SIR SYED UNIVERSITY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF SOFTWARE ENGINEERING

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SECTION: B

COURSE TITLE: ENGINEERING ECONOMICS

COURSE CODE: HS-301T

COURSE TEACHER: Engr. Abdul Moid Khan

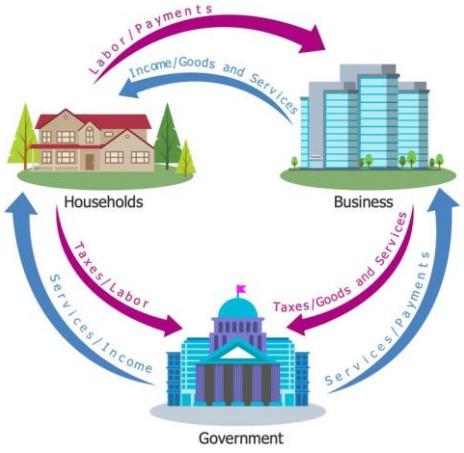
ASSIGNMENT # 01

Question No - 1:
Differentiate between three concepts of Interest Rate, Discount Rate, and MARR
Answer:
Discount Rate: The discount rates are charged on the commercial banks or depository institutions for taking overnight loans from the Federal Reserve Banks. Discount rate is decided by the federal reserve bank not by the interest rate in market.

Interest Rate: Interest rate is charged on the loan, which the lender gives to the borrower, by the lender. The lender can be banks, financial institutions, or individuals. This is charged upon the principle amount given by lender. Further, there are two types of interests i.e. Simple interest rate and Compound interest rate.

MARR: A hurdle rate, which is also known as the minimum acceptable rate of return (MARR), is the minimum required rate of return or target rate that investors are expecting to receive on an investment.

Question No - 2:
Define Economics also discuss the flow of goods, services, recourses & money payments in a simple economy with the help of suitable diagram?
Answer:
Economics is a social science that focuses on the production, distribution, and consumption of goods and services, and analyzes the choices that individuals, businesses, governments, and nations make to allocate resources.



The circular flow of economic activity is a model showing the basic economic relationships within a market economy. The model shows where money goes and what it's exchanged for. The model includes households, businesses and governments.

People in households buy goods and services from businesses in an attempt to satisfy their unlimited needs and wants. Households also sell their labor, land, and capital in exchange for income that they use to buy goods and services that firms produce.

Businesses sell goods and services to households, earning revenue and generating profits. Businesses also pay wages, interest and profits to households in return for the use of their factors of production.

Governments levy taxes on households and businesses in order to provide certain benefits to everyone.

Question No - 3:
What are the ways by which Economic Efficiency can be improved?
Answer:
Economic efficiency is a measure of how well a market or the firms within it are performing. It is important for a company to use resources to maximize output for an economy to be efficient.

It is also essential to produce goods and services at an affordable price so everyone has equal access to them. To have an efficient economy, an entity often increases its productivity, reduces its waste and decreases its inputs. This is important because it maximizes the total benefit of goods and services in society, which helps people to be more productive. It also ensures everyone can access basic needs, like food and shelter, so they can live comfortably. In business, it allows organizations to compete more effectively with other companies in their industry.

For an economy to be efficient, it is essential for it to allocate scarce resources, so people can get what they need at the lowest possible cost.

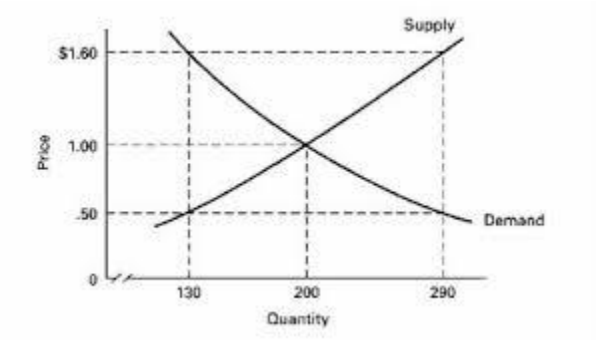
Question – 4:
Discuss the factor, which influence the Demand and Supply.
Answer:
There are several factors, which can alter the demand and supply in market. Some of them are discussed below:

Taxes and government regulation: Taxes or regulations are an additional cost of production that shifts supply to the left, leading the firm to produce a lower quantity at every given price. Government subsidies reduce the cost of production and increase supply at every given price, shifting supply to the right.

Availability of substitute goods: Substitutes present the consumer with alternatives. If the price of one good increases, then demand for the substitute is likely to rise. Therefore, substitutes have a positive cross elasticity of demand. An increase in the price of a substitute good causes a decrease in supply. With the higher price, sellers sell more of the substitute good and less of this good.

Market power of suppliers: An increase in the number of sellers supplying a good or service shifts the supply curve to the right; a reduction in the number of sellers shifts the supply curve to the left.

