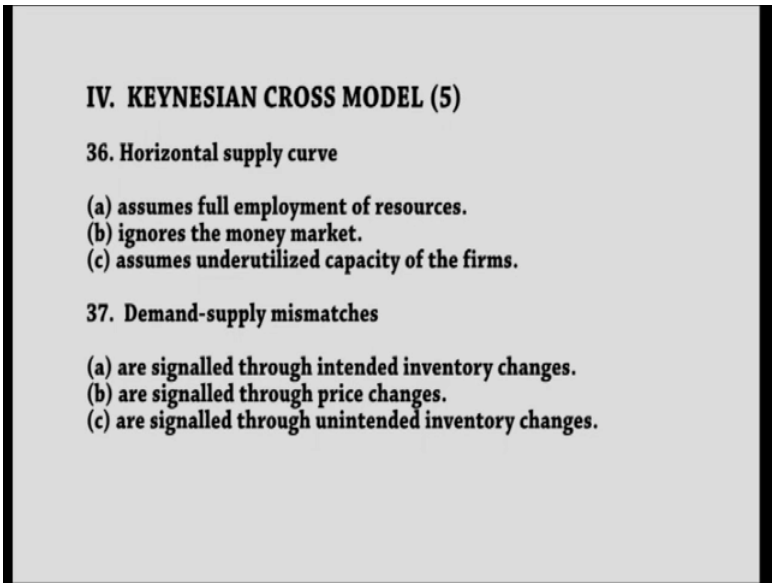

Keynesians cross model horizontal supply curve assume full employment of resources ignores the money market what nonsense supply curve and money marks has no relationship. You may have said what nonsense sir has given as alternative assume underutilize capacity of the firms that is correct horizontal supply curve c, demand supply miss matches. Demand supply miss matches are signal through intended in inventory changes through prices changes in the keynesians models are signal through unintended inventory changes answer c, very good.

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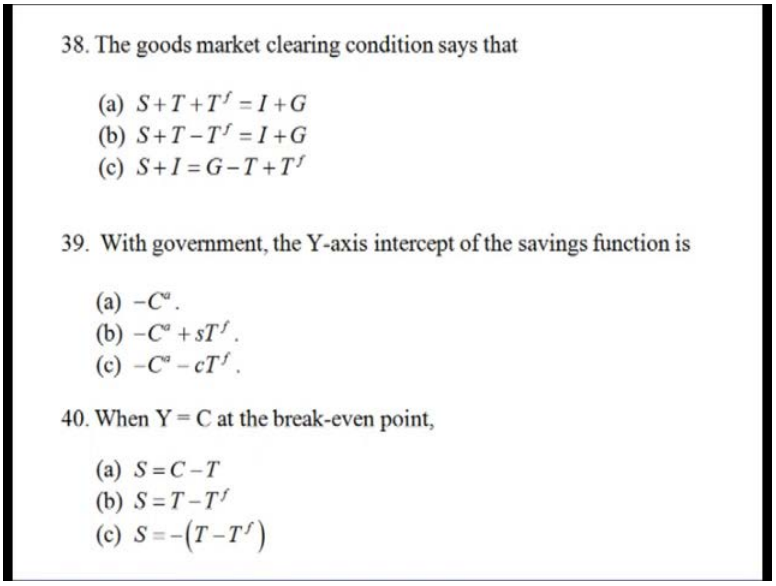

The goods marks here come condition is right away in front of you b, 39 with government the y axis intercept of the savings function b [FL] answer is b answer is b. Now, this is define breakeven point y is equal to C that is our define breakable point, so answer [FL] c, S is equal to minus T minus f, so saving C if taxes amount transfer decisions negatives savings there at breaking point.

So, what my point is what I am going to do now is topic 8 supply side model it is a high breed model look how economist and so called researchers often try to come up with some different result. How they manipulate models you have seen the classical model you have seen the insulin model you have seen the complete Keynesian models, now look at this kinds of supplies models.

