Institute / School Name	Darbhanga College of Engineering, Darbhanga
Program Name	B.Tech Mechanical Engineering.
Course Code	HS106
Course Name	Industrial Economics and Accounting
Course Coordinator Name	Mr. Prabhakar kumar
semester	6

CONTENTS

b. Teaching Evaluation

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	Max Marks: 100	
3-1-0	4	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

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 :**		TB1, RB3	70-140
		Various concept of cost, Cost function, Short & Long run cost. Concept of Revenue ,Break-Even Analysis		https://www.youtube.com/watch?v=TywirlymIDY	
Tutorial – 4, Assignment 2					
20-26		**Meaning of Market :**		TB1, RB3	141-202
		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		https://www.youtube.com/watch?v=wkji4WOEgFc	
Tutorial - 5					
Mid-Semester Exam (Syllabus covered from 1-16 lectures)					
27-33		**Engineering Economy :**		TB1, RB3	141-202
		(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.		https://www.youtube.com/watch?v=C5o6U7zOebM	
Tutorial 6					
34-42		**Accounting:**		TB1, RB3	203-283
		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.		https://www.youtube.com/watch?v=wkO21owPOLE	

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**
3rd 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**

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 preset 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?

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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------

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Required:

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

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normal good. : Pura 6) There should be porfect compete ison in the morolieti Demand schedule and demand curve :

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1) Income effect:

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a) Substitution effect

of the price of the produit falls, it becomes relatively cheaper than its Seebstiteade Those fore bene Consumers will now Suebsteteade the costliey poodluck

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4) Psychological effect :- .

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Notes.in These are some situations where low of demand does not aporated 0 beemos ineffeebebe Therapy are the lime fratione

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2). Article of distinction / Veblen offeet

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

Teblion and therefore known as Veblen offent. A few goods like diamon jewellery, Costly Couys, Costly likes etc are Purchased ley the rich & Wealthy Section of the society.to Show their status to others. The price of struch goods are so leigh

that they are beyond the rich of common people, the

higher the price of such goods. greaber is the demandbecause higher is their prestige value. When the price of

Suels goods fall such people thing that their prestige value

has come down and they don't purchase those goods

therefore the quantity demanded falls with fali in their price & increases with increase in their fonice. This is also against the laws of demand, 3). Conspicuores necesities

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

demand for 4C., LED , Bikes ett has not come down, though their pieces are increasing day by day:

4) Ignorance

A côn summer ignorance is another faitor which

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

Page-8

The goods as a higher mee meenuse they think that

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

lohen the people expect an increase in forice in future they purchase move quality of the pooo duet even if current

porice as high on the other hand when they expect a fall in fonce in future ovien uf current price is less

they fuchase less quantity. This is also against the low of demand. Leon 6). Emergency

During emerginey like war, flod, femine etc there is a

fear of food shos tage therefore people generally purchased mere quantity even at higher Sonice and store them to use

in future 7). Change in fashion: 96 the produet is out of fashion revien uz tie torice ces locus

Stity then these people don't purchase the forchet or quantity demardeod is les. On the other hand if the modwet is in fashion even at high price people are ready to purchase teve products theve fare quantity demand is more at high mice.

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GO Page-9 Elasticity of demande

The laws of demand Staties their is an inverse relationship between price & quantity demanded, ince when price increases quantity demandud yalls & force falls with increase in quantity

demanqued. Other words the law of dumand gives only the direction of change in quantity demanded with change cin fónice but

it doesn't feu us the magnitude of Change in quantity demanded: By bay how muen quantity demanded changes with change in porice. The magnitude of Change is geven by the concept relasticity

of demand

Pleasticity of demand measures the degree of charge in quantity demanded as the resiet of changé cin price,

income į fizices of other related goods. From Huis definition of Slasti lety, we can classify it into

3 types

12. Price Elasticity o tes in 1). Income Elasticity mu). Cross Elasticity

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1). Price Elasticity

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& p = Proportionate change in quantity demandeep

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x 1200

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price elasticity is always ave On come elasticity!

