

**MIT MUZAFFARPUR BIHAR
COURSE FILE
OF
INDUSTRIAL ECONOMICS & ACCOUNTING
(HS106)**



**FACULTY NAME:
AMIT KUMAR
ASSISTANT PROFESSOR,
DEPARTMENT OF MECHANICAL**

ENGINEERING



विज्ञान एवं प्रावैधिकी विभाग
Department of Science and Technology
Government of Bihar

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Course Description

Economics is an important part of the manufacturing sector. In industrial economics we study economics related to industries. This course is designed to address all the topics related to industrial economics such as demand, production, cost analysis, market, supply, methods to study investment return and accounting.

Course Objectives

- The economics of the management, operation, growth and profitability of engineering firms.
- Macro-level engineering economic trends and issues.
- Engineering product markets and demand influences.
- The development, marketing, and financing of new engineering technologies and products.

Course Outcomes

1. Analyze the difference between science, engineering, technology & economics.
2. Apply law of demand concept to real market and have clear understanding of various market factors to the demand of market products.
3. Analyze all the factors of production and able to identify significant factors.
4. Analyze various concepts of cost and revenue and apply break even analysis in real situation.
5. Analyze all sorts of market and apply law of supply to real market.
6. Apply basic models of investment return in practical situation.
7. Apply accounting in practical use.

HS-106 INDUSTRIAL ECONOMICS AND ACCOUNTING

L T P/D Total
3-1-0 4

Max Marks: 100

Final Exam: 70 Marks

Sessional: 20 Marks

Internals: 10 Marks.

Various definitions of Economics: Nature of Economic Problem, Relation between science, Engineering. Technology & Economics
Meaning of demand, Law of Demand, Elasticity of demand, Practical importance & application of the concept of elasticity of Demand
Land, labor, Capital ,Entrepreneur & Organization –their Characteristics law of variable Proportion .Return to Scale
Various concept of cost, Cost function, Short & Long run cost. Concept of Revenue ,Break-Even Analysis
Type of market –Perfect completion, Monopoly ,Oligopoly ,Monopolistic competition ,Main feature of these market), Meaning of Supply and Law of Supply, R ole of Demand & Supply in price in prime ,Main feature of these market), Meaning of Supply and Law of Supply, R ole of Demand & Supply in price in prime determination imperfect t competition
(a) Simple and compound interest, Annuities, (b)Basic methods For making economy Studies - (i) Present worth method, (ii) Future worth method (iii)I.R.R method (c) Comparison of alternative –(i) Present worth method, (ii\) Future Worth method (iii) I.R.R method.
Meaning Scope and Role of accounting, Accounting concept & Convention. Accounting as information System. Recording of transaction in journal and Ledgers. Trial –Balance, Preparation of final Account.

1. Textbooks

TB1: Modern Micro Economics by Theory -H.L.Ahuja-S.Chand

TB2: Advance Economic Theory by M .L.Jhingan-Konark Publication

2. Reference Books

RB1: Stonier & Hague by A test book of Economic Theory-Pearson

RB2: Industrial Organisation and Engg. Economics by Banga & Sharma.

RB3: Engineering Economics by Degarmo , Sullican & Canada –McMillan

RB4: Double Entry Book Keeping by T.S.Grewal –S .Chand

<i>Day/ time</i>	09:00-10:00	10:00-11:00	11:00-12:00	12:00-01:00	02:00-03:00	03:00-04:00	04:00-05:00
MON			IEA				
TUE					IEA		
WED			IEA				
THU			IEA				
FRI		IEA					

Institute / College Name :	MIT MUZAFFARPUR BIHAR		
Program Name	B.E. INFORMATION TECHNOLOGY		
Course Code	HS106		
Course Name	INDUSTRIAL ECONOMICS AND ACCOUNTING		
Lecture / Tutorial (per week):	3/1	Course Credits	4
Course Coordinator Name	ASSISTANT PROFESSOR AMIT KUMAR		

1. Scope and Objectives of the Course

Topics that may be addressed in engineering economics are inflation, uncertainty, replacements, depreciation, resource depletion, taxes, tax credits, accounting, cost estimations, or capital financing. All these topics are primary skills and knowledge areas in the field of cost engineering.

Since engineering is an important part of the manufacturing sector of the economy, engineering industrial economics is an important part of industrial or business economics. Major topics in engineering industrial economics are:

- The economics of the management, operation, and growth and profitability of engineering firms;
- Macro-level engineering economic trends and issues;
- Engineering product markets and demand influences; and
- The development, marketing, and financing of new engineering technologies and products.
- Benefit–cost ratio

2. Textbooks

TB1: Modern Micro Economics by Theory -H.L.Ahuja-S.Chand

TB2: Advance Economic Theory by M .L.Jhingan-Konark Publication

3. Reference Books

RB1: Stonier & Hague by A test book of Economic Theory-Pearson

RB2: Industrial Organisation and Engg. Economics by Banga & Sharma.

RB3: Engineering Economics by Degarmo , Sullican & Canada –McMillan

RB4: Double Entry Book Keeping by T.S.Grewal –S .Chand

1. Course Plan

Lecture Number	Date of Lecture	Topics	Web Links for video lectures	Text Book / Reference Book / Other reading material	Page numbers of Text Book(s)
1-3		Various definitions of Economics		TB1, RB3	1-8
		Nature of Economic Problem, Relation between science, Engineering. Technology & Economics of Irrigation Systems	https://www.youtube.com/watch?v=RaXQ8wQ6TUs		
Tutorial - 1					
4-9		Meaning of demand		TB1, RB3	7-45
		Law of Demand, Elasticity of demand, Practical importance & application of the concept of elasticity of Demand	https://www.youtube.com/watch?v=vRFBcta3GRE		
Tutorial – 2, Assignment I					
10-14		Meaning of Production and factor of Production		TB1, RB3	46-69
		Land, labor, Capital ,Entrepreneur & Organization –their Characteristics law of	https://www.youtube.com/watch?v=F9gscMb13hk		

