निर्माण प्रबंधन (Construction Management) के सिद्धांत

[Nirman prabandhan (Construction Management) ke Siddhant]

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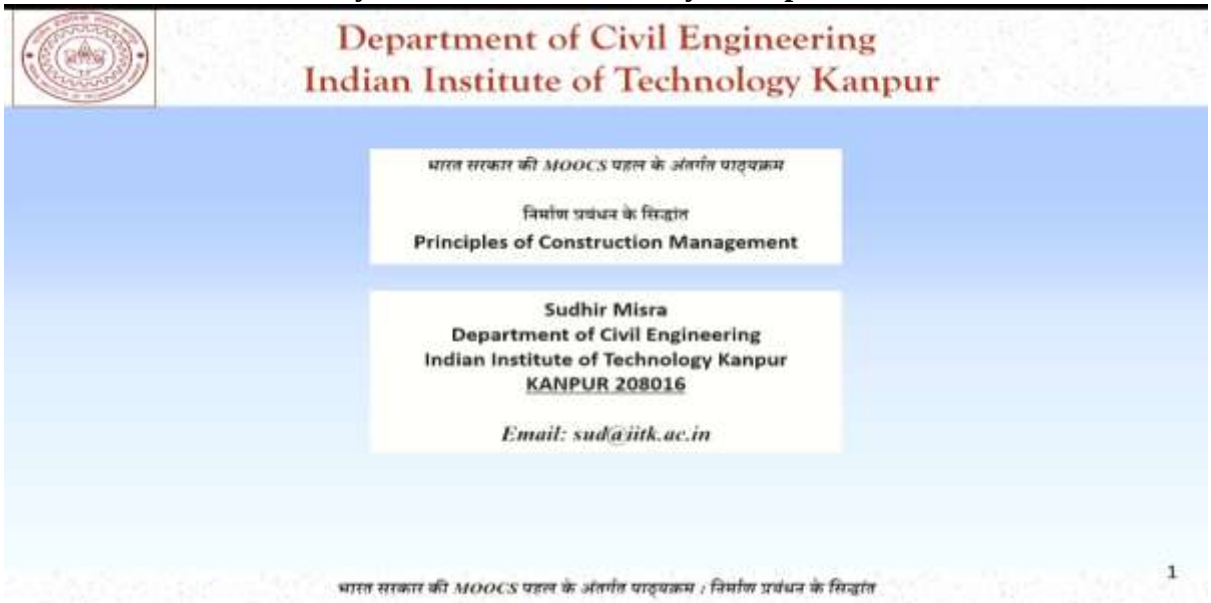
Lecture– 11

Samay ke saath dhan ke mooly mein parivartan



Namaskaar aur aapaka svaagat hai Bhaarat sarakaar kee MOOCS pahal ke antargat paathyakram Nirmaan Prabandhan ke Siddhaant mein.

(Reference Time 00:21)

Aur is lecture 11 mein. Aaj hamaara dhyaan kendrit rahega samay ke saath dhan ke mooly mein parivartan yaniki time value of money.

(Reference Time 00:38)

Yaad dila den ki paathyakram ke module jisamen ki ham charcha kar rahe hain vah yahaan par dikhae gae hain.

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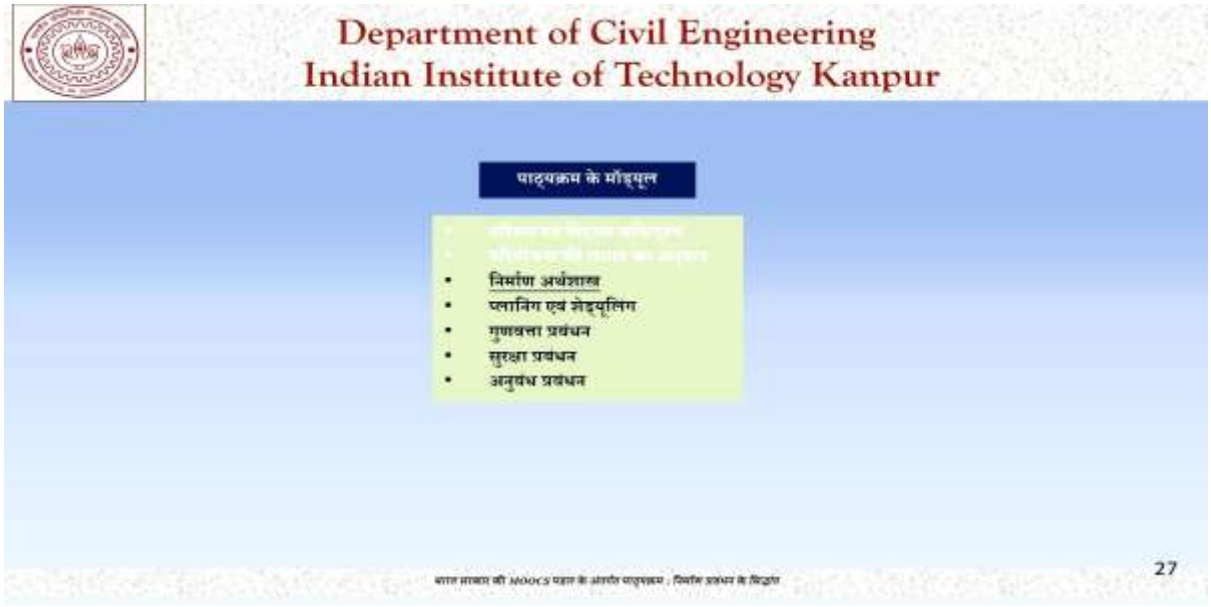

Aur aaj ham ek nae module nirmaan arthashaastr arthaat construction economics kee charcha shuroo karenge.

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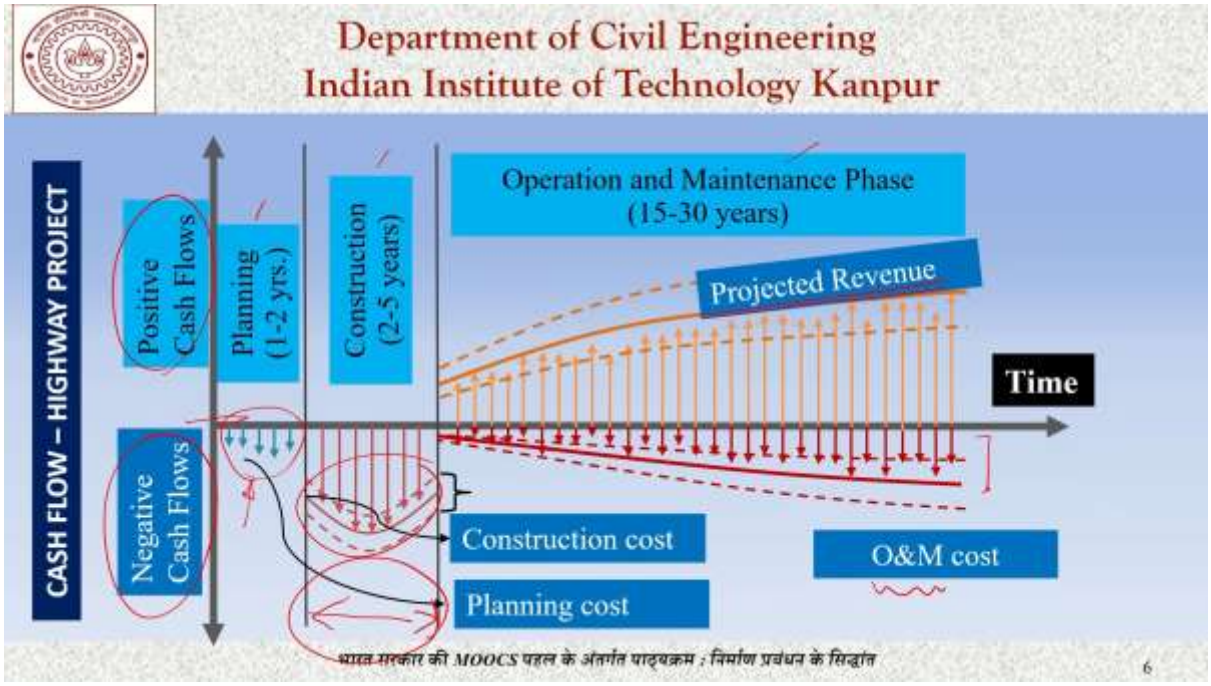