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Q Demand function as Qx = 10-6 PX + 12 px - 4P2+104

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50 - 40 + 50 I

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Cor:- Sat 1 Insulin 3) Unidanej elastic demand -

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Q, PP, in počce borngs an equal percendage change in quantity Porce L demanded. The demand curve as 10 zbe besecel state ale down used sloppinge ctureNotebin tata

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Here quantity demanded a more affected by Change in porce or o

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psi quantity demanded , The demand cerove is a fratter

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P! Comfools and luxurious goods Go To Page Page number

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5. Relatively inelos foc oro len elastsc demand :

Hope quantity demanded as len offered by change in price. Demand Cerove aj a EP Slbeeper me

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There are fecro thecrores of proccdue becom.

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

Total proooked at the to-face output poodlined by a

facon.sf given quantita, of a variable labour Hue Veroiable Jactor and 3r 10 labourer poodluce 200 quinlals, 200 quilalt as the total

product a) Averooge 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

3) Morogenad Prosduet :-(mp)Totes in

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MPL = db = 2L - 0.75 2?

= 2x10 - 0:15 103)2 - 20 - 75 = -55

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- 2x10 - 0.15 1012 Go To Page Page number = -55

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Equal Pooduet Curoves :

Equal poodet woves pepecsends those factors Combination wlüch 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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Law of variceble poopootaben es an important law

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Page-30

Stage - III :

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3) Dimishing return to scale otel

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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 Economicies -

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.

lö Managerial Economies -

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

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mo

business expande deffuement managers are in charge

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

GO Page-38

business expande diffelment managers are in charge of

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

her ease

iv). Marketing agu

ecture Notes

1). There mayn't be proper co-ordination among all the

departments which affect the fonduction adversly.

Page-39 Market

Go To Page Page number

Page-56 MODULE- III

prod

* COST CONCEPTS 8 ELEMENTS OF COST

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

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

There are four factor of production ir, Land, Labeur, capital and organisationen 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 lai karwn as "cost of productios?

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

clarification of costsotes.in

costs are classified according to their Common characteristics. Sonde of clarification are gives below:

Lecture Notes in

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2

say this sit ni the role of the next best oppordly

Pelle have to choose between different alternatives | Go To Page. Page number their money and Gome.

- the So, the opportužily cost of cuything

alternative that has been

forgone.

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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 : Ovur 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, warchouse rend,

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

price

of a produck

ni derived as

The selling Shoron below:

(a) Direct material cost + Direct labour cost +

Direct expenses = prime cost.

aby prime cosf + Fachory overhead = factory cost.

CC) Factory cost + Administrative overhead =

cost of production. Cdo cost of production + opening finished Stock

Closely finished stock = cost of goods sold.

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7

closing finished stock = cost of goods sold. Go To Page Page number

GO

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ce) cost of goods sold + Selling s distribution

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

og Soles/o.ucality sold = Selling Price per unit. Lecture Notes.in

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

quarterly, bolf Yenye s jeden in

Lecture Notes.in

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Page-63

Proforma of a cost sheet:

0000

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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

Fame cost of production T↻ + Selling o Distribution overheads

xxx

Corst of soles 0000 + profit balancing figure) in

xxx ecture Not SALES 0000

Example: 1 : from the following partiwlans 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 soles 4, 65,000 Direct expenses | 20,600 selling over heads 209,000

Page-64

0000

xX GO

Cabina

cost of production Go To Page Page number

Corst of soles + profit balancing figure)

ecture Not SALES

0000

Xxx

0000

Example:1: from the following partiwlars 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 soles 4, 65,600 Direct penses 20,600 selling over heads as, 600

Page-64

Solutions:

cru

Particulars

Amount Direct maturiol

1,50,000 Direct labeur

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 Adminstrative

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

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* Difference between Fired cof a variable costi

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

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

| Variable factors. + These costa erist even → They costo become Zeroa

at zero level of autput. at zero level of culput. → Thex Corts are found → These costs are seen in I only on the short period

→ These are the supple- ** They are called as prime megtary 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 to find the cut-off procluction volume from where a firm make profit.