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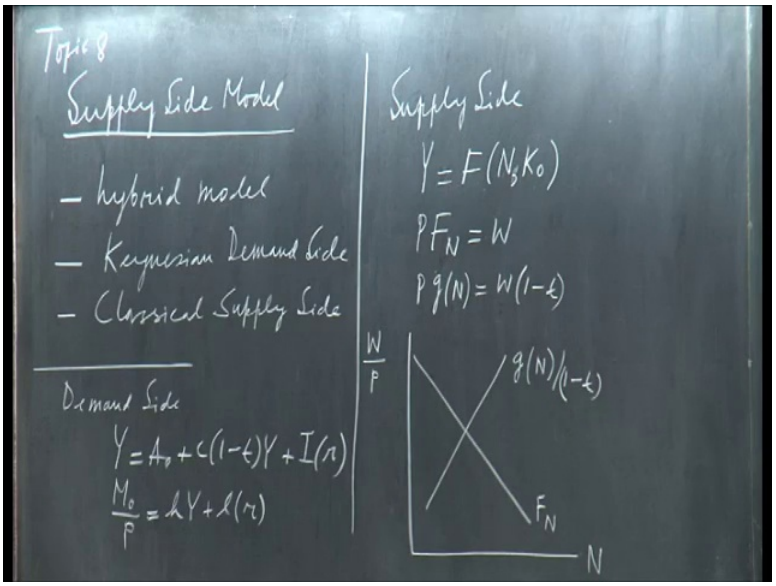

This topic, I forgotten topic 8 or what it is an example of supply side models topic 8, topic 8 a short discussions is a high hybrid models, but it gives an interesting result it has the Keynesians demand. This kind of thing began with the monitories mostly in the 70, 60 is the Keynesians demands side and it has a classical supply sides, so how it will look like. Therefore, on the demand side you have y equations on the demand side you have the highest equation on the supply side you have the very similar classical supply sides except one small change I will make to already. What you know I could tax in the labor supply function by saying the labor supply the number of house they work the look at net weighted they get net weighted not the gross weighted.

So, I do not look at IIT, what they give me 50,000 rupees per month, but I look at 50,000 rupees minus taxes and this kind of tax in the labor supply function the one you have written there. Labor supply function often they said this is the kind of pay roll tax that a language they use a pay roll tax is kind of a contribution that a labor has to make it if they have to work towards insurance etcetera. Pay roll tax, unemployment insurance welfare payments I do not know whatever other insurances all, so the income that I get is net of that tax.

So, roughly you have a labor supply function with the tax but the classical labor supply function no fix wage, no money reduction piece there in the labor supply function labor demand as before and you have a production function. Now, the thing is I shall model I need draw that you have seen isolate model how they are drawn, but the labor market is very interesting are if you draw the labor market is this clear this algebra is clear, all of you know this stuff. Now, by now you know this stuff, so the labor market is very interesting, now in the labor market what you have the labor demand function is F N.

But, what is the labor supply function W P goes it is g N over 1 minus t g N over 1 minus t g N over 1 minus t [FL] because W over P is the variables again which will draws g N divided by 1 minus t is equal W P F N is equal to W over P w over p is the variables real wages variables. So, now tax curve is there what will happen if there is the tax curve what will happen as t falls one minus t increases, so g N over 1 minus t falls, so this line will be shifting out this more labor supply as t falls they will more supply of labor.

What will happen in the economy look at it the employment in the economy will change the employment will change from N naught to N 1. The real wages call that omega will change from omega naught to omega 1 where omega is equal to W over P employment will change. Now, given a production imagine production function and the 45 degree line what is happening to the aggregate supply function which is vertical in the classical model we will shift to the right. So, the diagonal supply function if you draw here aggregate supply function Y and P which was a vertical line will now shift to the right and will become another vertical line.

So, aggregate supply function will shift S naught to S 1 and therefore output will increase from Y naught to Y 1 will not if employment increases, imagine the production function more output is produce with the higher employment. So, the diagonal supply

function shift vertical line which shift to the right, any difficult with this any difficulty. If taxes are cut see if the labor supplier function as the tax rate involves the way of redness if taxes are cut as a physical policy in economy the aggregate supply function. The aggregate supply output will shift to the right employment will increase all right in an isolane diagram they are, therefore if you have the complete model here.