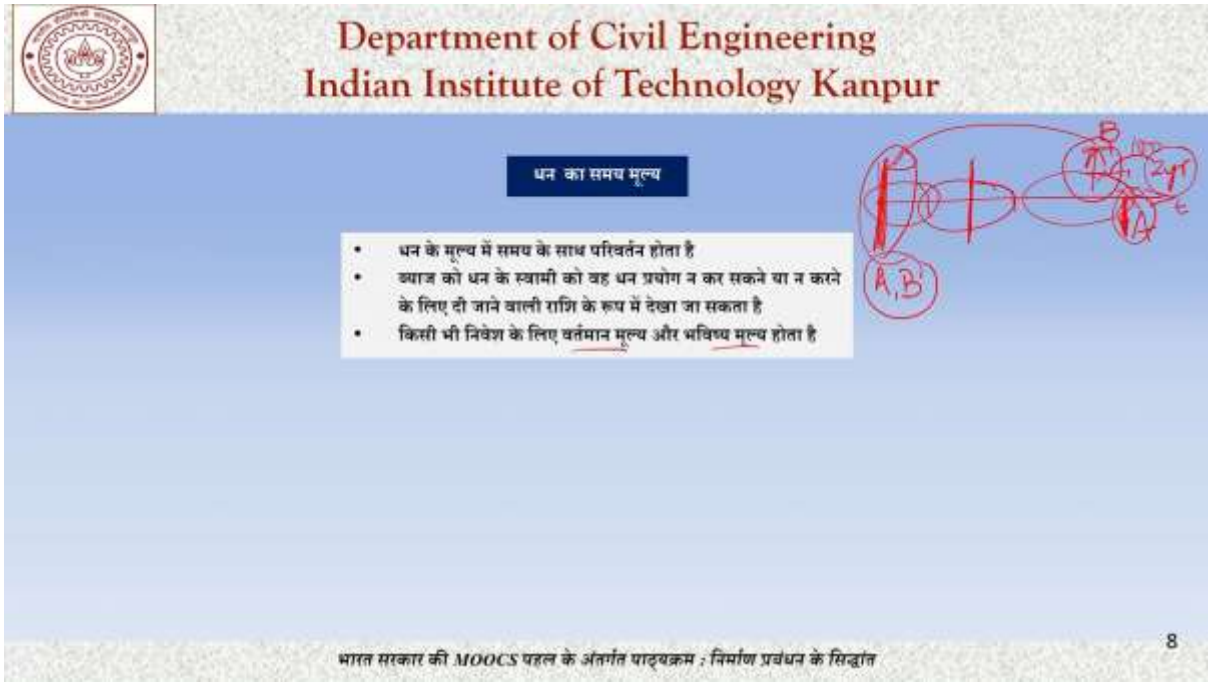
To aaiye sabase pahale dekhate hain ki kisee bhee pariyojana ke vibhinn charanon mein kis prakaar se kaish flow hota hai, nakadee ka flow pravaah kis tareeke se hota hai. Pahale to yah samajh len ki is access ke neeche hamane plot kiya hai negative cash flow arthaat vyay. Positive cash flow oopar plot kiya gaya hai vo revenue. Ab agar ham vibhinn charanon kee baat karen to sabase pahale planning hotee hai, phir construction hota hai aur antatah operation and maintenance phase jo ki 15 saal, 20 saal, 25 saal bahut lamba samay hota hai. Construction amooman 2 se 4-5 saalon mein samaapt ho jaata hai planning mein jitana bhee samay lage vah lagega. Agar ham laagat ke hisaab se dekhen to planning karate samay arthaat kisee bhee pariyojana kee yojana banaate samay bhee kuchh na kuchh laagat aatee hai, kuchh na kuchh vyay hota hai. Vah vyay yahaan darshaaya gaya hai. Isee prakaar nirmaan kaary ke dauraan bhee vah hoga, chaahe vah concrete mein ho, chaahe vah locomotive khareedane mein ho, chaahe vah power supply installing karane mein ho kisee prakaar se bhee ho ek vyay involved hai, to yah to hoga vyay. Usake baad jab ham operation maintenance phase mein jaate hain to hamaara revenue shuroo ho jaata hai hamen us pariyojana se kuchh milana shuroo ho jaata hai, returns aane lagate hain aur yah return samay ke saath badh sakate hain nahin bhee badh sakate hain. Lekin operation maintenance phase ke dauraan bhee vyay hota hai usako ham kahate hain operation and maintenance cost. Is poore chitr ko dhyaan mein rakhate hue hee ham yah tay karate hain ki kya yah pariyojana aarthik drshti se tarkasangat hai, isako karana chaahie ki nahin karana chaahie aur yah decision making economic view point (arthashaastr ke drshtikon) se jab karate hain to usamen jin tools kee jin baaton kee jaanakaaree kee aavashyakata hamen hotee hai un par ham aaj charcha shuroo karenge. Hamane pahale bhee kaha hai ki is poore paathyakram mein moolat: hamaara dhyaan nirmaan phase mein hee kendrit rahega lekin yah chitr aapako ek total picture dene ke lie lagaaya gaya hai.

(Reference Time 03:14)

To aage badhate hain aur dekhate hain ki nivesh ya pariyojana ka mooly nimn par nirbhar karata hai. Jo value hai vah kin baaton par nirbhar karatee hai. Pariyojana se apekshit nakadee pravaah (maatra evan samay) ka vishleshan arthaat jo hamane maatra maanee ki is samay hamen itana return hoga, itana hamaara kharcha hoga usakee maatra kya hai aur vah samay kee access par kab hoga isaka vishleshan aur saath-saath nakadee pravaah ke har bhaag se judee anishchitata. Yah bhee tay baat hai ki ham yah tay nahin kar sakate hain ki hamen itana revenue to milega hee. Agar ham highway project kee baat karen to usamen kitana traffic hai, kitana toll hai in donon baaton par nirbhar karega hamaara vahaan ka revenue. Na hamaare bus mein traffic hai, toll hamaare paas mein thoda bahut hai ki ham nishchit kar sakate hain ki hamaara toll 100 rupaye hoga ki 150 rupe hoga lekin traffic par control bahut kam hai vishesh roop se agar ham baat kar rahe hain 10 saal baad ya 15 saal baad kya hoga to usamen ek anishchitata hotee hai. Nirmaan kaary ke dauraan bhee vibhinn kaaryon ko execute karate samay ek anishchitata banee rahatee hai. Steel ka daam, cement ka daam, majadoor kee salary yah sab varies kar sakatee hai (badal sakatee hai) aur unako dhyaan mein rakhana hee anishchitata ko dhyaan mein rakhana hota hai. Risk Management - Risk Management is baat ka ek subject hai jis par ki study hotee hai lekin ham Risk Management mein is course mein philahaal nahin jaenge. Ham yah maanenge ki jo value ya jo aankada ham lete hain vah sthir hai, usamen anishchitata nahin hai. Rakharakhaav kee badhatee laagat ko dhyaan mein rakhate hue nivesh vikalpon ka moolyaankan praarambhik nivesh ke alaava pariyojana kee sampoorn jeevan chakr laagat ke aadhaar par kiya jaana chaahie arthaat maatr yah kahana ki is pariyojana ko poora karane ke lie 40 crore rupe lagenge ya 50 crore rupe lagenge yah nahin balki is pariyojana ke poore jeevan kaal mein arthaat service life mein usakee life cycle cost kya hogee is baat ke aadhaar par hamen moolyaankan karana chaahie aur iseelie aapako vah poora chitr ek baar dikhaaya gaya tha. Jab niveshak nivesh laagat se adhik kamaata hai, to mooly ka nirmaan hota hai. Arthaat agar hamane 100 crore rupe lagaakar ek pariyojana pooree kee lekin usake returns 110 crore rupe kee value ke aae to yah munaapha ka sauda hua. Isaka matalab hua mooly ka nirmaan hua value create huee us pariyojana se aur pariyojana ka chayan aisa hona chaahie ki pariyojana se na keval mooly ka nirmaan ho balki isase saamaan anishchitata vaalee kisee bhee any pariyojana kee tulana mein adhik mooly ka nirmaan ho. Agar hamaare paas vibhinn vikalp hain to un vikalpon mein adhik mooly ka nirmaan jisamen ho raha hai vah nivesh mein chunana chaahie. Yah sab baaten bhaarat mein

pichhale 25 se 30 saalon mein bahut mahatvapoorn ho gaee hai kyonki tamaam pariyojanaon mein se sarakaar is baat ko encouraging kar rahee hai, is baat ko protsaahan de rahee hai ki vibhinn private niveshak pariyojanaon mein nivesh karen. To pariyojanaon mein nivesh karane ka kya arth hua? Nirmaan prakriya mein bhee vo laagat lagaenge jabaki pahale jo bade project hote the pariyojanaen hotee thee usamen sarakaar hee laagat lagaatee thee, sarakaar paisa lagaatee thee aur isalie usamen cost benefit analysis ek any tareeke se kee jaatee thee lekin jab niveshak paisa lagaata hai usamen apana investe karata hai to in sab baaton ko dhyaan mein rakhana aavashyak ho jaata hai.