Leb,

S = Selling price per unet Lectva variabda cost percnet

FC - Fized cost per period

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

TS - Sx 2 The total cost of the firm for a given production Volume à give as :

Le To Total Variable cost (TVC) + FC The linear plots of the above two equations are shown in fellowing figure

LectureN ISR

Break-even soles

u l Hook2_

Pa

BEP B Production Quantity

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13

of the

Total sales

ha

The intersection point

BEP Q Go To Page Page number

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GO

The intersection point of the Total sales Revenue line and the Potal cost line w called the Break-even point. The corresponding volume of producto on the x- and known as the 'Break-even sales quntity. At the intersection point the folct cost equal to the total revenue. This point n also called no loss or no-goin situation. For any production quantity which less than the break-eves quartily,

the Td a more than the TR Hence, the firing will be makin loss for any production quantity which à more then the Break-even quantity, the TR' will be more than the TC. Hence, the firm will be making profit.

profit = Total sales - (fired cost traviable cool)

The formulae to find the break-even quintety and break-even soles are given below:

BEQ

E Cecisentengs.in

FC

BES BES

=

- clay Notes.in S-V =

The contribution n the difference betwes the Potel Sales and the potol variable cost. The margin of Safety CMS) ñ the pott sales over and above the break-even soles.

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the contributeen ang

1. formulas do compute break-elen soles. Go To Page Page number

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14

The formulac to compute the contribution and Margin of safety are given bela;

Contribution = BTS - VC costribution peronet - Selling Price per unit - variable cost Lecture Notes.in

M.S = Actual sales - Break even sales

Per undt

profit

y Toled sales.

combuse)

Mis as a percentage of sales

=(MS/coles)x160

Example; Alpha Associates hos the following details:

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

Seeley price per urett = Rs. 200 Find,

(as the break even Sales quantity Cb) The break eves sales e Notes.in (C) If the actual production quantity * 6000find

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

Page-70

Go To Page Page number

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solution:

Cambre Cha t

Selling price

FC

(a) Break-even quentity

=

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 x 9) - Gv xe) Lectu=(200x600) -(100x60,000)

= 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

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GO

Go To Page Page number

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Method - 71

Profit

M. S =

x soles

Contribution

profit = Sales - CFC + vx8

= 1,20,00,000 - 80,00.000 Lectur

= R8.40,00,600

40,60,000 MS -

ex 1,29,60,600 60,00,000

= Rs. 80,00,000

80.80.600x160=67% M. S sa percent of sales - 7,20,0000

* profit - volume Ratoo CPA Ratio)

Lect Plv ratio a valid ratio which ai useful for further andyse's. The formerla for Plr ratio

Plv ratio

contribution

soles

Sales - Variable cost

Sales

BEP s Plvratio a'

The relationship between given below!

FC BEP a

Plv ratio

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17

I5EP 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 Not

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

Variable cost R1.45,600 Find the following:

cas coótribution 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

Plryoto 62'500

62.50

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18

Supply Schedule and supply ccone ir

The law of repply can be explashed with the belp of a supply schedule and a Supply Cuove. Supply Scheclube depossents the varicru quantities a/ a prordust e offered for soul at diferent prices. As quantily Seepplied on different at different proces, supply Schedule represents therr varoiou poice and quantity supplied combinatione.

poice ! allied

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Supply Schedule and supply coveis

The law of repply can be puplashed with the belp of a feapply schedule and a

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upply Supply Scheclube depossents the variou quantiteres o/ a prordust be offered for Sout at different prices · Asi quantity Scupplied a different at different proces, supply Schedule represents thervarozow poice and quan til supplied combinatione