		variable Proportion .Return to Scale			
Tutorial - 3					
15-19		Cost Analysis : Various concept of cost, Cost function, Short & Long run cost. Concept of Revenue ,Break-Even Analysis		TB1, RB3 https://www.youtube.com/watch?v=TywirlymIDY	70-140
Tutorial – 4, Assignment 2					
20-26		Meaning of Market : Type of market –Perfect completion, Monopoly ,Oligopoly ,Monopolistic competition ,Main feature of these market), Meaning of Supply and Law of Supply, Role of Demand & Supply in price in prime ,Main feature of these market), Meaning of Supply and Law of Supply, Role of Demand & Supply in price in prime determination imperfect t competition		TB1, RB3 https://www.youtube.com/watch?v=wkji4W0EgFc	141-202
Tutorial - 5					
Mid-Semester Exam (Syllabus covered from 1-16 lectures)					
27-33		Engineering Economy : (a) Simple and compound interest, Annuities, (b)Basic methods For making economy Studies -(i) Present worth method, (ii) Future worth method (iii)I.R.R method (c) Comparison of alternative –(i) Present worth method, (ii) Future Worth method (iii) I.R.R method.		TB1, RB3 https://www.youtube.com/watch?v=C5o6U7zOebM	141-202
Tutorial 6					
34-42		Accounting: Meaning Scope and Role of accounting, Accounting concept & Convention. Accounting as information System. Recording of transaction in journal and Ledgers. Trial –Balance, Preparation of final Account.		TB1, RB3 https://www.youtube.com/watch?v=wkO21owPOLE	203-283

1. **Evaluation Scheme:**

Component 1	Mid Semester Exam	20
Component 2	Assignment Evaluation	10
Component 3**	End Term Examination**	70
	Total	100

** The End Term Comprehensive examination will be held at the end of semester. The mandatory requirement of 75% attendance in all theory classes is to be met for being eligible to appear in this component.

SYLLABUS

Topics	No of lectures	Weightage
Various definitions of Economics: Nature of Economic Problem, Relation between science, Engineering. Technology & Economics	3	8%
Meaning of demand, Law of Demand, Elasticity of demand, Practical importance & application of the concept of elasticity of Demand	5	11%
Land, labor, Capital ,Entrepreneur & Organization –their Characteristics law of variable Proportion .Return to Scale	5	10%
Various concept of cost, Cost function, Short & Long run cost. Concept of Revenue ,Break-Even Analysis	5	10%
Type of market –Perfect completion, Monopoly ,Oligopoly ,Monopolistic competition ,Main feature of these market), Meaning of Supply and Law of Supply, R ole of Demand & Supply in price in prime ,Main feature of these market), Meaning of Supply and Law of Supply, R ole of Demand & Supply in price in prime determination imperfect t competition	7	18%
(a) Simple and compound interest, Annuities, (b)Basic methods For making economy Studies -(i) Present worth method, (ii) Future worth method (iii)I.R.R method (c) Comparison of alternative –(i) Present worth method, (ii) Future Worth method (iii) I.R.R method.	7	18%
Meaning Scope and Role of accounting, Accounting concept & Convention. Accounting as information System. Recording of transaction in journal and Ledgers. Trial –Balance, Preparation of final Account.	9	23%

This Document is approved by:

Designation	Name	Signature
Course Coordinator	AMIT KUMAR	
H.O.D	Dr. VIKAS KUMAR	
Principal	Dr. J N JHA	
Date		

Evaluation and Examination Blue Print:

Internal assessment is done through quiz tests, presentations, assignments and project work. Two sets of question papers are asked from each faculty and out of these two, without the knowledge of faculty, one question paper is chosen for the concerned examination. Examination rules and regulations are uploaded on the student's portal. Evaluation is a very transparent process and the answer sheets of sessional tests, internal assessment assignments are returned back to the students.

The components of evaluations alongwith their weightage followed by the University is given below

Mid SEM Test 20%

Assignments/Quiz Tests/Seminars 10%

End term examination 70%

(From amongst the three sessional tests best of two are considered)

Institute / School Name :	MIT MUZAFFARPUR		
Program Name	B.E. INFORMATION		
Course Code	HS106		
Course Name	INDUSTRIAL ECONOMICS AND ACCOUNTING		
Lecture / Tutorial (per week):	3/1	Course Credits	4
Course Coordinator Name	AMIT KUMAR		

LECTURE PLAN

Topics	Lecture Number
Introduction	
Introduction to Economics	1
Nature of Economic Problem	2
Relation between science, engineering, Technology & Economics	3
3 rd lecture extended	4
Meaning of Demand	
Law of demand and its graph	5
Factors affecting Law of demand	6
Exception to the Law of Demand	7
Elasticity of Demand	8
Types of Elasticity of Demand	9
Meaning of Production and factor of Production	
Factors of Production , Production function	10
Law of variable Proportion	11
Law of variable Proportion Extended	12
Law of returns to scale	13
Law of returns to scale Extended	14
Cost Analysis	
Concept of cost	15
Cost function , Short run and Long run Cost	16
Concept of Revenue	17
Break even Analysis	18
Break even analysis extended	19
Meaning of Market	
Types of market	20
Types of market extended	21
Main features of these market	22
Law of supply	23
Factors affecting supply, exception	24
Role of demand and supply in Price determination	25
Previous Lecture Extended	26
Engineering Economy	
Simple and Compound Interest	27
Simple and Compound Interest Extended	28
Basic Methods of economic Studies	29
Present Worth method and Future worth Method	30
IRR Method	31
Problems on above topics	32
Comparison of alternatives	33
Accounting	
Meaning scope and role of accounting	34

Accounting concept and convention	35
Previous lecture extended	36
Accounting as information system	37
Recording of transaction in Journal and Ledgers	38
Trial- Balance	39
Preparation of final account	40

**Department of Mechanical Engineering
Industrial Economics and Accounting (HS-106)**

Assignment 1

1. Explain the difference between science, engineering, Technology & Economics.
2. Define elasticity of demand and its types with example.
3. Explain factor of production and production function.
4. Explain law of variable proportion and its stages with assumptions

Assignment 2

1. Explain law of demand with graph.
2. Explain law of Returns to scale and its stages.
3. What are the types of market? Explain them with their features.
4. What is law of supply and factors affecting it?