(Reference Time 07:20)



Aage badhate hain, dhan ka samay mooly arthaat time value of money jo ki hamaare aaj ke lecture ka pramukh focus hai. Isaka arth kya hai? Dhan ka mooly samay ke saath parivartit hota rahata hai arthaat aaj jo 100 rupaye hamaare paas hain kal usakee value kya 100 rupaye hogee. Saadhaaran bhaasha mein agar samajhane kee koshish karen to ham jab bank mein 100 rupaye rakhate hain aur bank hamako 5 percent ya 7 percent jo bhee byaaj deta hai to vo 100 rupaye 107 rupaye, 108 rupaye ho jaata hai lekin kya 1 saal baad us 108 rupe kee ya 110 rupe kee value aaj ke 100 rupaye se adhik hai ya nahin hai, usakee value badal jaatee hai agar ham kahen inflation (mudraaspheeti). Mudraaspheeti se usakee value kam ho rahee hai byaaj dar se usakee maatra badh rahee hai to in baaton ko dhyaan mein rakhana in baaton ko dhyaan mein rakhate hue nirnay karana yah hamaare nirmaan arthashaastr kee paravyoo mein aata hai isee par ham log charcha karenge. Aakhir byaaj kya hai? Byaaj ko ham dhan ke svaamee ko vah dhan prayog na kar sakane ya na karane ke lie dee jaane vaalee raashi ke roop mein dekh sakate hain. Jab bank kahata hai ki aap 100 rupaye hamaare paas rakh deejie, ham aapako 5 rupaye denge. To vah 5 rupaye hue byaaj lekin jo aapaka dhan hai vah 100 rupaye vah aap us avadhi mein prayog nahin kar sakate hain. To usaka ek prakaar se compensation (muaavaja) vah hai byaaj.

Kisee bhee nivesh ke lie vartamaan mooly aur bhavishy mooly hota hai, vartamaan mooly aur bhavishy mooly kya hai? Hamane dekha ki jab ham time access par cash flow diagram banaate hain ya chitr banaate hain to yah kaee varshon tak chalane vaala chitr hota hai planning ka phase hai, nirmaan ka phase hai, operation maintenance ka phase hai to isamen samay ke saath hone vaalee dhan kee value ka parivartan ignore nahin kiya ja sakata hai

usako dhyaan mein rakhana hee hoga. To is baat ko dhyaan mein rakhane ke lie ya is baat ko dhyaan mein rakhate hue agar ham yahaan par hone vaale vyay ya yahaan par hone vaalee aay ka moolyaankan karana chaahate hain, hamen kya karana hoga? Hamako is maatra ko vartamaan chaahe vo yahaan par ho, chaahe vo yahaan par ho jo bhee vartamaan time ham lete hain vartamaan samay lete hain yahaan par usakee value kya hai yah jaanana aavashyak hota hai aur yah value ka parivartan kaise nikaalenge usake liye hamen pata hona chaahiye byaaj dar. Ham kya byaaj dar maan ke chalate hain ham 5 percent maanate hain, 10 percent maanate hain jo bhee maanate hain lekin agar hamen byaaj dar pata hai to ham ye tay kar sakate hain ki yahaan par jo 100 rupaye hai usakee aaj kee value kya hogee. Ab jis tareeke se maine banaaya hai to yahaan par ye A aur ye B to A samay mein aage hai. Maan leejiye ye 2 varsh ka samay hai to ye aap sochiye ki kya A kee vartamaan value aur B kee vartamaan value inamen se kaun see value adhik hogee? Yah prashn main aapake lie chhod raha hoon.
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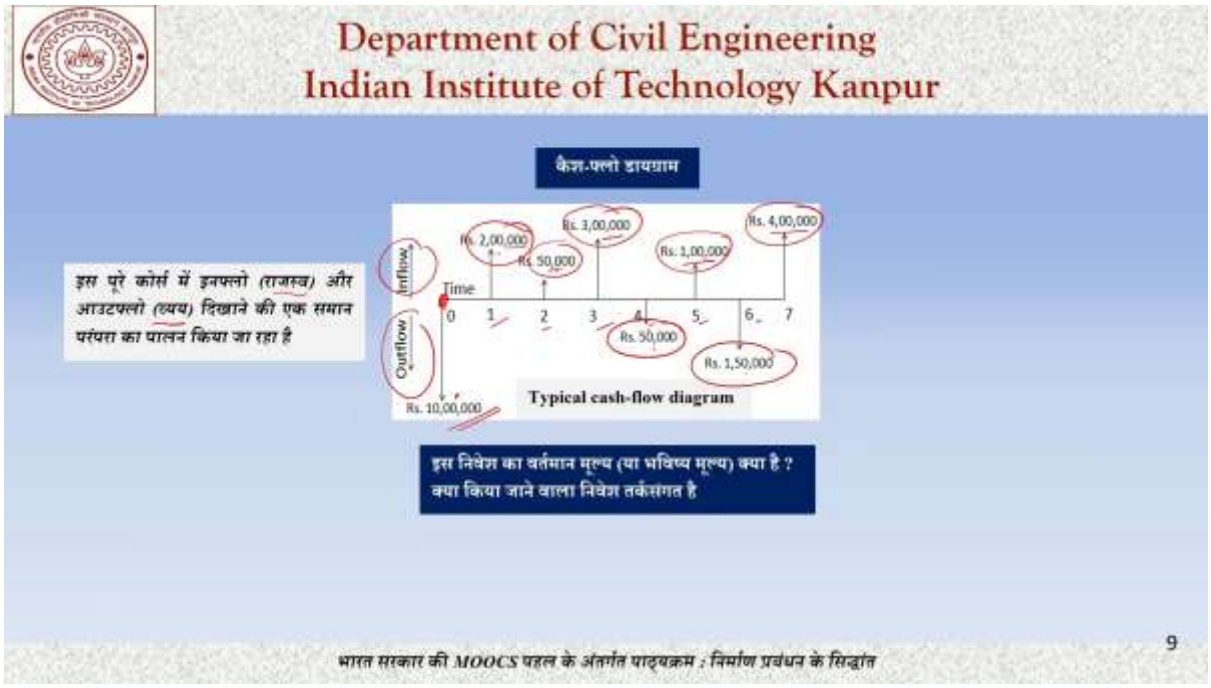
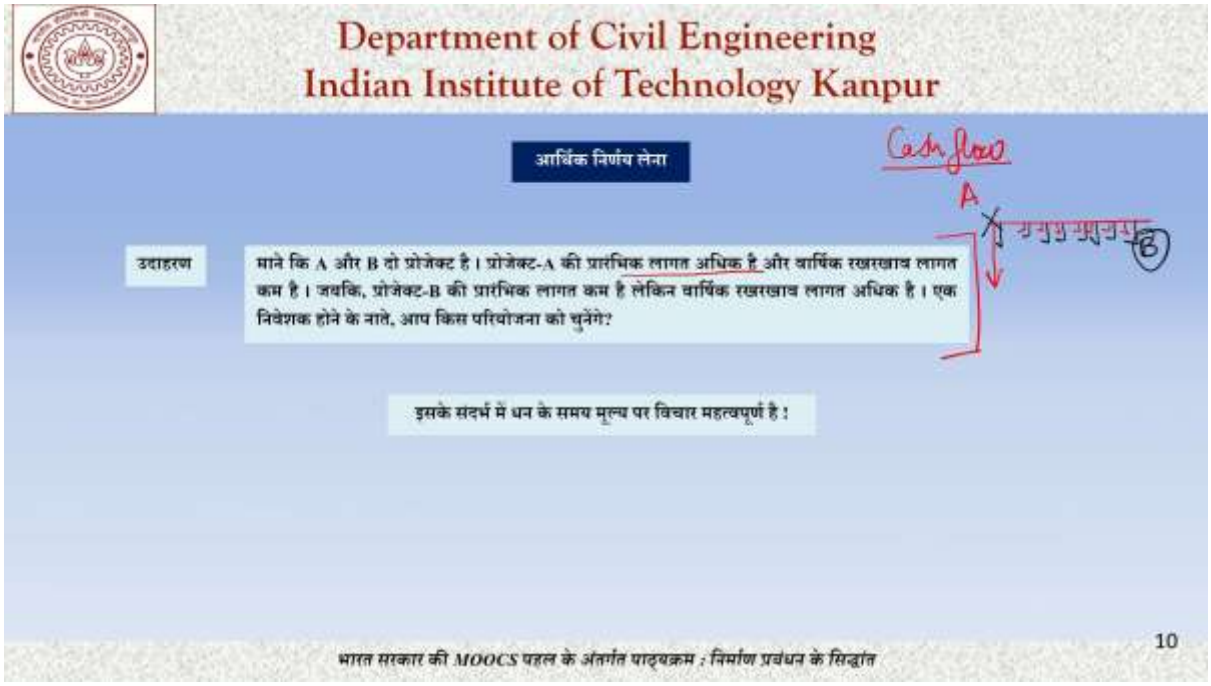
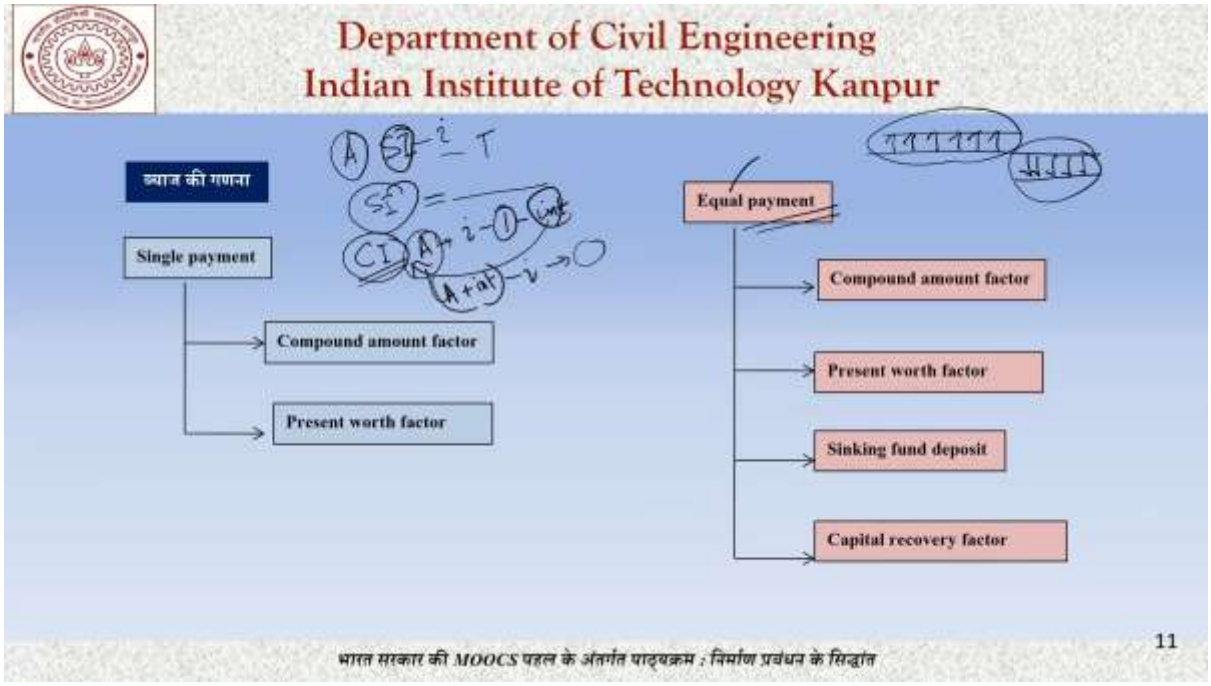