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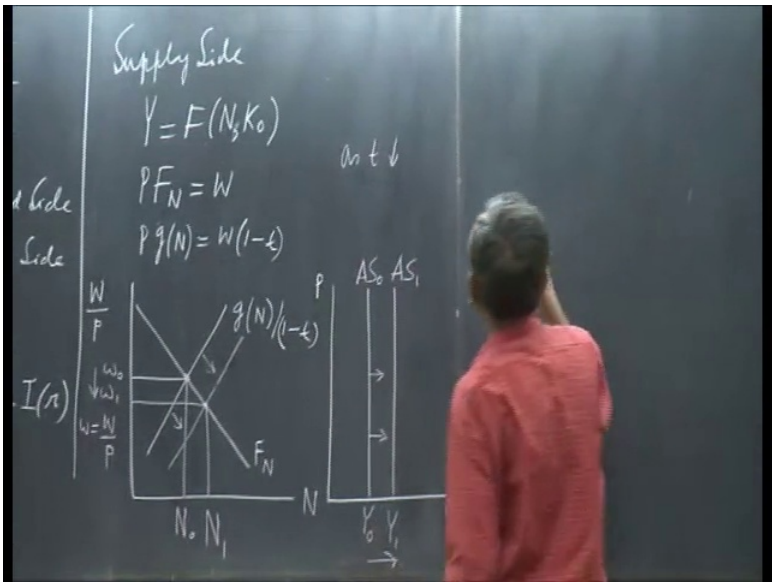

The complete model, then what you find is the following I have a 2 part I need a 2 part diagram, now this is the original situation you have classical supply sides. The Keynesians demand sides isolane the Keynesians demand function only determines the prices, the supply sides determines the output is a very funny model. You solve the model is this you go to the supply side N and the N and Y and W over P are solved then when you come to the demand side if Y is you come to the first equation.

You put in the value of Y you get the r and you take the r value and Y value in this equation you get the P value from the quantic theorem money I can kind over quantic theorem of money market equation. You get the P value it has cursive system the classical system is the recorded system you get the value of N and Y given all the parameter values and W over P is also solved 3 equation three unknown solved where come.

Here, put the value of y this equation as r which solves r then you go and take the r value on the Y value put here you get the value of P any problem all of you understood how to

solve the system. So, the demand I solve surprises and rate of interest and on the supply side you get the real wage employment and output solve this is the supply vertical, this is the supply determine model classical model, now if taxes are cut what is happening is this.

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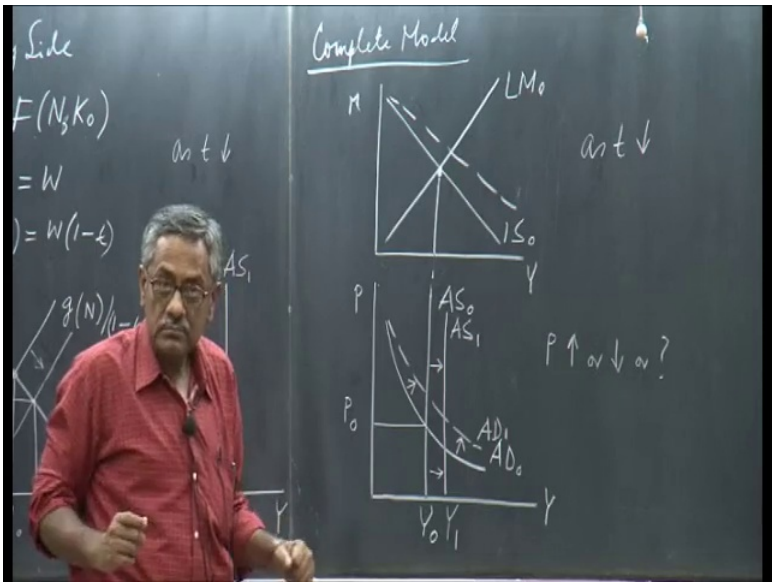

If taxes are cut then the I S curve becomes slater, I hope I am correct this I am confusions about the rectangular hyperbole is becomes slater of steeper when what did I say when velocity increases the some discussions going on it is undissolved. But, in this case if taxes are cut as ice curve become slater you agree with me or not if you look at the slope of ice curve if taxes are cut what is the slope of the ice curves 1 minus 1 t into 1 minis t over I R. So, if t is cut 1 minus t goes up C into 1 minus t increases, so 1 minus that solves, so the ice curves becomes slater, so ice becomes slater the demand curve if you open if you know this the slope of the demand curve then demand curve also become slater.

It becomes 1 as t falls I shifts like this demands shift and in the labor market is taxes are cut labor supply shifts, so aggregate supply also shifts and the aggregate supply function also shifts to S 1. So, output in the economy increases from tax curve diagonal supply also shifts the age gate demands shifts all right, but did you see problem here about prices wither it will go up or go down when both the curve shift diagrammatically. We

do not know whether prices increase or decrease or what because since both the curve shift if demand where there agree supply price would form the intersecting point is here.