**Department of Mechanical Engineering
Industrial Economics and Accounting (HS-106)**

Assignment 3

1. What are the exceptions to the law of supply?
2. Describe discounted cash flow technic with example.
3. Describe I.R.R method with an example.
4. Write the meaning and scope of accounting.
5. What are the accounting concept and convention?

Tutorial Sheet 1

1. Company XYZ is considering an investment of \$100,000. The useful life of the project is 10 years. The cut off period is three (3) years. The board of directors has identified two alternatives A and B. The expected annual cash flows are as follows, Find payback period for A and B.

Cost or Cash Flow	Alternative A	Alternative B
Initial cost	(\$100,000)	(\$100,000)
Cash flow year 1	35,000	35,000
Cash flow year 2	28,000	35,000
Cash flow year 3	32,000	35,000
Cash flow year 4	40,000	35,000

2. What is the value of an investment of \$3,500 after 2 years if it earns 1.5% compounded quarterly?
3. Mrs. Jefferson purchased an antique statue for \$450. Ten years later, she sold this statue for \$750. If the statue is viewed as an investment, what annual rate did she earn?
4. A machine can reduce annual cost by \$40,000. The cost of the machine is 223,000 and the useful life is 15 years with zero residual value.

Required:

- (a) Compute internal rate of return of the machine.
- (b) Is it an acceptable investment if cost of capital is 16%?

Tut Sheet II

1. From the following data, you are required to calculate break-even point and net sales value at this point:

	₹
Direct material cost per unit	10
Direct labour cost per unit	5
Fixed overhead	50,000
Variable overheads @ 60% on direct labour	
Selling price per unit	25
Trade discount	4%

If sales are 10% and 25% above the break even volume, determine the net profits.

2. From the following particulars, find out the break-even-point:

	₹
Variable Cost per unit	15
Fixed Expenses	54,000
Selling Price per unit	20

What should be the selling price per unit, if the break-even point should be brought down to 6,000 units?

3. Pepsi Company produces a single article. Following cost data is given about its product:- Selling price per unit Rs.40 , Variable cost per unit Rs.24, Fixed cost per annum Rs. 16000, Calculate: (a) break even quantity (b) break even sales (c) sales to earn a profit of Rs. 2,000 (d) Profit at sales of Rs. 60,000 .

Tut Sheet III

1. Find the compound interest on Rs. 10000 at 12% rate of interest for 1 year, compounded half-yearly.
2. The difference between SI and CI compounded annually on a certain sum of money for 2 years at 8% per annum is Rs. 12.80. Find the principal.
3. Sunlight company needs a machine for its manufacturing process. The cost of the new machine is \$80,700. The expected useful life of the machine is 8 years. At the end of 8-year period, the machine would have no salvage value. After installation, the machine would increase cash inflows by \$30,000 per year. Sunlight is interested to know the net present value of the machine to accept or reject this investment. The minimum required rate of return of the company is 16% on all capital investments.

Required:

1. Compute net present value of the machine.
2. Is it acceptable to purchase the machine?

IEA QUESTION BANK

SET1---

1. Explain law of demand with graph.
2. Explain law of Returns to scale and its stages.
3. What are the types of market? Explain them with their features.
4. What is law of supply and factors affecting it?
5. Explain the difference between science, engineering, Technology & Economics.
6. Define elasticity of demand and its types with example.
7. Explain factor of production and production function.
8. Explain law of variable proportion and its stages with assumptions.
9. What are the exceptions to the law of supply?
10. Describe discounted cash flow technic with example.
11. Describe I.R.R method with an example.
12. Write the meaning and scope of accounting.
13. What are the accounting concept and convention?

SET 2-----

1. Company XYZ is considering an investment of \$100,000. The useful life of the project is 10 years. The cut off period is three (3) years. The board of directors has identified two alternatives A and B. The expected annual cash flows are as follows, Find payback period for A and B.

Cost or Cash Flow	Alternative A	Alternative B
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Cash flow year 4	40,000	35,000

2. What is the value of an investment of \$3,500 after 2 years if it earns 1.5% compounded quarterly?
3. Mrs. Jefferson purchased an antique statue for \$450. Ten years later, she sold this statue for \$750. If the statue is viewed as an investment, what annual rate did she earn?
4. A machine can reduce annual cost by \$40,000. The cost of the machine is 223,000 and the useful life is 15 years with zero residual value.

Required:

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- (b) Is it an acceptable investment if cost of capital is 16%?

5. **From the following data, you are required to calculate break-even point and net sales value at this point:**

Direct material cost per unit	₹ 10
Direct labour cost per unit	5
Fixed overhead	50,000
Variable overheads @ 60% on direct labour	
Selling price per unit	25
Trade discount	4%

If sales are 10% and 25% above the break even volume, determine the net profits.

6. From the following particulars, find out the break-even-point:

Variable Cost per unit	₹
Fixed Expenses	15
Selling Price per unit	54,000
	20

What should be the selling price per unit, if the break-even point should be brought down to 6,000 units?

7. Pepsi Company produces a single article. Following cost data is given about its product:- Selling price per unit Rs.40 , Variable cost per unit Rs.24, Fixed cost per annum Rs. 16000, Calculate: (a) break even quantity (b) break even sales (c) sales to earn a profit of Rs. 2,000 (d) Profit at sales of Rs. 60,000 .
8. Find the compound interest on Rs. 10000 at 12% rate of interest for 1 year, compounded half-yearly.
9. The difference between SI and CI compounded annually on a certain sum of money for 2 years at 8% per annum is Rs. 12.80. Find the principal.
10. Sunlight company needs a machine for its manufacturing process. The cost of the new machine is \$80,700. The expected useful life of the machine is 8 years. At the end of 8-year period, the machine would have no salvage value. After installation, the machine would increase cash inflows by \$30,000 per year. Sunlight is interested to know the net present value of the machine to accept or reject this investment. The minimum required rate of return of the company is 16% on all capital investments.