To aaiye is baat ko ham ek udaaharan ke maadhyam se samajhane kee koshish karate hain. Diya gaya hai ek cash flow diagram yahaan par outflow yaanee vyay aur inflow yaanee raajasv (revenue) darshaaya gaya hai. Yah dikhaaya gaya hai yahaan par 10 lakh ka kharcha hoga aur varsh 1, 2, 3, 4, 5, 6, 7 par ye hamaare kharche hain aur ye hamaara revenue hai. Ab tay yah karana hai ki is nivesh ka vartamaan mooly ya bhavishy mooly kya hai? Kya kie jaane vaala nivesh tarkasangat hai? Agar hamako yah baat pata hai ki hamen 10 lakh rupe kharch karane hain yahaan par hamen 2 lakh milenge, yahaan 50 hazaar milenge, 3 lakh milenge, 1 lakh milega, 4 lakh milenge aur yah hamaara kharcha hoga, to kya hamen yah pariyojana karanee chaahie ya nahin karanee chaahie? Isalie aavashyak hai ham in sabhee aankadon ko ya to is point par lekar aae ki inakee present value kya hai, isako bhee hamen present value par hee laana hoga.
(Reference Time 12:12)



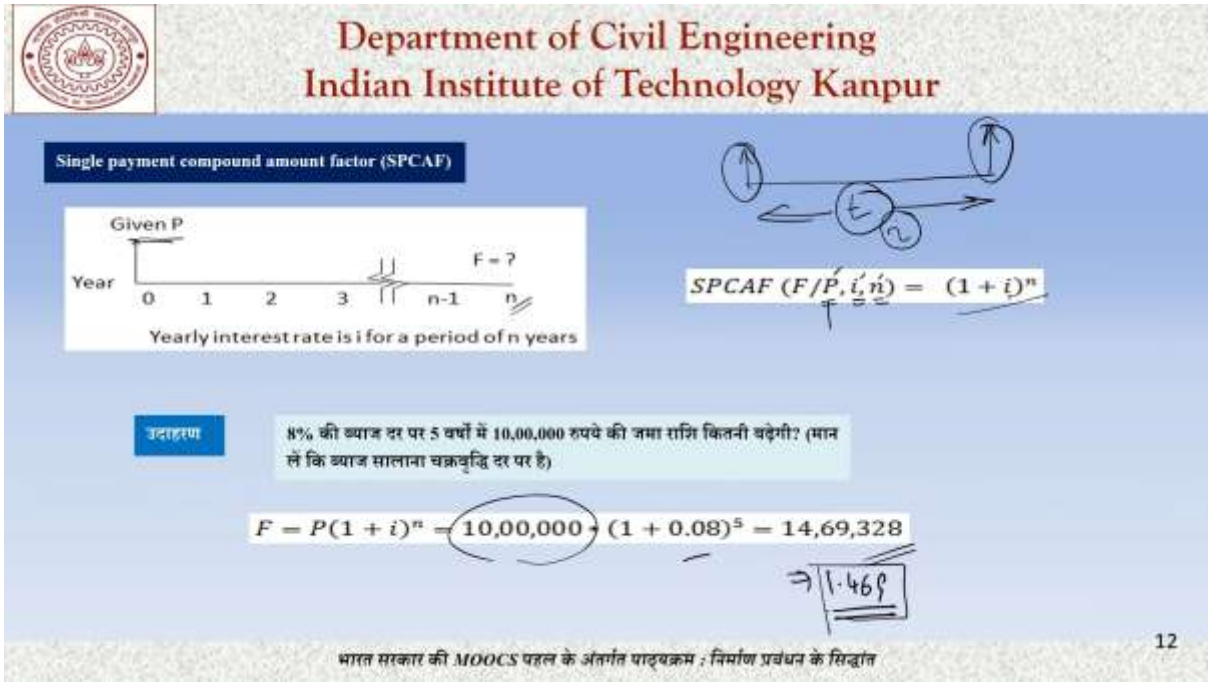
Aaiye ek aur udaaharan dekhate hain maana ki A aur B do project hai; project A kee praarambhik laagat adhik hai aur vaarshik rakharakhaav kee laagat kam hai. Jabaki project B kee praarambhik laagat kam hai lekin vaarshik rakharakhaav kee laagat adhik hai. Ek niveshak ke naate aap kis pariyojana ko chunenge. Yah baat pariyojanaon ke lie hee nahin hai. Koee bhee nirmaan equipment (construction equipment) chaahe vo kren ho, chaahe vo earth mover ho usako khareedate samay bhee is baat kee chunautee aatee hai ki hamaare paas do vikalp hain ek machine hai, doosaree machine hai. Ek machine kee initial cost (praarambhik laagat) kam hai ek kee jyaada hai lekin rakharakhaav kee keemat donon kee alag-alag hai. To isako ham kis prakaar se modal karenge aur kis prakaar se nirnay lenge. To hamako is tareeke kee baaton ko, is prakaar ke text ko cash flow diagram mein parivartit karana hoga. Project A hai jisamen ki praarambhik laagat adhik hai. To jo laagat hai vah adhik hai jo rakharakhaav kee laagat hai vah kam hai. Isake comparison mein ham kah sakate hain ki jo project B hai isakee praarambhik laagat to kam hai lekin rakharakhaav kee laagat isase adhik hai. Ab in do vikalpon mein se ek ko chunane ke lie yah aavashyak hai ki ham kisee bhee point par (kisee bhee bindu par) in donon vikalpon kee vartamaan laagat ya vartamaan mooly (present value) ko calculate karen, usako estimate karen aur phir nirnay len. Aur is sandarbh mein dhan ke samay mooly par vichaar karana mahatvapoorn hai usako avashy hee dhyaan mein rakhana chaahie.