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with a to 80 units

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Shedule on a graph cue will

get the Supply love

on the figure is the urentes.in Supply Cerove which is an micella 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 cod sebead:

When govestment impole fare it increases cost of prooder von and dis courage the producers

Theroe fore quantity to produce moze

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when government pagubels +

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o poodluce Subceedus encourage poodi eri

quantity therefore

upplied will be more and

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Faceptéms Ilimitations to law of Scepplyer 1- The law does not applied to come collection

(flee old coins gold Stamps ,anctent paintenas etc. o their supply & ferud, Bebe connot incolas Huly

Scepply by offering a high price for them d- persishable gooca s- the laws of supply obocs not

opperale en case of perishable proolete like focuits , vegetables, fish, egg ete weich can not be stored

for a longer period of time 8- when the seller en urogent need of money, tu

would like to sell the poodieet even at a

lower prices

out that time he sells the product at a loccer

proiu s. The low does not hold good when the sellers wat

to dispose of the old Stacks and Puochase new Shack at that time they come in cocase the sell only at a lower price.

daly we four projet

4 o CĐVới sẽ

Pay back periol. (PB)

widely wel it is a 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 unnual cash in How (CFAT)

Hon

-

(variable) year to yetua

-il cash intew often tox it non uniform

than payback period is given by

P8 = A + where,

م = اهزأ معو

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ا ماrnعالمهاي المدا علوملي

(net invested cash flow) B = Absolete 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 -

ف اطر سارا

ARR A Pay fuck puri

not progesterol

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die Betro S GATE PE

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PE i planning to undertake a p onte sneguang tal investment of 105 Crore, the project is empeded to generar con flow other twy (LFAT) od 25 Crores Por its Lube in each yea I yerini tekshe, the pay back periods,

Bol

PB =

=

105

=

4.2 yo

initi od mestment Con Pannual cash flowy ebten to

A company is planning to take a project requiring insbicas investment of 2 50 Grere is expected to generale

:

انيي ا)

اه اها

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مرارا و لم

1st yeur - jo (srove 2nd year -- 134 3rd year -----16

19 19 496 year 5th yeur - 39"

(aluate this payback period.

YEAR Cash inbow All Tay

(CFAT) (tor

tumuiatie couh out here

Chiet impied cash flow)

CROT

ūöl

OO+

**

- 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 retwin + payback period methods there was no time vale money but in chiscounted Cash How technique the future coon Hows are converted in porcsent vame so that investment (cash out flow) returna (cash in How) or benifits ot e both are accounted

an inflow at same time ie at preient value. i at picient value is greater than cash outflow (investom than project is financially vibles,

table F = Plitr.)" P = F/(1+013" P = F (1+1) .

Pe present Value Ft future Value 92 + interest per annum /cost on Capital n → No of period/years.

citam = (1+34)" >> Discounting factor.

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

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Pa Present value of Biscounted Canh How (DCF) F = future carn How (CE) .

Ft = C F2 = Cfn =

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

오

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 > O, then project is finanually viable NPV = 0, then project meets just Break even

(cie. No project probit - No lots Situation NPV co, project is not vizible finenually.

i

. if mare than one projects have tue NPV than the project

with maxim NPV is_ most viable. '

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

BCR =

.

Total Benifits at present Value. Tote investment I lost) at present value

if

BCR. >1, project is finanually viable (Accept)

BCR.S 1, "

" "

" Not an (Reject)

BCR = 1, In difference

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Initial muertount for a project

28 bes. 290,000

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*** YEAR

Ist year gird yeah

yeet yeen

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

70,000

40,000

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9,000

lest

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)".

(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 >O

project is Vicable

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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 probit 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 calulation does not in corporate Environmental

inbrest Nute factors such as

infletion

+

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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ESC Basics of Pflect Management

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→

DCF - Initial Cost EO

Cin

0;

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i IRR

WE

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y Ci in

u

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 exemtion 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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von DTUBO Proce

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