Question – 6:
Illustrate the effect t of price on Demand and Supply. Illustrate with the help of diagram.
Answer:



As the price of a good goes up, consumers demand less of it and more supply enters the market. If the price is too high, the supply will be greater than demand, and producers will be stuck with the excess. Conversely, as the price of a good goes down, consumers demand more of it and less supply enters the market.

Question – 7: Distinguish between Technical Efficiency & Economic Efficiency by giving examples.
Answer:
Technical efficiency happens when there is no possibility to increase the output without increasing the input. For example, a pencil factory that can produce 900 pencils per hour of employee labor. Technical efficiency is improved with techniques such as knowledge, training, automation and information tools for workers.

Economic efficiency happens when the production cost of an output is as low as possible. Economic efficiency mainly depends on the prices related to the factors of production. Suppose a clothing factory has several machines to help sew the clothing. The machines can produce enough clothing that when sold could result in $100, $75, and $50. In this example, the most efficient option is the one that results in $100.

In order to achieve economic efficiency, one should have achieved technical efficiency. Only if technical efficiency is achieved can one get better economic efficiency.

Question – 8: InfoSol Software House has the following details, Fixed Cost: Rs. 4,000,000/- Variable Cost per Unit: Rs. 300/- Selling Price per Unit: Rs. 500/- To Find: a. The Break Even Sale quantity b. The Break Even Sales c. If the actual production quantity is Rs. 120,000 then find the following i. Contribution ii. Margin of safety (M.S) by all means
Answer:
Fixed cost = FC = 4000000
Variable cost = VC = 300
Selling price = SP = 500

Unit contribution = Selling price – variable cost = 500-300 = 200

a) Break Even quantity = Fixed Cost/unit contribution = 4000000/200 =20000

b) Break even sales = Fixed Cost/unit contribution x SP = 20000 x 500 = 10000000

c) Actual production quantity = 120,000

i) Contribution = Sales – VC = 120000x500 – 120000x300 = 24000000

ii) Margin of Safety:

Margin of safety in Rs = Sales – Break even sales
= 120000x500 – 10000000
= 50000000

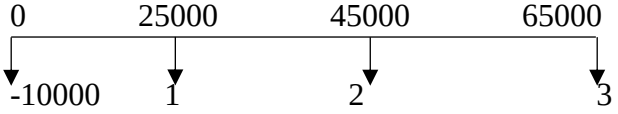
Margin of safety in % = (Current Sales Level – Breakeven Point) / Current Sales Level x 100
= ((120000-20000)/120000) x100
= 83.33%

Margin of safety in units = (Actual Sales – Break-even Point) / Selling Price per Unit
= (120000- 20000) / 500
= 200

Question - 9: A project with a 3 year life and a cost of Rs. 100,000 generates revenue of Rs. 25,000 in year 1, Rs. 45,000 in year 2, and Rs. 65, 000 in year 3. If the discount rate is 8%, what is the NPV of the project? Should the project be accepted or rejected?

Answer:

Time: 3 years
Initial investment: Rs.100000
Discount rate: 8% = 0.08



$PV = \frac{-100000}{(1+0.0.8)^0} = -100000$ ***Year 0***

$PV = \frac{25000}{(1+0.0.8)^1} = 23148.14$ ***Year 1***

$PV = \frac{45000}{(1+0.0.8)^2} = 38580.24$ ***Year 2***

PV = $\frac{65000}{(1+0.0.8)^3}$ = 51599.09 ***Year 3***

NPV = 100000+23148.14+38580.24+51599.09
NPV = 13327.47

Result of NPV is positive value so it should be accepted.

Question – 10: The Balance Sheet of Punjab Auto Limited as on 31-12-2002 was as follows: From the above, compute (a) the Current Ratio, (b) Quick Ratio and (c) Debt-Equity Ratio.
Answer:

Current assets = Stock + Debtors + Cash In hand + Investments (Short-term)
= 12000+12000+12000+4000
= 40000

Current Liabilities = Creditors+ Bank Overdraft (BOD)+Provision for Taxation (current&future)
= 160000 + 4000 + 4000 + 4000
= 28000

a) Current Ratio:
Current ratio = Current Assets / Current Liabilities
= 40000 / 28000
= 1.428

b) Quick Ratio:
Quick Assets = Current Assets – Stock = 40000-12000 = 28000
Quick Liabilities = Current Liabilities – (BOD + PFT future) = 28000 – (4000+4000) = 20000

Quick ratio = Quick Assets / Quick Liabilities
= 28000 / 20000
= 1.4

c) Debt-Equity Ratio:
Long Term Debt = Debentures + long term loans = 32000
SHF = Eq. Sh. Cap. + Reserves & Surplus + Preference Sh. Cap. – Fictitious Assets = 60000

Debt-Equity ratio = Long Term Debt / Stakeholders Fund (SHF)
= 32000/60000
= 0.53