(Reference Time 13:57)



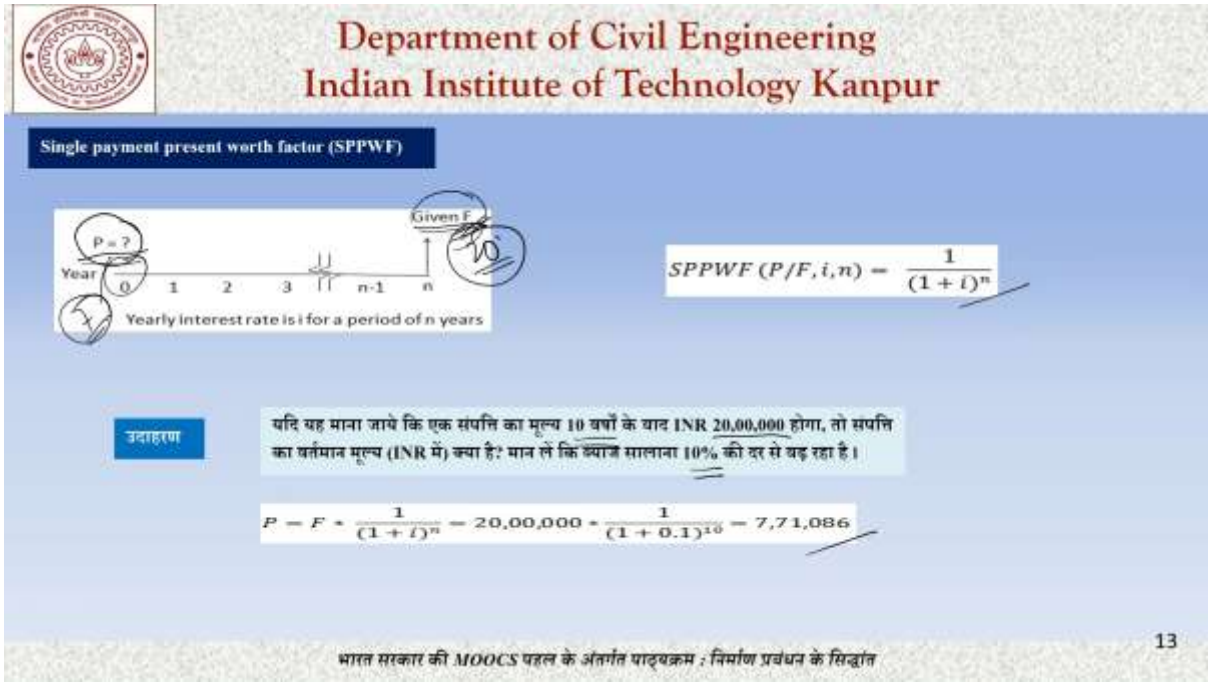
Ab baat aatee hai ki byaaj kee ganana kis prakaar se ho sakatee hai? To jab tak byaaj nahin pata hoga tab tak ham kisee bhee prakaar se vartamaan mooly ya bhavishy mooly kee baat nahin kar sakate hain, to isalie byaaj kee ganana karana aavashyak hai usake baare mein samajhana aavashyak hai. To single payment ke aadhaar par byaaj kee ganana ham karate hain, compound amount factor aur present worth factor yah do terminology hain usake aadhaar par. Hamane haee school mein compound interest aur simple interest kee baat padhee huee hai, usamen kya hota hai? Kahaan yah jaata hai ki agar ham ek amount A simple interest jisaka ki rate i hai (jisakee ki dar i hai) agar ham usako t time ke lie rakhate hain to simple interest kitana hoga? Yah ham calculate kar sakate hain yah hamako high school mein karaaya gaya hai. Isake comparison mein jab baat compound interest kee aatee hai to ham ye calculate karate hain ki isee amount par usee dar se pahale saal mein ya pahale time span mein jo bhee byaaj aaega (interest aaega) vah is amount mein jud jaega aur phir yah amount plus interest is par phir se interest lagega aur hamaara agala interest aaega. To yah ho gaee compound interest kee baat. To isako nikaalane ke lie bhee ham logon ne high school mein tarah-tarah ke abhyaas kie hain. Baat vaheen par aa jaegee unheen baaton kee charcha ham thoda sa doosare paripekshy mein karenge. Single payment ke baad baat aatee hai equal payment kee. Yah koee jarooree nahin hai ki ham ek musht ek hee payment kee baat kar rahe hon. Aksar hamaaree charcha equal payment ke aadhaar par hotee hai arthaat hamako lagaataar kuchh revenue mil sakata hai, hamaara kabhee-kabhee lagaataar kuchh kharch ho sakata hai. To modal karane ke lie samajhane ke lie is baat ko equal kar liya gaya hai yah aavashyak nahin hai ki equal hee ho equal kar dene se ganit aasaan ho jaatee hai, yah calculations bahut aasaan hai lekin usamen computer kee ya excel sheet kee aavashyakata hotee hai bahut saare factors hain, bahut saaree taalikaen milatee hain jinase ki ham yah calculation kar sakate hain lekin aaj ham yah calculation karane kee koshish karenge taaki aapako samajh mein aae ki ham karana kya chaahate hain aur jo factors hain vah kis prakaar nikaale jaate hain. To equal payment mein ham compound amount factor, present worth factor, sinking fund deposit aur capital recovery factor in chaar kee baat karenge.

(Reference Time 16:47)



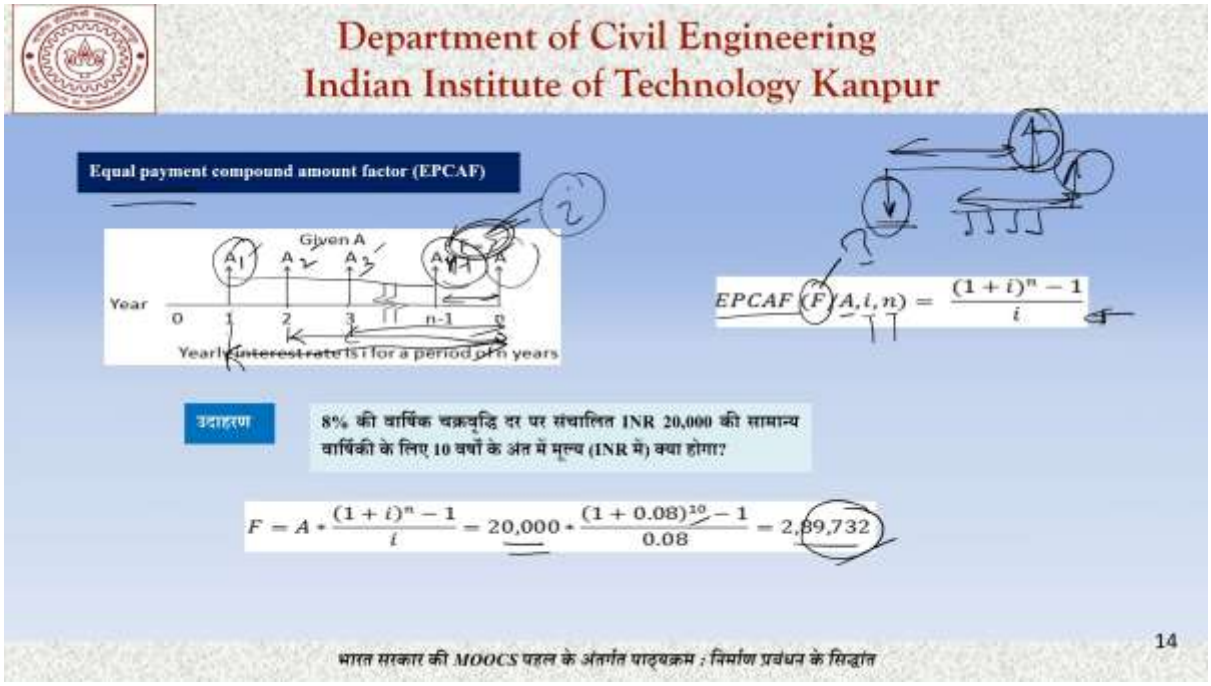
To lie sabase pahale baat karate hain single payment compound amount factor kee. Seedhee see baat yah hai ki ham samay mein ek jagah par ek amount hai, doosaree jagah par doosara amount hai aur inake beech mein ek samay hai jo ki t years ka diya hua hai aur ek rate of interest i hai. To in chaar parameters mein aapas mein ek sambandh hai us sambandh ka hee vishleshan kiya ja raha hai. Single payment compound amount factor jisako SPCAF kaha gaya hai vah kya hai? Ki givin P, i aur n; to hamen P pata hai, hamako i pata hai, hamako n pata hai. P hamaara principal hai jo ki hamane shuroo mein liya i pata hai jo ki rate of interest ham lekar chalenge aur n hamaare samay ka maap hai n years kee baat ho rahee hai. To vahaan par SPCAF 1 plus i to the power of n yah hamako pata hai jahaan par ki i parasent mein liya gaya hai. Is baat ko ek udaaharan ke roop mein agar dekhen ki 8 percent kee byaaj dar par 5 varshon mein 10 lakh rupe kee jama raashi kitana badhegee. To yah hamaare high school mein kiya hua hai ki compound interest ham lagaenge aur ham P times P guna 1 plus a to the power of n karenge aur yah dekhenge ki yah 14 lakh 69 hazaar 328 ho jaega. To agar ham is cheej ko hata den, to hamaara jo factor aaya vah aaya 1.469. To agar hamako P, i aur n pata hai to ham is factor ko pata kar sakate hain aur agar factor pata chal gaya to aapaka principal amount aapako pata hai aapako f nikaalane mein koee dikkat nahin hogee.