Required:

1. Compute net present value of the machine.
2. Is it acceptable to purchase the machine?

GO

Page 2

Law of demand :

Law of demand expresses the functional relationship between price and quantity demanded

According to law of demand " Other things remaining constant there is an inverse relationship between price and quantity demanded "

opposite relationship between price and quantity demanded as shown in the diagram. " De when price becomes quantity demanded falls and vice versa in inverse relationship and quantity demanded increases. It Demand function -

Demand function for a product describes the relationship between the quantity demanded for a product and the price of the product. The quantity demanded for a product is affected by many factors. like.

its own price, income of the consumer, tastes, population, etc.

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GO

keeping all other factors constant except the price

Qd = f(p) Assumptions of the law of demand : 1) The price of related goods to slow down remain constant

2) There should be no change in the income of the consumer

consumers. clure Notes

3) There should not be any change in tastes and preferences of the consumer.

4) There should be no change in the size of population

5) The product that is to be considered must be a

normal good. : Pure 6) There should be perfect competition in the market Demand schedule and demand curve :

The law of demand can be explained with the help of a demand

Schedule and a demand curve Demand Schedule represents the various quantities of a product demanded at different prices. In other words demand schedule represents the various price quantity combinations

Price Offered

POR

10

180 130

15

200

Page-4

10

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Page-4

The schedule represents different combinations of price and quantity demanded when price falls quantity demanded increases

to 200 units when we represent the demand schedule on a graph we will get a downward sloping demand curve

to 200 units when we represent the demand schedule on a graph we will get a downward sloping demand curve

Demand

on this figure shows the demand curve which is a downward sloping

μουν και ορολου του με vartow price quantities

Combination

A

Q1 22

demand

me

1) Income effect:

Money income of a consumer changes when the price of a product changes. In the case of a fall in the price of a product, the consumer's real income increases. This leads to an increase in the quantity of the product purchased. However, the consumer can also purchase other goods and services with the same amount of money.

1)

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Page-5

a) Substitution effect

of the price of the product falls, it becomes relatively cheaper than its substitutes. Therefore, consumers will now substitute the costlier product for the cheaper one. As a result of which quantity demanded for the cheaper one will increase thus causing a substitution effect.

Lecture Notes in 3) New consumer ;

When the price of a product falls, people who were not purchasers, are brought before the market.

en

due to its purchasing at A a result of which

quantity demanded on the market in a given

price is

lower

than

4) Psychological effect :- .

when the people find the possibility of a cheaper price they usually purchase more quantity which is quite natural and psychological. Due to which quantity demanded increases. Limitations to law of demand ;

lecture

Notes. In these are some situations where law of demand does not apply. These are the limitations to law of demand.

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given

Lecture Notes.inddelling

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Page-7

2). *Article of distinction / Veblen effect*

This exception to law of demand is associated with the name of

Veblen and therefore known as Veblen effect. A few goods like diamond jewellery, Costly Cars, Costly clothes etc are purchased by the rich & Wealthy Section of the society to show their status to others. The price of such goods are so high

that they are beyond the reach of common people, the

higher the price of such goods. greater is the demand because higher is their prestige value. When the price of

such goods fall such people think that their prestige value

has come down and they don't purchase those goods

therefore the quantity demanded falls with fall in their price & increases with increase in their income. This is also against the laws of demand, 3). *Conspicuous necessities*

Certain things have become the necessities of modern life & people purchase them despite their high prices. The

demand for Cars, LED, Bikes etc has not come down, though their prices are increasing day by day:

4) Ignorance

A common ignorance is another factor which

sometimes induces forces the consumer to purchase the goods at a higher price because they think that high price goods are better in quality that is why

Page-8

The goods as a higher price because they think that

Go To Page Page number in quality that is why

Page-8

People prefer to purchase goods from high priced AC Shopping Mall Badby er dhan to purchase Comme foro duet from Ordinary Prep at lower price. lower price 5). Expectation of future Change in price.

When the people expect an increase in price in future they purchase more quantity of the goods even if current

price is high on the other hand when they expect a fall in price in future even if current price is less

they purchase less quantity. This is also against the law of demand. Law 6). Emergency

During emergency like war, flood, famine etc there is a

fear of food shortage therefore people generally purchase more quantity even at higher price and store them to use

in future 7). Change in fashion: When the product is out of fashion even if the price is low

then these people don't purchase the product or quantity demanded is less. On the other hand if the product is in fashion even at high price people are ready to purchase these products there fore quantity demand is more at high price.

Page-9

Go To Page Page number

GO Page-9 Elasticity of demand

The laws of demand states there is an inverse relationship between price & quantity demanded, i.e. when price increases quantity demanded falls & vice versa with increase in quantity

demand. Other words the law of demand gives only the direction of change in quantity demanded with change in price but

it doesn't tell us the magnitude of Change in quantity demanded: By how much quantity demanded changes with change in price. The magnitude of Change is given by the concept elasticity

of demand

Elasticity of demand measures the degree of change in quantity demanded as the result of change in price,

income & prices of other related goods. From Hicks definition of Elasticity, we can classify it into

3 types

1). Price Elasticity (e). Income Elasticity (mu). Cross Elasticity

Lecture Notes.in

1). Price Elasticity

It measures the degree of change in quantity demanded as a result of change in price. It is denoted by

$e = \frac{\Delta Q}{Q} \div \frac{\Delta P}{P}$ = Proportionate change in quantity demanded

Proportionate change in price

changes in quantity/original quantity

Change in Price / Original price.

Page-10

Go To Page Page number see un price / original GO

Page-10

9 ep

Alfa.

Aplp. - e n

Q. A pen company sells 4000 units at Rs 12 per piece. If price is lowered by 20% to sell 6500 units calculate the

to sell 6500 units calculate

Company would be able to find the price elasticity of demand.

