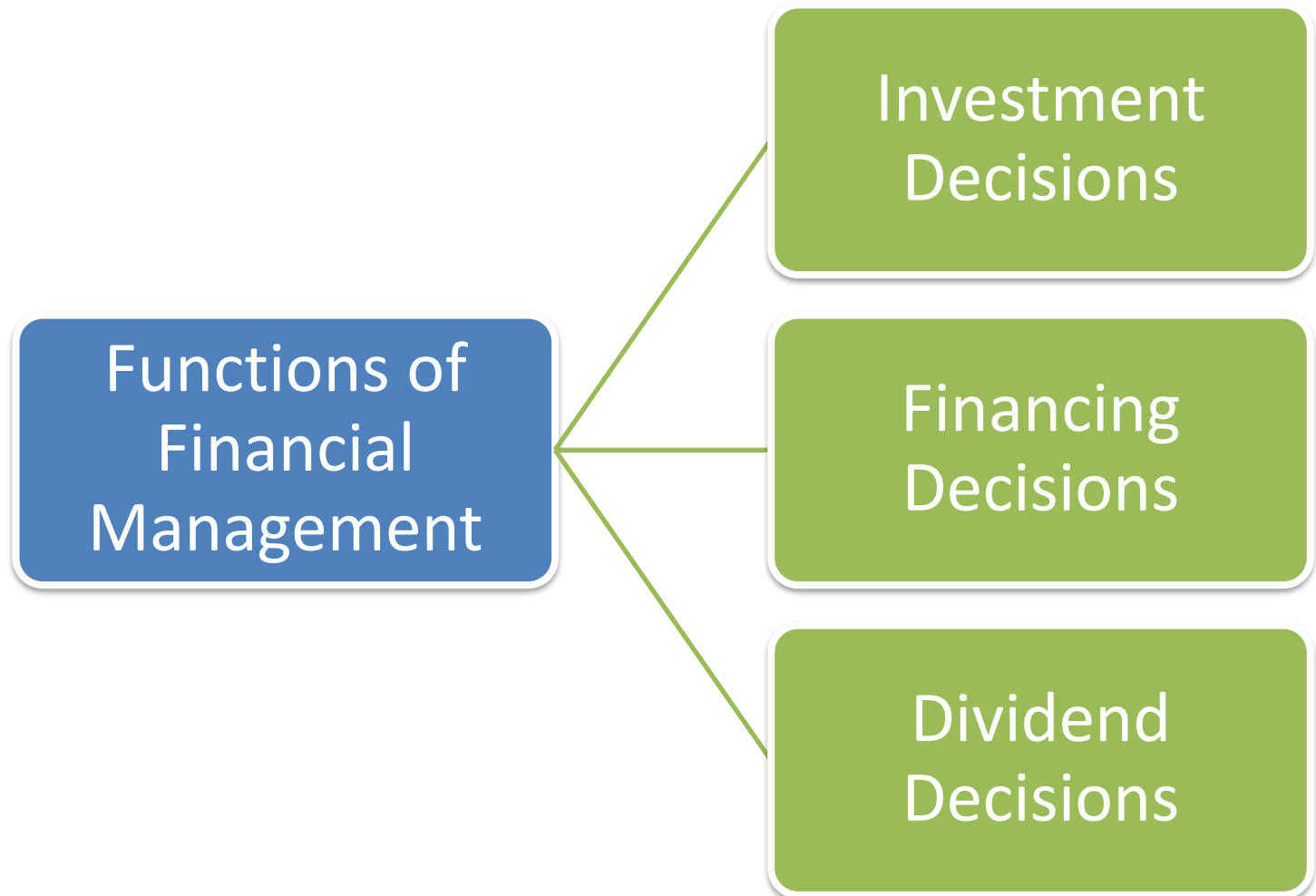


# **Financial Analysis**

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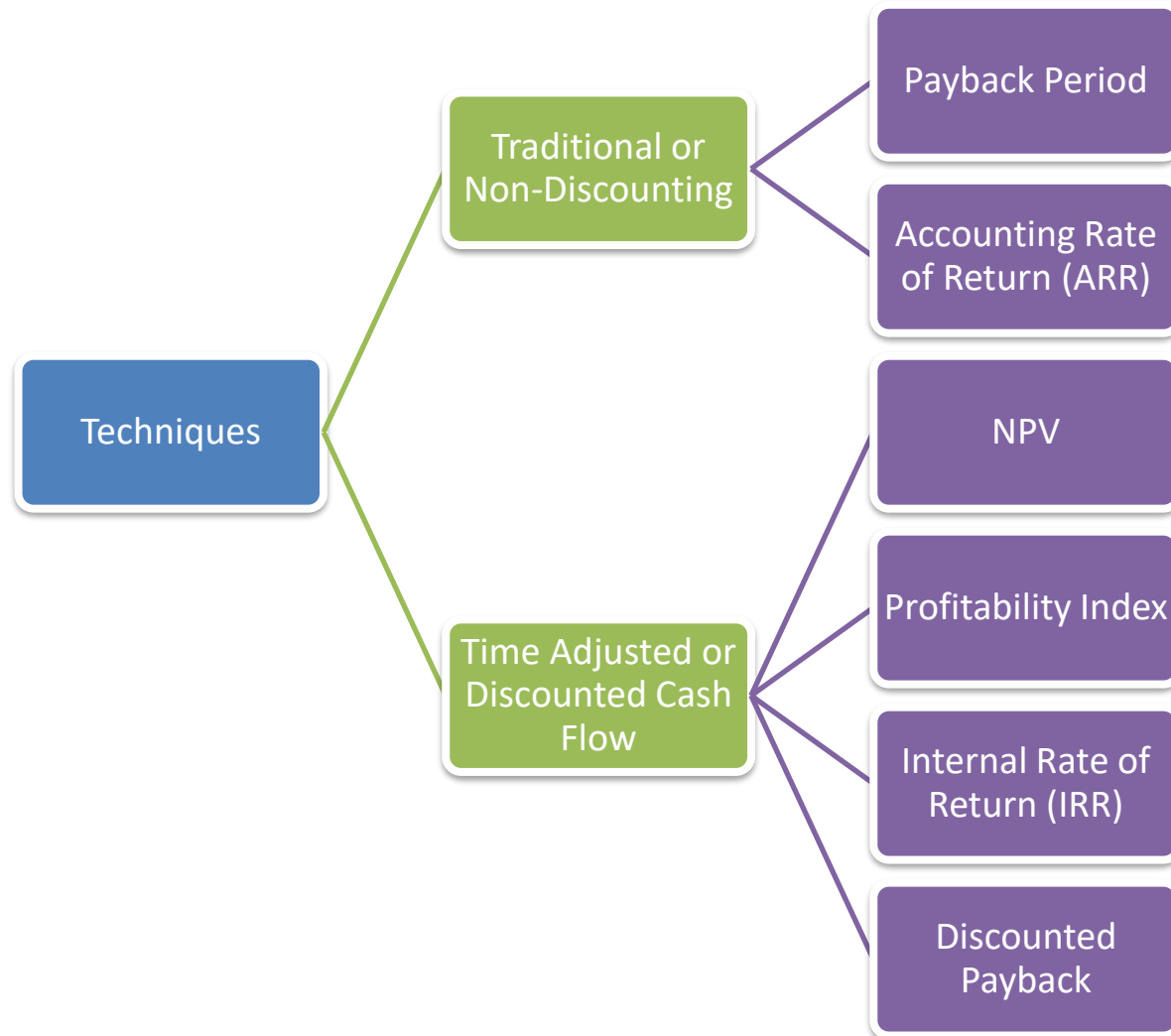
# Functions of Financial Management



# Investment Decisions

- Investment decision is concerned with optimum utilization of fund to maximize the wealth of the organization.
- Investment decisions are very popularly known as Capital Budgeting.
- It involves
  - ✓ Identification of investment projects that are strategic to business' overall objectives;
  - ✓ Estimating and evaluating post-tax incremental cash flows for each of the investment proposals; and
  - ✓ Selection of an investment proposal that maximizes the return to the investors

# Capital Budgeting Techniques



# Capital Budgeting Techniques

- Organizations may use any one or more of capital investment evaluation techniques; some organizations use different methods for different types of projects while others may use multiple methods for evaluating each project.

# **Traditional Methods/ Non-Discounting Methods**

- These techniques of capital Budgeting does not discount the future cash flows.

# Payback Period

- Time required to recover the initial cash-outflow is called pay-back period.
- The payback period of an investment is the length of time required for the cumulative total net cash flows from the investment to equal the total initial cash outlays.
- At that point in time, the investor has recovered the money invested in the project.