(Reference Time 18:45)



Is baat ko agar ham palat den aur kahen ki ham f jaanate hain ham jaanana chaahate hain ki hamen P kitana rakhana chaahie, tab hamen kya karana hoga? Jo pichhalee prakriya thee usako ulat deejie to one upon 1 plus I to the power of n ho jaega. Isaka udaaharan agar ham dekhate hain ki yadi yah maana jae ki ek sampatti ka mooly 10 varshon baad 20 lakh rupe hoga, to sampatti ka vartamaan mooly kya hai? Maan le ki byaaj dar saalaana 10 percent hai. To agar ham yah maanate hain to isaka mooly 7,71086 rupaye hua is baat ko agar ham nirmaan ke paripekshy mein dekhen to agar ham dekhate hain ki hamen yahaan par ek machine khareedanee hai jisakee ki keemat 10 lakh rupe hogee yah maanate hain. To hamen aaj kitane paise kee aavashyakata hai jo ki ham ek byaaj dar par alag kar den taaki n years baad hamen vo f amount mil jaaye, is baat ko ham single payment present worth factor kahate hain. To is amount kee present worth kya hai, is f kee present worth kya hai? Udaaharan mein jo diya gaya hai vo kaha gaya hai ki 20 laakh yahaan par hai. To is 20 lakh kee present worth 7 laakh hai lekin 10 saal ke baad? Yah 10 saal aur agar 10 percent ham lete hain to is 20 laakh kee present worth 7 lakh rupaye hai.

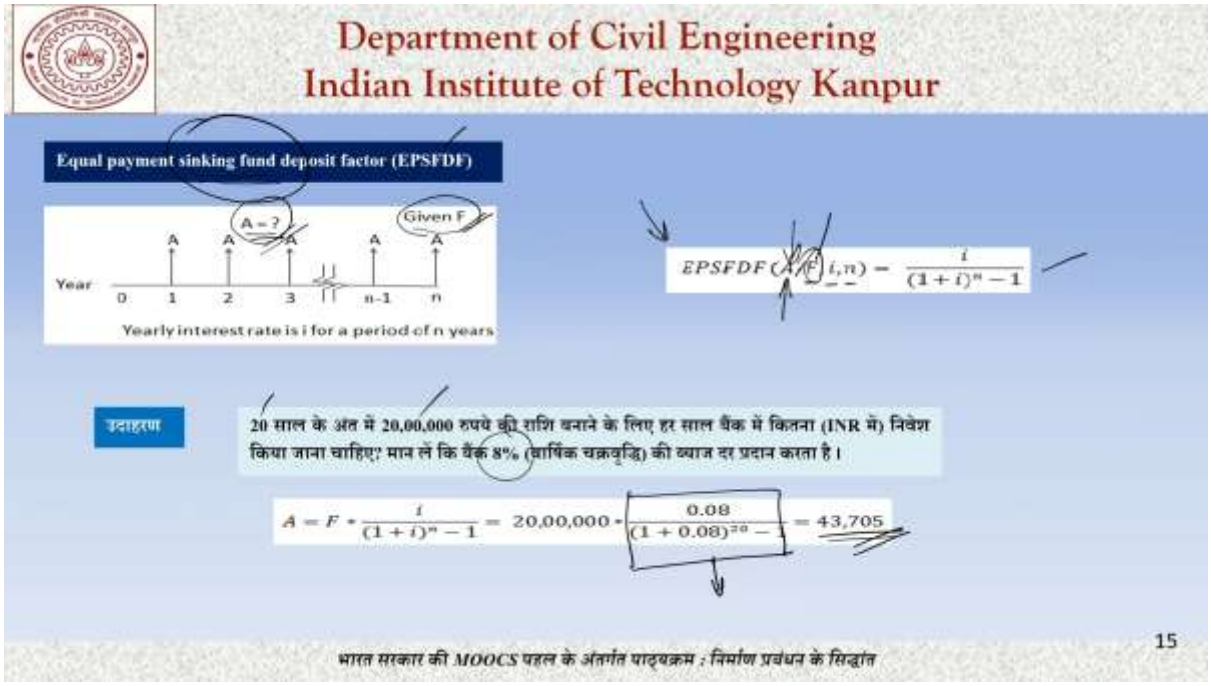
(Reference Time 20:22)



Aage badhate hue ham Equal Payment compound factor kee baat karate hain, EPCAF isaka arth kya hua? Ki A, i aur n arthaat ye A ham lagaataar har saal agar rakhen to f kya hoga? Aur i aur n hamen pata hai, i aur n matalab rate of interest aur number of years. To agar ye cheej hamen pata hai to ham EPCAF kee ganana is formula se kar sakate hain. Agar ham isako samajhane kee koshish karen aur ye kahen ki A1, A2, A3, A4 yahaan par a(n minus 1) hai to n minus 1 likh dete hain. To in instalments ko ham pay karate hain, to is f mein kaun-kaun kitana contribute kar raha hai? Jo A1 hai vah itane samay ke lie contribute kar raha hai, jo A2 hai vah 1 saal kam arthaat itane samay ke lie kar raha hai, A3 ek aur saal kam itane samay ke lie kar raha hai aur yah jo laast instalment hai (item instalment hai) vah maatr 1 saal ke lie hee kar raha hai. To A1, A2, A3 aadi A(n minus 1)tak ke sabake contributions ko dekhakar ya sab ke contributions ko agar ham chhod denge, to jo value aaegee vah hogee f. To ye f voo value huee jo kee A1, A2, A3, A4 agar ham n varshon tak i rate of interest par rakhate hain to f kya hoga?