Soln:

Price

12

Qty 4000 6500

to

$A_p = -2$

$A_Q = 2300$

$Q_p = 2300$

0

M26 126

x 1200

ep -L-2.25ure Notes.in

Note!

price and Quantity are inversely related.

price elasticity is always a negative number!

To measure the degree of change in quantity demanded relative to change in the income of the consumer. It is denoted as income elasticity

income elasticity = "

change in quantity demanded / proportionate change in income.

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proportionate

change in income

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Change in Qty Original and

change in income

income

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AQ

Income elasticity is always positive. Q Suppose a consumer's income increases from A 1000 to B 3000 and his purchase of good X increases from 2 to 3.000 units. What is his change in income elasticity?

for y Solny arco ureNotes.in

AB= 1000

oe

woo

DANSD LectureNotes in

T 10 = 2.5 Intel Gook elasticity

Price elasticity measures the degree of change in quantity demanded of X as a result of a change in price of y. When x and y are related goods or substitutes, goods,

it is denoted as ϵ_{xy}

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Page-12

percentage change in quantity demanded a proposed change in price of y

$$\epsilon_{xy} = \frac{\Delta Q_x}{Q_x} \div \frac{\Delta P_y}{P_y}$$

DQ

Qy

Dy App

sax

Q Demand function as $Q_x = 10 - 6P_x + 12P_y - 4P_z + 104$

Calculate elasticity of demand of price of roses and Qty demanded as 1200 units

Sep DGP

Ap

=-6

800 lan

Q The demand equn of x wt e $Q = 150 - 100 + 0.5I$

where Q_i Price are quantity price and income respectively assume that $p = 4, 4 = 100$ 1) go to the source Notes.in . a) find out elasticity of given price & income (where $Q = 50 - 10.4 + 0.5I$)

$50 - 40 + 50I$

regalo

Page-13

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Page-13

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de ♥ dyuālot.es.in

Os x lenge

Gel

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0.83

@ The demand equn of x $Q = 500 - 3P_x + 20$

$Q = 900 - 3P_x + 0.14I$ where Q is Quantity P_x price of x P_y price of a lot Read y fue income of the consumer

$P_Q = 10, P_P = 20$ tu y come find Parce nincenned con eles ting

brace of a Dog

consumere sf

Related quals Poin

find

pads

Sum of

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$$Q_x = 500 - 3P_y + 202 + 0.14$$

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15 The value of price elasticity is not defined. Ex:- Substitute goods. a) perfectly inelastic demand :

Here quantity demanded

demand curve is not affected by change in price. or quantity demanded

whatever may be the price - The demand curve is a vertical line parallel to the y-axis and price elasticity is zero

Cor:- 1) Insulin 3) Unidirectional elastic demand -

A given percentage change

Q, PP, in price brings an equal percentage change in quantity demanded. The demand curve as 10 degree slope

io 43 relatively elastic demand :

Here quantity demanded is more affected by change in price or

Small change in price

Q, P, P,

psi quantity demanded, The demand curve is a flatter

□□ in comforts and luxurious goods

brings a

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Profits

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! Comforts and luxurious goods Go To Page Page number

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Page-16

5. Relatively inelastic or less elastic demand :

Hope quantity demanded as less offered by change in price. Demand Curve is a steep line

A smaller change in price leads to a small change in quantity demanded

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Page-17

origin, of demand in a graph

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Production -

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$$Q=f(L,K, mi) \text{ whea } G + \text{ Output}$$

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Page-26

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Page-26

There are fecro thecrores of procddue becom.

Law of variable popper tions :-(SRPF) 2) cow of Returons to sale (CRPP) Basic Conceph - Total product (TP):

Total prooked at the to-face output poodlined by a

facon.sf given quantita, of a variable labour

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product a) Averooqe Product :- (AP)

of a the output por unit ofa variable factor of labour in the variable forector

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TP No of labours

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MPL - da Lecture Notes.in Q. Given the production fonction $Q = 22 - 0.25L$ final

the moogensed prooduct of los barro when Lalo soin $Q = 12 - 0.asL3$

$MPL = db = 2L - 0.75 2?$

$= 2 \times 10 - 0:15 103)2 - 20 - 75 = -55$

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- $2 \times 10 - 0.15 1012$ Go To Page Page

number = -55

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Equal Pooduet Curoves :

Equal poodet woves pepesends those factors Combination wlich orbe cepable of peodluung the same output . Each equal promenet move 'repraeseros a defenak sevel of of outpur. Higher Equal poodet unes give Leglur output But člay point on Same Igual poodet

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Units of Labor

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Page-30

Stage - III :

Lecture Notes.in This is stage of negative potum in his stage TP declines and there fore the TP curve slopes down and The Mp of the variable factor a negative and therefore mp curve goes below the axis .The AP con finere to fou been a positive Ass the mosgeha Dooduet of labour is negative this stage ý known as the Stage of negative cockerm,

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Page-33

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$AB = OA AB+OA 04 +CA \rightarrow OB = 204 \text{ Notes.in}$

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Page-35

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Returns to Scale Operater due to the following factors

1) Internal of external economies of scale u Internal & external diseconomies of scale.

Increering Returns to Scale operale due to internal &

werternal eo nomicies

Guternal economies referrs to the advantages enjoyed by thel yaum due to increase in its Scale.

Intiemal economices consist of

+ Labour economies, llono rises due to indivisibility of factors / machine, managerial economies , margeting

llonomies etc. cctures 1) Labour Economices -

On the low run, their is increase in wook force.it leads to Specialisation & division of labour which increases the

efficiency of labour due to which output inw eases at an increasing rate ureNotes.in

ii) Indivisibility of machine

When quantity produced is less the machine can't be wred to the optimum extend but when there is increase

ein output the machine are fully utilised & their is

increasing returns to scale.

10 Managerial Economies -

When the firm operates in a small scale, one manager has to look after all the departments but when

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no

business expands different managers are in charge

has to look after all the departments but when Go To Page Page number

GO Page-38

business expands different managers are in charge of

different works which promotes efficiency & Production in a greater Proportion.

her ease

iv). Marketing and

Lecture Notes

1). There mayn't be proper co-ordination among all the departments which affect the production adversely.