If supply does not shift demand only shifts prices will go up you know that, but when both shifts in the same direction we do not know what the price is going to be effect on price is we do not know diagrammatically speaking. So, in order to find the what this effect on prices we have go through the algebra then only we would know what is affect on prices because diagrammatically is not clear. Output increases and in the labor market real wages fall in this market initial rate of interest increases. But, L M shifts back towards the price increase then it will increase further the balance is right ward how much it shifts we do not know so this are answer rate of interest also because here depending on how much price change L M will also shift which we do not know.

There is also answered with respect rate of interest now the question is how can we you can ask the question how we can know what is the effect on prices on this curve shall we attempt the little bit of algebra computation here on the board so that the job is done. So, for that will you allow me erase the diagrammatic explanation let me erase this part, so our objective is to find out d p d t, dy is positive you know we want to find d p d t, now in order to find d p d t you can see what is happening.

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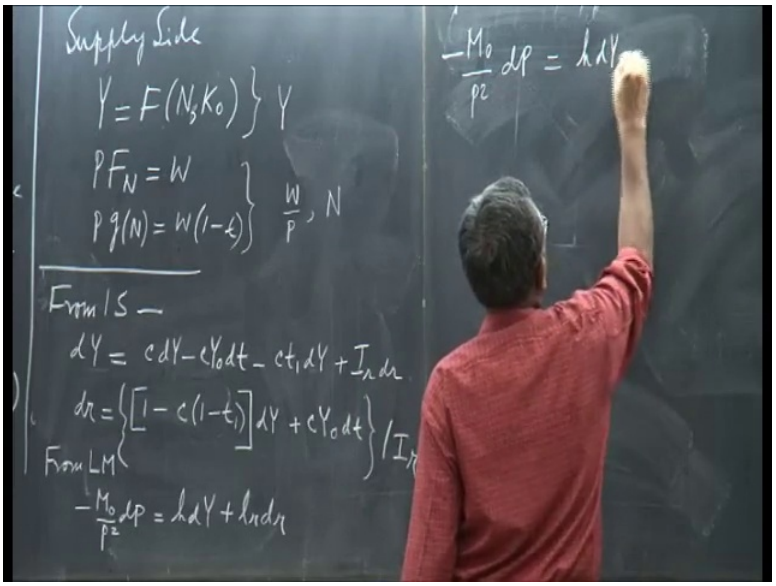

This equation, these two equations will give you the value of W over P and N this equation will give you the value of Y 1 minus one comes these equations. This equations

gives you value of r and this equation gives you the value of P, so let us get d s come here substitute here and d t change and all that. So, from I S we have the following d Y d g will be equal to 0 and [FL] I am not interested only t variable, so d Y is equal to C d Y minus C Y naught d t minus C equilibrium mute x ray.

You remember that model we are doing x t 1 d Y plus I r d r, so how much is d r, d r is d Y, d Y, d Y, so it will be d r is equal to 1 minus C into 1 minus C into how much is this C bracketed 1 minus t 1 d Y. You have this term taken to the right no this is the exogenous term yeah we can take to the right plus C Y naught d t this whole thing divided by this whole thing divided by I r this whole thing divided by I r 1 minus t into 1 minus t Y d Y the C Y naught d t whole thing divided by I r S P. You know I r d r put the d r, here after totally differentiating setting from L M, M naught is constant, so M naught over P square d p thought over P square d p is equal to h d Y plus l r d r and d r value this one can be substituted.

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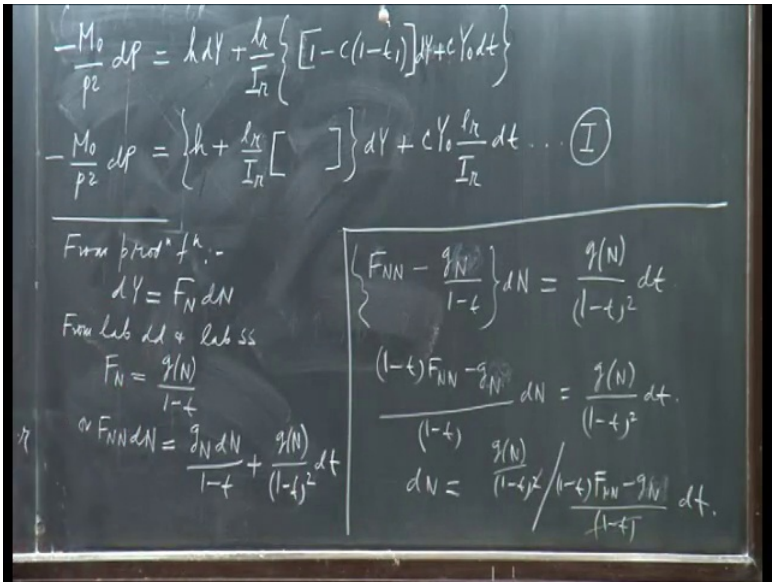