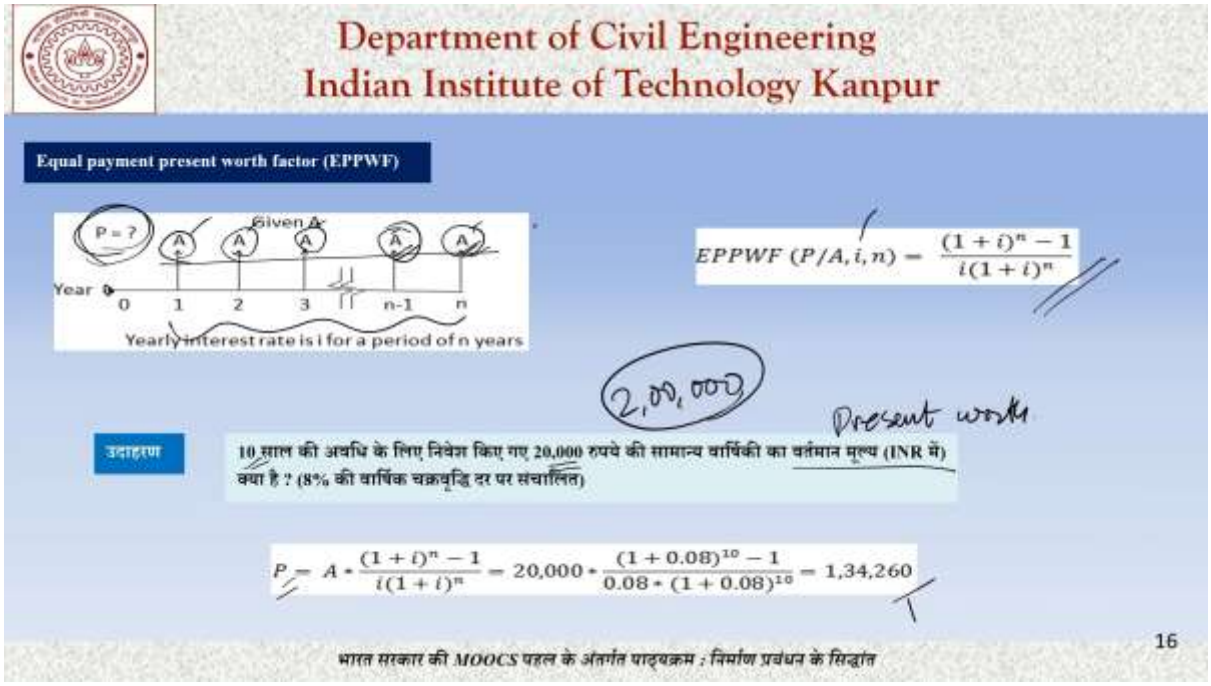
To isako ham ek udaaharan ke maadhyam se dekhate hain ki 8 percent kee vaarshik chakravrddhi dar arthaat compound interest par sanchaalit repay 20000 kee saamaany vaarshikee ke lie 10 varshon ke ant mein kya value hogee? Agar ham yah formula ka prayog karate hain? To value hamako milatee hai 2 lakh 89 hajaar 732. Hamane investment kiya 20000, 10 saal repay200000; hamako mile 289000 yah jo value milee yah hamaaree interest hai yahaan par hamane Equal Payment kiya. To jo example hamane pahale liya tha ki agar hamaara construction equipment 20 lakh ka hai aur ham 10 saal baad usako khareedana chaahate hai ya 4 saal baad khareedana chaahate hain, to ek tareeka to hai ki ham ek must yah paisa kaheen rakh den aur itane saal baad hamako yah paisa mil jaega. Doosara vikalp ho sakata hai ki ham itana amount yahaan nahin rakh paenge lekin ham thoda-thoda amount yahaan rakh denge taaki yah equipment ham itane saal baad khareed sake.

(Reference Time 23:10)



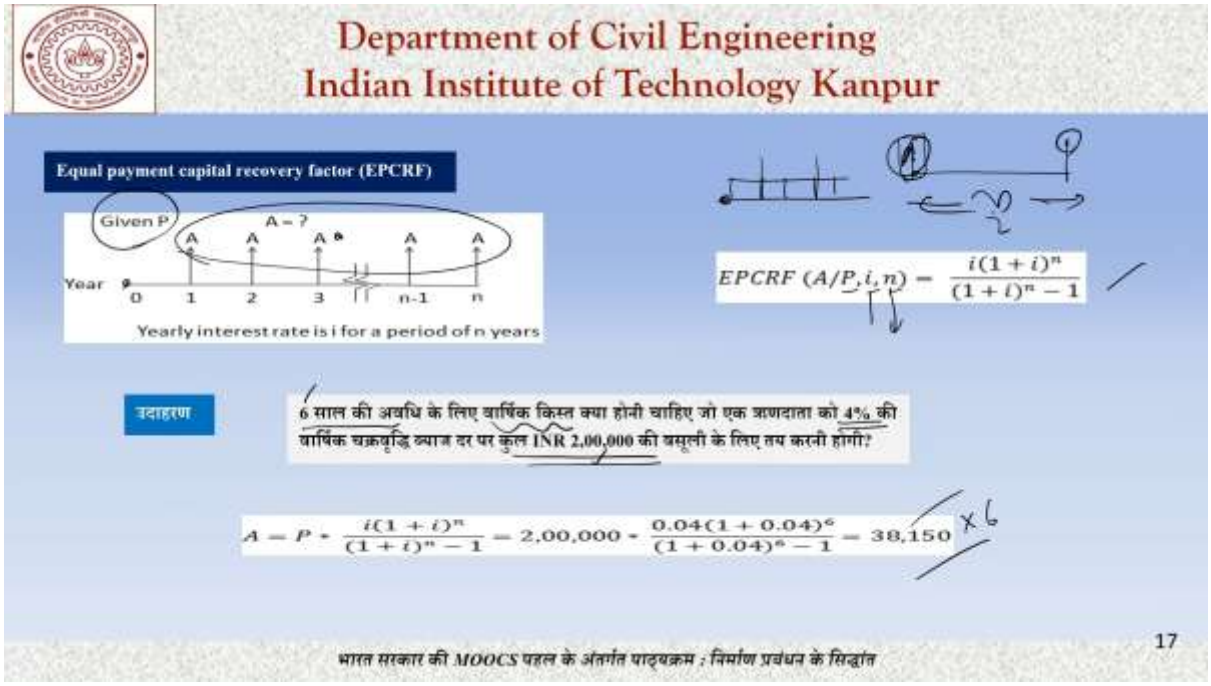
Aaie aage badhate hain aur equal payment sinking fund deposit factor. Yahaan par given f; i, f and n hamaara kitana hona chaahie? Yah baat pichhale vaale example se thoda bhinn hai. Pichhalee baar kya tha? Yahaan par A diya hua tha aur hamako f nikalana tha, yahaan par hamako f diya gaya hai aur A nikaalana hai. To jo udaaharan mainne aapako samajhaaya, vo is jagah se adhik relevant hai ki hamako f pata hai ki hamako 20 lakh rupe equipment khareedane ke lie chaahie. Usake lie hamen kya amount hataana padega ya kaun sa amount, kitana amount hamako ek sinking fund mein daal dena chaahie. Usako daalakar bhool jaana chaahie, jaise ham bachchon ke saath golak kee baat karate hain. Paisa alag karake rakh dete hain usakee chhoot nahin hai. To ham use golak mein sinking fund ke roop mein kya amount har saal daal den taaki n years ke baad hamako f mil jae yah hamaara formula hai use baat ke lie. Udaaharan dekhate hain ki 20 saal ke ant mein 20 lakh rupe kee raashi banaane ke lie har saal bank mein kitana nivesh kiya jaana chaahie. Yah maana jae kee 8 percent compound interest ka rate hai. Is pooree charcha mein aap dekh rahe honge kee rate of interest hamako lagaataar maanana pad raha hai ki bina rate of interest ke maane to kuchh bhee nahin hoga lekin yah baat bhee tay hai anishchitata hai ki kitana rate of interest kis samay hoga is par bhee hamen dhyaan rakhana chaahie aur ek conservative value lekar chalana chaahie. Yah ek siddhaant hai jo ki har pariyojana prabandhak ko dhyaan mein rakhana chaahie. Nirnay karate samay yah dhyaan mein rakhen ki hamen conservative site par chal rahe hain, na ki ek risk kee site par. Aaie aage badhate hain isaka uttar yah hai. Agar hamako 20 lakh rupe chaahie 20 saal ke ant mein to hamen 43705 rupe har saal alag karane honge aur aapaka jo factor hai use nikal aata hai. Yahaan se aane vaalee value ko ham kahate hain EPSFDF, that is ‘equal payment sinking fund deposit factor’. Yah sabhee factor ek taalika ke roop mein vibhinn rate of interest ke lie upalabdh hai. To hamen har baar yah calculation karane kee aavashyakata nahin hai.