Page-39 Market

Go To Page Page number

Page-56 MODULE- III

prod

* COST CONCEPTS & ELEMENTS OF COST

The analyses of cost is of great importance in economics because production decision of the producers are influenced by cost consideration. The

as it influence the cost very significant products, supply, sales and the determination of price in the market. O

There are four factors of production i.e., Land, Labour, capital and organisation in order to produce a product, producer needs these factors of production. And these factors are not available freely: Thus, the expenses incurred by the producer to pay for these factors of production are known as "cost of production".

So, cost refers to the total amount of money spent in the production of goods.

clarification of cost notes.in

Costs are classified according to their common characteristics. Some of the clarifications are given below:

Lecture Notes in

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Go To Page Page number

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Page-57

2

say this is the role of the next best opportunity

Producers have to choose between different alternatives | Go To Page. Page number their money and time.

- the So, the opportunity cost of anything

alternative that has been

forgone.

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Go To Page Page number

GO

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Page-60

and nail in furniture makey are the enempus of

indirect materials, Go To Page Page number

Page-00

supervisors, Salary paid to the

The example of indirect labore are, wage paid to the store keeper, supervisors, Salary pod back office employees, blei

And the excempls of indicet experies are rents, electricity bills, insurance,ete

Lecturen Overheedo ara classified in to three groups:

Page-61

coa collinaid Dishibution overheads : Ovr heads include rent on office bumbung, Salanes to back office staffs legal charges, etc. The variable Go To Page Page numbere etationary exp Go

Postage Dagens titephone case de bilg en penses, bte

Page-61

CC) selling and Distribution overheads :

Expenses incurred for the promotion of Sales and relaining customers are considered as selling

and commission fail to Overheads. For eslample, salaries the sales managers, executives, agents, and advertisement expenses are and selling overheads.

On the other hand, expenses incurreal for fremSPORTing good from point to

the manufacturing the warehouse stores and upto their delivery to the Customers are koris as disfributioz over hoods. I sonce of examples of distribution overheads are, warehouse rend,

Salanes paid to warehouse employees, experies on delivery vans truck, insurance on 'transit', etc.

price of a product ni derived as

The selling Shoron below:

(a) Direct material cost + Direct labour cost +

Direct expenses = prime cost.

Prime cost + Factory overhead = factory cost.

Factory cost + Administrative overhead =

cost of production. Cost of production

+ opening finished Stock

Closing finished stock = cost of goods sold.

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7

closing finished stock = cost of goods sold. Go To

Page Page number

GO

Page-62

ce) cost of goods sold + Selling s distribution

Over head = cost of sales. CF) cost of sales + profit - Sales.

Volume of sales/quantity sold = Selling Price per unit. Lecture Notes.in

In the above calculation, if the opening finished Stock equal to the closing finished Stock then the cost of production is equal to the cost of goods sold.

quarterly, half yearly s jeden in

Lecture Notes.in

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GO

Go To Page Page number

Page-63

Proforma of a cost sheet:

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particulars

Anouk CRO Direct Material

Xxx Direct labor

XXX

X*X Direct Expenses tes.in

Prime cost + Factory overheads

XXX

Factory cost + Administrative overheads

xxx

Prime cost of production T + Selling & Distribution overheads

xxx

Cost of sales 0000 + profit balancing

figure) in

xxx Lecture Not SALES 0000

Example: 1 : from the following particulars given below

Prepare a cost sheet's in Dived Material 1,50,000 Direct labour 50,000 Factory overheads 60, 000 Administration cards 75,000 Distribution heads | 20,600 sales 4, 65,000 Direct expenses | 20,600 selling over heads 209,000

Page-64

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XX GO

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cost of production Go To Page Page number

Cost of sales + profit balancing figure)

Lecture Not SALES

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Example:1: from the following particulars given below

prepare a cost sheet. Dived material 1,50,000 Dived labour 50,000 Factory overheads 60,000 Administration des 75,000 Distributio? heads 20,000 sales 4, 65,600 Direct penses 20,600 selling over heads as, 600

Page-64

Solutions:

cru

Particulars

Amount Direct material

1,50,000 Direct labour

50,000

20,000 Direct expenses Lecture Notes. Prime cost

2,20,00

60,000 Addi Factory overhead

works cost

2, 80,000 2, 80,000

25,000 Atli Administrative

overheed

cost of production 3,55,000

25,000 Add: selling overhead

20,000 Add Dishubution overheaded

cost of sales 4100,000 Add: profit a

65,600 - cales 14,65,00

Lecture Notes.in

Sales Sales

7,20,000

Go To Page Page number

Page-00

GO

* Difference between Fixed and variable costs

FIXED COSTS VARIABLE COSTS → These costs are * They costs vary with the

independent of output level of output. 0 + These are the costs of → These are the costs of fixed factors

| Variable factors. + These costs exist even → They costs become Zero

at zero level of output. at zero level of output. → These costs are found → These costs are seen in I only on the short period

→ These are the supplementary- ** They are called as prime

measurable costs

cemus s log.sos

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Lecture Notes.in

Lecture Notes.in

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12

* Break - Even Analysis

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terenu

* Break- Even Analysis

The main objective of break-even analysis is to find the cut-off production volume from where a firm make profit. Leb,

S = Selling price per unit
L = Variable cost per unit

FC = Fixed cost per period

Q : volume of production
The Total sales is given by the following formula:

TS = $S \times Q$
The total cost of the firm for a given production Volume is given as :

TC = Total Variable cost (TVC) + FC
The linear plots of the above two equations are shown in following figure

Lecture 10

Break-even sales

u 1 Hook 2

Pa

BEP B Production Quantity

Page-68

13

of the

Total sales

has

The intersection point

BEP Q Go To Page Page number

Page-68

GO

The intersection point of the Total sales Revenue line and the Total cost line is called the Break-even point. The corresponding volume of production on the x-axis and known as the 'Break-even sales quantity'. At the intersection point the total cost equal to the total revenue. This point is also called no loss or no-gain situation. For any production quantity which less than the break-even quantity,

the Total cost is more than the TR. Hence, the firm will be making loss for any production quantity which is more than the Break-even quantity, the TR will be more than the TC. Hence, the firm will be making profit.

profit = Total sales - (fixed cost + variable cost)

The formulae to find the break-even quantity and break-even sales are given below:

BEQ

E Cecisentengs.in

FC

BES BES

=

- clay Notes.in S-V =

The contribution is the difference between the Total Sales and the total variable cost. The margin of Safety (MS) is the total sales over and above the break-even sales.