So, you have minus M naught over P square d P is equal to h d Y plus what will be l r over I r into 1 minus C into 1 minus t 1 plus C y naught d t am I correct [FL] d Y is missing, here d Y is missing. Now, you have another d Y here, so it will be it will become therefore h plus l r over I r this bracketed term the whole thing plus d Y plus C Y naught l r over I r d, of course this is alright, minus M naught over P square d P. Now, leave this as one part, now come to the production function this part, so from the

production function what you have d Y is equal t F N d n from labor demand and labor supply what you have is W over P W over P can be equated.

So, you will have F N is equal to g N divided by 1 minus t, W over P, W over P eliminated from this three equations or F N, N d N is equal to g subscript N d N divided by 1 minus t plus 1 minus t square and it will be plus t. So, g N over 1 minus t square d t, am I correct 1 minus t equal t with respect t if you differential it will g N over 1 minus t square into d t and that minus sign, minus sign will cancel out become plus. Now, I can group the N functions group the n's, so it will be it will be F N, N minus g N divided by 1 minus t into d N is equal to g N over 1 minus t square d t all right. So, this will be 1 minus t F N, N minus g N divided by 1 minus t into d N is equal to g N over 1 minus t square d t.

Therefore, d N is equal to this number g N over 1 minus t square the whole thing divided by this 1 minus t F N, N minus g N divided by 1 minus t d t 1 minus t and 1 minus t will cancel out. So, 1 will go and 1 will go here all right which one this one this one here g subscripted very good this is correct and this will be g subscript M, so d N is this d N can be substituted into the production function.

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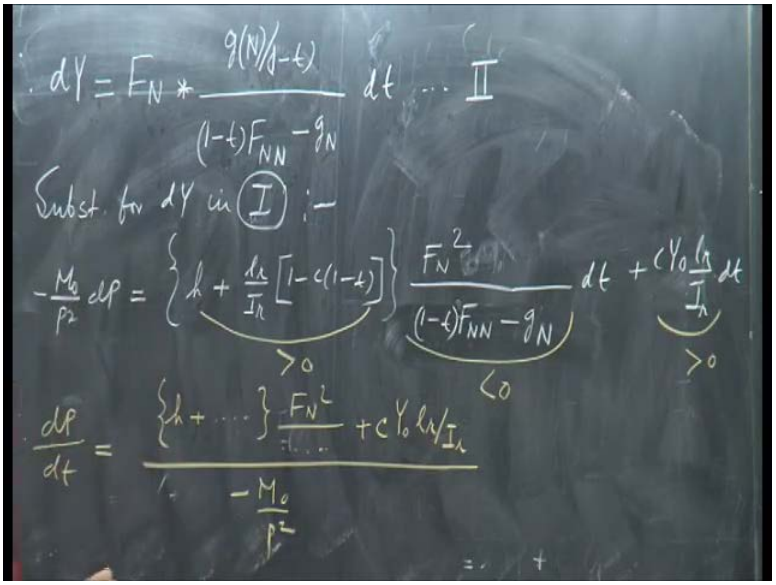

So, d Y becomes therefore d Y is equal to F N into a bundle of terms which is g N over 1 minus t this divided by 1 minus t F N, N minus g subscript N divided by 1 minus t is gone into d t this is d Y. So, call this number 2, now in number 2 we have d P we have a

bundle of d Y terms, so all we need to do is to substitute that d Y value here. So, what you have is substitute for d Y in 1 what you have you have minus M naught over P square d P is equal to h plus l r over I r [FL] which is how much 1 minus C into 1 minus t that is all in the bracket all right. Now, this whole thing is d Y, so this whole thing is multiplied by this which is F N, g N divided by 1 minus t, so you can take the 1 minus t downstairs.

So, which is make you pardon make you pardon g on over 1 minus t is F N, so you can put it F N square, fine put F N square because F N is equal to g N over 1 minus t, so this is F N square and divided by 1 minus t into this whole thing. So, it will be 1 minus t square F N, N minus g subscript N into 1 minus t, am I correct [FL] which one has been taken, absolutely right. So, it will remain as it is one minus t F N, N minus g N great, but this is the d Y term and after this you have to write after this. You have to write d t all thing is multiplied with the d t and there is d t there C Y naught over I r d t plus C Y naught l r over I r d t, now look one thing this entire d t term.