(Reference Time 25:52)



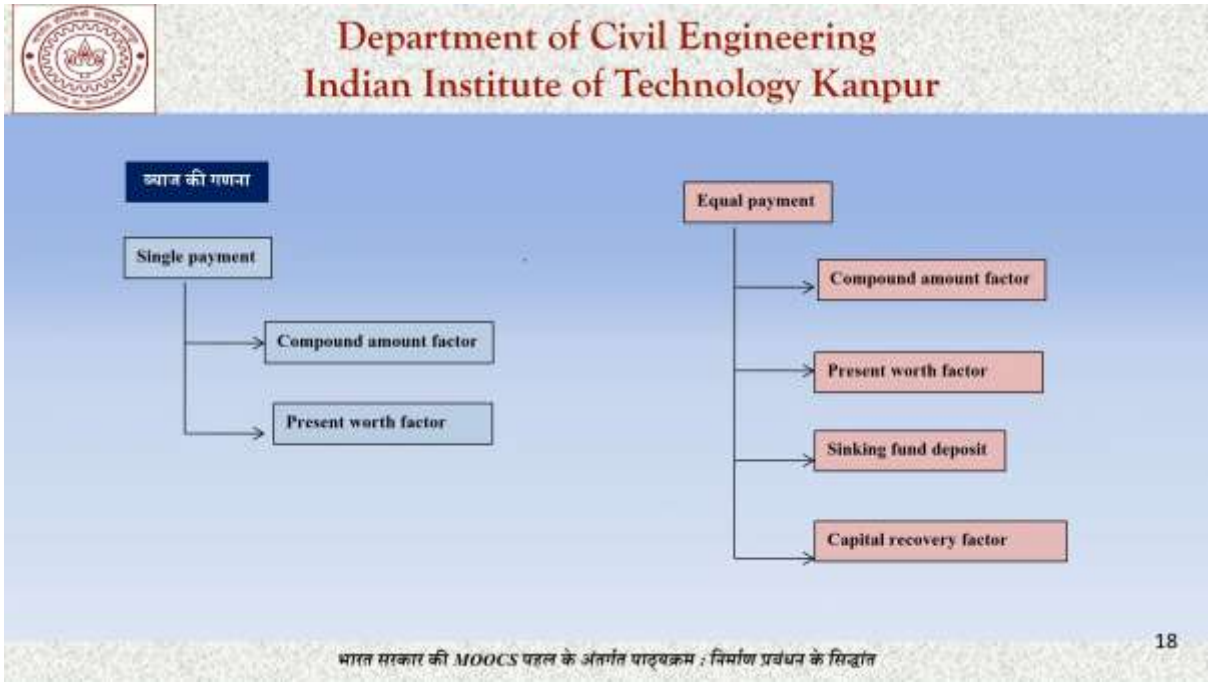
To aaie agale factor kee baat karate hain ‘equal payment present worth factor’. Ab ham baat kar rahe hain present worth kee, abhee tak baat huee future worth ki hamen f kya hai? Ab baat hogee present worth kee arthaat agar ham yah A lagaataar in varshon ke lie i rate of interest par alag karate hain, to is investament kee present worth kya hai? Vah nikaalane ke lie ham is formula ka prayog kar sakate hain. Udaaharan ham dekhate hain ki 10 saal kee avadhi ke lie nivesh kie gae ₹20000 kee saamaany varsh kee ka vartamaan mooly kya hai? Vartamaan mooly matalab present worth. To is samay usakee worth kya hai? Ham is formula ka prayog karate hain to hamaaree present worth nikaalakar aatee hai 1,34,260. To is poore investament kee present worth 1,34,260 hai. Dhyaan rakhie ki ham agar 10 saal mein ₹ 20,000 invest kar rahe hain, hamaara total investament to 2 lakh rupe ka hai lekin is 2 lakh rupe kee present worth 1,34,260 hee hai. Isaka matalab yah hai ki in value kee agar ham inako A1, A2, A3 vagaira ka kah denge, to inakee value yahaan par kitanee hai, is 20,000 kee value yahaan par kitanee hai? To jab present worth nikale gae, to in sabako jodakar nikalenge.

(Reference Time 27:27)

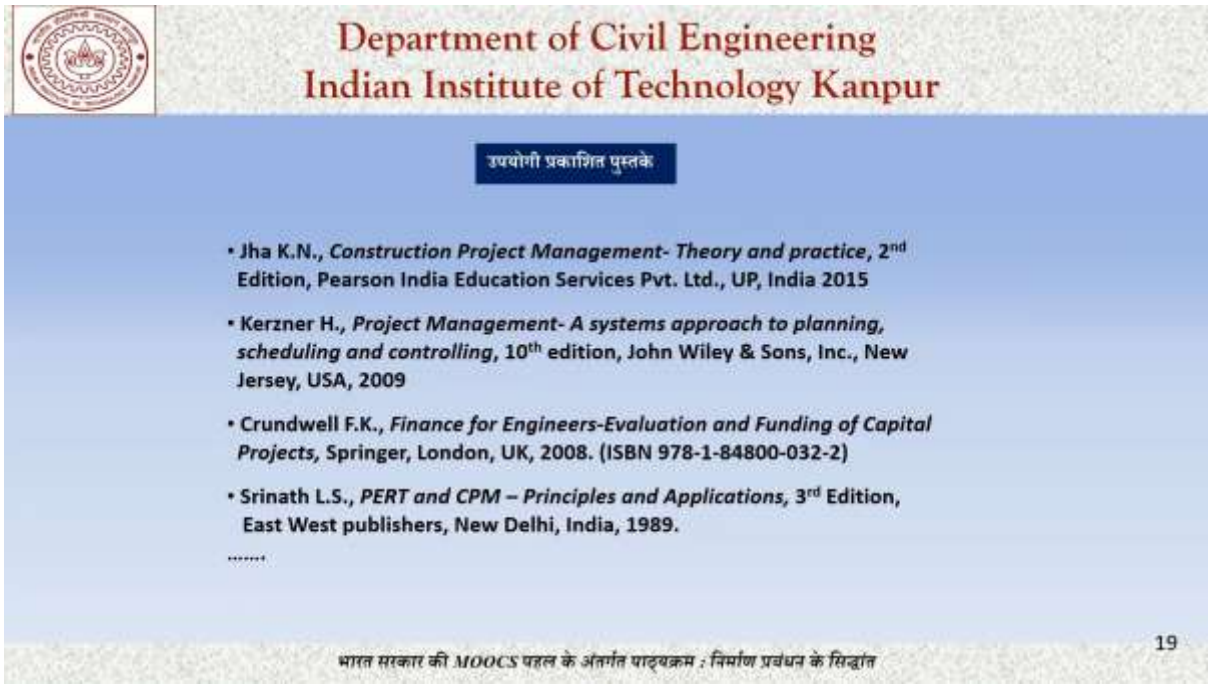


To aage badhate hain aur yah aakhiree phaiktar hai ‘Equal Payment Capital Recovery Factor’, jisamen kee P, i aur n diya hua hai aur A nikaalana hai. To jaisa mainne pahale aapako bataaya tha khel maatr chaar quantities ka hai yahaan kee value n, i aur yahaan kee value, baat doosaree kee is value ko ham chaahe lump sum mile ya ham usako distribution kar den. Jab ham distribution kar dete hain to vah equal amount kar dete hain. Yah aavashyak nahin hai ki equal amount hee hon agar yah amount unequal hote hain to jis prakaar se mainne aapako bataaya us prakaar se ham in sabhee values ko present worth factor mein convert kar sakate hain lekin usake lie aapako thodee see ganit karanee hogee aur ek exercise ham aapako homework mein denge. To aaiye vaapas chalate hain equal payment capital recovery factor par to aaiye ek udaaharan dekhate hain. Ki ek 6 saal kee avadhi hai arthaat jo n hai vah 6 saal hai, jo rate of interest hai vah 4 percent hai, 2 lakh kee vasoolee tay karane ke lie arthaat hamaara P jo hai vah diya hua hai 2 lakh isako neutralise karane ke lie vaarshik kist tay karanee hai arthaat A hamako tay karana hai. To isake lie agar ham is formula ka prayog karate hain, to hamako pata chalata hai 38,150. To 38,150 agar ham 6 saal payment karen to ham 200000 ke ran urn ho jaenge. Ab aap yah dekh sakate hain ki 200000 ka ran hai usako ham 38,000 6 saal jab denge tab hamaara ran samaapt hoga, to kitana hamane byaaj component diya yah aap nikal sakate hain. Byaaj kee dar dee huee hai lekin total byaaj ka component kitana hua yah aap yahaan se nikaal sakate hain.

(Reference Time 29:31)



To aaj kee charcha ham yaheen par samaapt karana chaahenge jahaan par ki hamane byaaj aur byaaj dar, present worth, future worth aur equal instalment in par charcha kee. Aage in baaton ko lekar ham aarthik nirnay kaise lete hain, kin criteria par lete hain un criteria ko ham kaise interpret karate hain is par ham charcha aage badhaenge agale lecture mein.
(Reference Time 29:59)



Yah ek list hai jo ki upayogee prakaashit pustaken hain mera sujhaav hai ki aap unako avashy dekhen. Dhanyavaad. Jay hind.