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14

14

the contribution and

1. formulas to compute break-even sales. Go To Page Page number

GO

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14

The formulas to compute the contribution and Margin of safety are given below;

Contribution = Total Sales - Variable cost per unit - Selling Price per unit - variable cost
Lecture Notes.in

M.S = Actual sales - Break even sales

Per unit

profit

by Total sales.

combine)

MS as a percentage of sales

$= (MS / \text{sales}) \times 100$

Example; Alpha Associates has the following details:

Fixed cost = Rs. 20,00,500 Variable cost per unit - Re. 160

Selling price per unit = Rs. 200 Find,

(a) the break even Sales quantity (b) The break even sales value (c) If the actual production quantity is 6000 find

(i) contribution, and (ii) Margin of safety by all methods,

Page-70

Go To Page Page number

GO

Page-70

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solution:

Cambre Cha t

Selling price

FC

(a) Break-even quantity

=

20,00.000

--20,000 UN 200-160

(b) Break.eves cales. - e

XS

2900.000 x 200 = Rs. 40,60,000

100

CC) contribution

= sales -VC

$$(C \times 9) - Gv \text{ xe) Lectu}=(200 \times 600) -(100 \times 60,000)$$

= 1,20, 60,500 - 60,00,600

60,60,000

Lecture Notes.in

method -T

M. S = Sales - BES

= 60,000x200 – 40,60,600 31, 20,50,600 - 40,60,000 - Rs. 80,60,60

Page-71

GO

Go To Page Page number

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Method - 71

Profit

M. S =

x soles

Contribution

$$\begin{aligned}
 \text{profit} &= \text{Sales} - \text{CFC} + \text{vx8} \\
 &= 1,20,00,000 - 80,00,000 \text{ Lectur} \\
 &= \text{R}8.40,00,600 \\
 &\quad 40,60,000 \text{ MS} - \\
 &\quad \text{ex } 1,29,60,600 \text{ } 60,00,000 \\
 &= \text{Rs. } 80,00,000
 \end{aligned}$$

80.80.600x160=67% M. S sa percent

of sales - 7,20,0000

* profit - volume Ratoos CPA Ratio)

Lect Plv ratio a valid ratio which is useful for further analysis. The formula for

Plr ratio

Plv ratio

contribution

sales

Sales - Variable cost

Sales

BEP's Plv ratio a'

The relationship between given below!

FC BEP a

Plv ratio

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17

ISEP 2 .

Plv ratio Go To Page Page number

GO

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Profit

M.S

- Plu ratio

Example:2: consider the following data of a company for the

Year 2014 Lecture Note

Sales = Rs. 1,20,000 Fixed cost Rs. 25,000

Variable cost R1.45,600 Find the following:

cas contribution Cb) Profit (c) 23EP d) MS

Solution:

cas contribution - Sales - VC

Lecture 120.60 \$ 45.000

-75.000 Cb) pufet - Contribution-fces,

- 75600 - 25000

= 50,000

ce) SEP

P/V ratio -

Contributo?

Sales

75000x10 = 62.50%

62.67

1,20,600

BEPFC: 25.com

*160 R. 40,850 Pirrotia Col) Mos e noht Hoxto = Rs. 80.500

Plyoto 62'500

62.50

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Supply Schedule and supply curve

The law of supply can be explained with the help of a supply schedule and a Supply Curve. Supply Schedule depicts the various quantities of a product offered for sale at different prices. As quantity supplied on different at different prices, supply Schedule represents their various price and quantity supplied combination.

price ! allied

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GO

Supply Schedule and supply curve

The law of supply can be explained with the help of a supply schedule and a

Curve. L

Supply Schedule depicts the various quantities of a product offered for sale at different prices. As quantity supplied at different prices, supply Schedule represents their various price and quantity supplied combination

Price ! along

Curve

Supplied

CR)

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See on the graph

table that with increase

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apeared sloping come nepresenting 10 the various pole quantela combinations

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Qlz Supplied

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Factors affecting Stepply ?

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7) Tax code seabed:

When government imposes tax it increases cost of production and discourages the producers

Therefore quantity to produce more

On the other hand reduced. On the

when government imposes tax the supply curve shifts leftward and the quantity produced falls.

Subsequently, the quantity supplied will be more and

the quantity demanded will be less.

Faceptéms Ilimitations to law of Supply 1- The law does not apply to collection

(flee old coins gold Stamps , ancient paintings etc. on their supply & demand, because they cannot be collected)

Supply by offering a high price for them 2- perishable goods - the laws of supply and demand do not

apply in case of perishable products like fruits, vegetables, fish, eggs etc which cannot be stored

for a longer period of time 3- when the seller has an urgent need of money, the

would like to sell the product even at a lower price

Lecture Note's: 4- When the seller wants to close his business, at that time he sells the product at a lower

proius. The low does not hold good when the sellers want to dispose of the old Stacks and Purchase new Shack at that time they come in case they sell only at a lower price.