Let us see if we can sign it the coefficients of d t, h positive I r over N l r over I r positive this is positive F N square is positive F N, N is the negative minus g, g N is positive, so minus g N is negative. So, this term is negative C Y naught is positive l r over I r is positive, so what you see here is h plus l r over I r this term positive this term negative plus a positive.

Therefore, d P over d t which is h plus this term into F N square over all this terms plus C Y naught l r over I r the whole thing divided by minus M naught P square a coefficients with the d p, since one term is negative this term can be negative will be negative. So, this first term is negative second term is positive now let me get another chalk to make it more colorful this is precisely the problem which you saw in the diagram.

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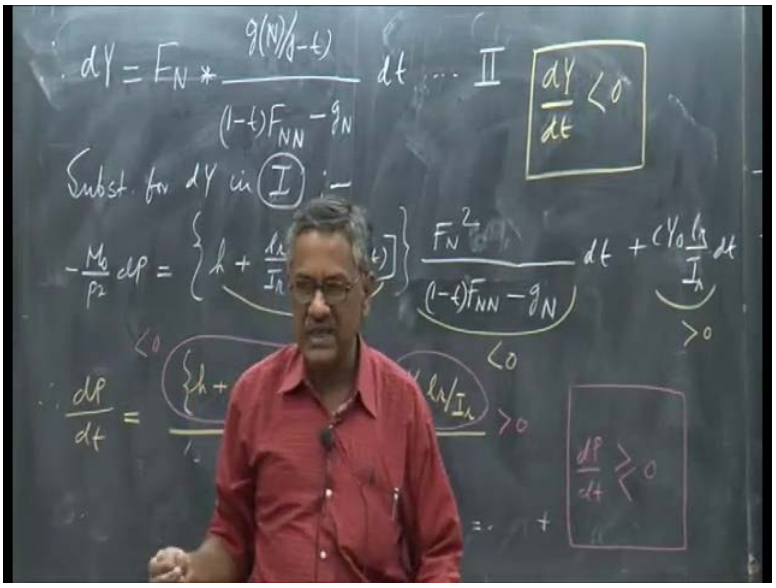

The problem is this is less than 0, this is greater than 0 and this thing less than 0, so less than 0 greater than 0 we do not numerator which is stronger this is coming from the demand function directly this is the combination of demand and supply [FL]. This is demand function negative, so if the numerator this dominates then negative, negative means positive d P d t is you need directional if taxes are cut prices will found. So, the demand curve is shift more than supply curve in the price will fall otherwise if this is negative this is positive.

The positive term dominates and the negative term you are positive in the numerator negative already in the denominator it becomes less than 0 which means if taxes are cut price may go up. So, the effect on price this is the conclusion which I told you diagrammatically that d P d t can be greater than or less than 0. But, d Y d t, d Y d t however d Y d t always less than 0 that means if taxes are cut output increases the best one we do not know, so I used an experimental model which is like a research paper written.

Once upon a time a hybrid model which are the monitory staff it doing a lot keynesians type demand function, but there are in classical supply function and then it is get complicated this is known as supply side. So, this is very classical tradition if you have classical supply is a very classical model, so what they are trying to say if you know pay attention in recessions and particularly in saturation in tease. The western world was

using a policy which even Obama was trying to do and before Obama, Bush president, Bush was also trying to do and this are known as how about boosting the economy and controlling inflation through tax cut.

They talk about tax cuts lot if you get attention you would hear that essentially they have this kind of policy if tax are cut demands gets a boost. But, the supply also gets boost all right, so output increases from both directions and then you have of course the prices. But, whether prices will come down or not you do not know because the effect in a static model is that we have found that effect on cut on price is uncertain the pink box [FL] unfortunately I wasted half a day today. So, what, but I want to show you how, now you can move with this models combine them like in the chemistry lab [FL], so economist were doing it supply side supply curve keynesians side demand curves join [FL].

Now, let us talk about tax cut policy this very popular style, but now in U S tax cut policy is not working, not working much, not very effective and I guess the Obama expected that it will work. As the way work during the nineteen eighties because nineteen eighties tax cut were huge, now Obama cannot have a huge tax cut anymore because tax over the quite low it is not working. So, it also depends upon the issue like where taxes are at the moment and therefore, how much tax you can have and to boost economy.