# Payback Period

$$\text{Payback period} = \frac{\text{Total initial capital investment}}{\text{Annual expected after-tax net cash flow}}$$



# Advantages of Payback Period

- It is easy to compute.
- It is easy to understand as it provides a quick estimate of the time needed for the organization to recoup the cash invested.
- The length of the payback period can also serve as an estimate of a project's risk; the longer the payback period, the riskier the project as long-term predictions are less reliable.

# Limitations of Payback Period

- It ignores the time value of money.
- Its failure to consider an investment's total profitability; it only considers cash inflows up to the period in which initial investment is fully recovered and ignores cash flows after the payback period.
- Payback technique places much emphasis on short payback periods thereby ignoring long-term projects.

# Payback Period

- A project costs Rs. 20,00,000 and yields annually a profit of Rs. 3,00,000 after depreciation @  $12\frac{1}{2}\%$  (straight line method) but before tax 50%. Calculate Payback period.

# Payback Period

➤ Suppose XYZ Ltd. is analyzing a project requiring an initial cash outlay of Rs.2,05,000 and expected to generate cash inflows as follows-

Year	Annual Cash Flow (In Rs.)
1	80,000
2	60,000
3	60,000
4	20,000

# Discounting Techniques

- Theoretically, the discount rate or desired rate of return on an investment is the rate of return the firm would have earned by investing the same funds in the best available alternative investment that has the same risk.

# Net Present Value (NPV)

- The net present value technique is a discounted cash flow method that considers the time value of money in evaluating capital investments.
- The net present value method uses a specified discount rate to bring all subsequent cash inflows after the initial investment to their present values.
- The net present value of a project is the amount, in current value of amount, the investment earns after paying cost of capital in each period.

# NPV

Net present value =

Present value of net cash inflow –

Total net initial investment

If  $NPV \geq 0$  Accept The Proposal

If  $NPV < 0$  Reject The Proposal

# Advantages of NPV

- NPV method takes into account the time value of money.
- The whole stream of cash flows is considered.
- The net present value can be seen as the addition to the wealth of shareholders.
- The NPV uses the discounted cash flows i.e., expresses cash flows in terms of current rupees. The NPVs of different projects therefore can be compared.
- This method is useful for the selection of mutually exclusive projects.



# Limitations of NPV

- It involves difficult calculations.
- The application of this method necessitates forecasting cash flows and the discount rate.
- The decision under NPV method is based on absolute measure. It ignores the difference in initial outflows, size of different proposals etc. while evaluating mutually exclusive projects.

# Profitability Index (PI)/ Present Value Index/ Desirability Factor

- In certain cases we have to compare a number of proposals each involving different amounts of cash inflows.
- One of the methods of comparing such proposals is to work out what is known as the 'Desirability factor', or 'Profitability index' or 'Present Value Index Method'.

$$\text{Profitability Index (PI)} = \frac{\text{Sum of discounted cash in flows}}{\text{Initial cash outlay or Total discounted cash outflow (as the case may)}}$$

- If  $PI \geq 1$ - Accept the proposal
- If  $PI \leq 1$ - Reject the proposal

# Advantages of PI

- The method also uses the concept of time value of money and is a better project evaluation technique than NPV.
- In the PI method, since the present value of cash inflows is divided by the present value of cash outflow, it is a relative measure of a project's profitability.
- Cash flows generated during the entire life of the project are taken into consideration.

# Limitations of PI

- Profitability index fails as a guide in resolving capital rationing where projects are indivisible.
- Once a single large project with high NPV is selected, possibility of accepting several small projects which together may have higher NPV than the single project is excluded.
- Also situations may arise where a project with a lower profitability index selected may generate cash flows in such a way that another project can be taken up one or two years later, the total NPV in such case being more than the one with a project with highest Profitability Index.

# Internal Rate of Return (IRR)

- The internal rate of return method considers the time value of money, the initial cash investment, and all cash flows from the investment.
- But unlike the net present value method, the internal rate of return method does not use the desired rate of return but estimates the discount rate that makes the present value of subsequent cash inflows equal to the initial investment.
- This discount rate is called IRR.
- Internal rate of return for an investment proposal is the discount rate that equates the present value of the expected cash inflows with the initial cash outflow.

# Advantages of IRR

- It considers the time value of money even though the annual cash flow is even and uneven.
- Profitability of the project is considered over the entire lifetime of the project.
- There is no need for pre determination of cost of capital or cutoff rate.