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Pay back period. (PB)

traditional method however it walukon terms of trine which is required to recov to investment Do Couth inhow able toru
CCFAT) per annum is writorm Bayback period is given by :

P8 = Initial investment

Coristant unnuual cash in How (CFAT)

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(variable) year to yetua

-il cash intew often tox it non uniform

than payback period is given by

$$P8 = A + \text{where,}$$

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(net invested cash flow) B = Absolute value

of ammulative cash outflow

at the end period A (it is net invested

Coub flow at the end 4 peuód A). C = Cab in how during the next period ofter A

Greater the Peybeck

(Advantage of

payback period

pesseed Sheeter will

uitate. 1. Egy and dimple to 3. Con be

we to measure risk in the project

3. for Companies facing Liquidity problem, it provides a good p anking of progests that wood return money early.

it does not account the trine value of money. fait does not quount Coun flouss which criure Abler pay back period

o

the risk -

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ARR A Pay fuck puri

not progesterol

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PE is planning to undertake a project requiring an investment of 105 Crores, the project is expected to generate a cash flow of 25 Crores per year. Determine the pay back period,

BoI

PB =

=

105

=

4.2 yo

initial investment / Annual cash flow =

A company is planning to take a project requiring an investment of 250 Crores. It is expected to generate

:

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مرارا ولم

1st year - 100 (2nd year -- 134 3rd year ---- 16

19 19 496 year 5th year - 39"

(Calculate this payback period.)

YEAR Cash inflow All Year

(CFAT) (total

cumulative cash flow)

(Initial investment)

CRO

100

00+

**

- 27

Pwyl-(AFB)

HE WNPO

+ 13 + 16 + 19 + 2

3+ !!

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Nouscounty

in ARR ord!

P.B =

A + B

=

3+

=

3.58 year

• Discounted cash flow Technique

In aug. rate of return + payback period methods there was no time value money but in discounted Cash Flow technique the future cash flows are converted in present value so that investment (cash out flow) returns (cash in flow) or benefits of it both are accounted

an inflow at same time i.e. at present value. if at present value is greater than cash outflow (investment) then project is financially viable,

$$P = \frac{F}{(1+r)^n}$$

P = present Value F = future Value r = interest per annum / cost on Capital n → No of period/years.

Discounting factor.

Hard Kutun Me Basa Project Management BE prepelleicht by me Son ECLES

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Pa Present value of Discounted Cash Flow (DCF) $P = \frac{C}{(1+r)^n}$

$$F_t = C F_2 = C F_n =$$

future cash flow

.....

.

after .

1 year 21ty cars m yeurs..

The total discounted cash How (total poresent Lecture) which is Equwalent to future cash Hows do im" years is Equal to :

DEF = of
main tanto

Ω

DCE = CF1 x Kx + CEXKz + ... + Can X kn med present maine

2

kec

D-F for first year

- nth yecer y Kunsten

A

CF + cash flow.aftos Tax.

\$

Total present Value (DCF) > Total initial investment, then Rooject is financially viable

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Net present Value (NPV):

Tate 1 Pincsent Value of cash inflow – Totales

esent

NPV =

Value Cash out

NPV =

Total DCF - Total initial cost.

=

Totod OCF -

Totat investment at present cost

NPV > 0, then project is financially viable
NPV = 0, then project meets just Break even
(ie. No project profit - No loss Situation NPV < 0,
project is not financially viable.

i

. if more than one projects have the NPV than the project
with maximum NPV is most viable. '

(6). Benefit Cost Ratio (BCR);- ..

BCR =

.

Total Benefits at present Value. Total investment (lost) at present value

if

BCR > 1, project is financially viable (Accept)

BCR < 1, "

" "

" Not an (Reject)

BCR = 1, In difference

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Initial investment for a project

28 million 290,000

ab investment# □□□□□□ □□□

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*** YEAR

1st year grid year

year year

G F (*) 80,000 1,20,000

70,000

40,000

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9,000

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Capital Cinhest state

9% than find the NPV

oh in How

→ DCF

Total Present Value (pv).

-

(n+7)

(1+r)² = (1+y)

(1+r)ⁿ.

(1+r)

=

*

30000 (1 + \$40)

to 1,20,000

(1+%1002

70000 (1+9100)

49,00 + 200 (1 7100" (1+ Vice

DCF = -2,69,700

NPV =

. = NPV =

- Total p.v. of investment Total

P.V g (auh in flow

269,700 – 3,40,000

29,700 > 0

project is Vlicable

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WA Muthuset tied)

norrland

(6) Internal Rate of Return (IRR)

e Ekonomie

(- it is also known

OR Marginal productivity Fietunn OR yield on Return OR

(DGFA

ORI Discounted cash flow rate of setu

In

ERR

→

IRR is the discount satt at which the present Valo of a future cash in flowy i Equal to total initial investment it means the net porcent Value is Zelo

IRR that rate at which the project achieve no prohibit no lots situation lett achieve break even.

→

IRR is used for Capital budgetting it for profitability of Investment ibi IRR is > Lost of capital (Inbrest Pal then project should be undertaken. IRR gives idea about rate of return whereas NOV gries idea about value ob return

hare TRR Can also be we..to evaluate big back of Shaumery

→

→

NOTE: The term internal meaning in internal Metunn rate) means

that calculation does not in corporate Environmental

inbrest Nute factors such as

inflation

+

IRR Can be Calculated as follows . ib i is Internal return hel natc (TRR)

NPV = 0

*

Total PV of count in flow (DCF) - Total Av of investment (cash outfias

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DCF - Initial Cost EO

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0;

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i IRR

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y Ci in

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porojat is viable ;

x Thermal sa Puke

mple :- Calulak the IRR boy a project having cash flouses as

Shown in table. The total inihal Cost of the project

is 7 1,33,400. H o Cost on Capital is 47. Give your decision about exemption of project.

year ist

2nd 3rd

Cash Hiow (CEAT)

736,200

54,300 F 48,100

i = IAR

li = Total initial forst = 1,23,400;

DCF = li = wpro

Sei

SFR

Ett tija

54800

36200 (ii)

CI+

$$- 1,93400 = 0$$

$$42,100 = 1,23,400 * 7+t)$$

$$i = 60596 = 5.99\%$$

m IRR

> Cost on Capital rate a lie i

5.964 > 4% Pooject is viable

Since,

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as em

CATIFU

von DTUBO Proce

DMM

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