# IRR

$$LR + \frac{NPV \text{ at LR}}{NPV \text{ at LR} - NPV \text{ at HR}} \times (HR - LR)$$

*CALCULATE the internal rate of return of an investment of ₹1,36,000 which yields the following cash inflows:*

<i>Year</i>	<i>Cash Inflows (in ₹)</i>
<i>1</i>	<i>30,000</i>
<i>2</i>	<i>40,000</i>
<i>3</i>	<i>60,000</i>
<i>4</i>	<i>30,000</i>
<i>5</i>	<i>20,000</i>

# Numerical Problem

- A Ltd. is evaluating a project involving an outlay of Rs. 10,00,000 resulting in an annual cash inflow of Rs.2,50,000 for 6 years. Assuming salvage value of the project is zero; DETERMINE the IRR of the project.



**Table 4 - Present value interest factors for an annuity. Formula:  $PV = [1 - 1/(1 + k)^n] / k$**

Period (n) / per cent (k)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125	1.6901	1.6681
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4437	2.4018	2.3612
4	3.9020	3.8077	3.7171	3.6299	3.5460	3.4651	3.3872	3.3121	3.2397	3.1699	3.1024	3.0373	2.9745
Snip 5	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6959	3.6048	3.5172
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305	4.1114	3.9975
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.7122	4.5638	4.4226
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	5.1461	4.9676	4.7988
9	8.5660	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370	5.3282	5.1317
10	9.4713	8.9826	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.8892	5.6502	5.4262
11	10.3676	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	6.2065	5.9377	5.6869
12	11.2551	10.5753	9.9540	9.3851	8.8633	8.3838	7.9427	7.5361	7.1607	6.8137	6.4924	6.1944	5.9176

# Limitations of IRR

- It involves tedious calculations.
- This method gives importance only to the profitability but not to consider the earliest recouping of capital expenditure.
- The result of NPV and IRR method may differ when the projects under evaluation differ in their size, timing of cash flows and life.

# Discounted Payback Period

- Some accountants prefer to calculate payback period after discounting the cash flow by a predetermined rate and the payback period so calculated is called, 'Discounted payback period'.
- Discounted Payback is more appropriate way of measuring the payback period since it considers the time value of money.

# Accounting Rate of Return (ARR)

- It is also termed as ROI.
- It is the ratio of Average Profit To Average Investment.

$$ARR = \frac{\text{Profit after Depreciation}}{\text{Investment in the beginning of the year}}$$

$$ARR = \frac{\text{Average Annual Profit}}{\text{Investment in the beginning}} \times 100$$

$$ARR = \frac{\text{Average Annual Profit}}{\text{Average Investment}} \times 100$$

$$\frac{1}{2}(\text{Initial Investment} - \text{Salvage Value}) + \text{Salvage Value} + \text{Additional Working Capital}$$

# Advantages of ARR

- Easy to calculate
- Considers entire cash-Inflows

# Limitations of ARR

- Overlooks time value of money
- Use of only accounting data

# Numerical Problem

*ABC Ltd is a small company that is currently analyzing capital expenditure proposals for the purchase of equipment; the company uses the net present value technique to evaluate projects. The capital budget is limited to ₹ 500,000 which ABC Ltd believes is the maximum capital it can raise. The initial investment and projected net cash flows for each project are shown below. The cost of capital of ABC Ltd is 12%. You are required to COMPUTE the NPV of the different projects.*

	Project A	Project B	Project C	Project D
Initial Investment	200,000	190,000	250,000	210,000
Project Cash Inflows				
Year 1	50,000	40,000	75,000	75,000
2	50,000	50,000	75,000	75,000
3	50,000	70,000	60,000	60,000
4	50,000	75,000	80,000	40,000
5	50,000	75,000	100,000	20,000

# Numerical Problem

- The expected cash flows of three projects are given below. The cost of capital is 10 per cent.

*(figures in '000)*

<b>Period</b>	<b>Project A (₹)</b>	<b>Project B (₹)</b>	<b>Project C (₹)</b>
0	(5,000)	(5,000)	(5,000)
1	900	700	2,000
2	900	800	2,000
3	900	900	2,000
4	900	1,000	1,000
5	900	1,100	
6	900	1,200	
7	900	1,300	
8	900	1,400	
9	900	1,500	
10	900	1,600	



# Numerical Problem

- CALCULATE the payback period, net present value, internal rate of return and accounting rate of return of each project.
- IDENTIFY the rankings of the projects by each of the four methods

# Projected Estimates

(This statement should be prepared for ten years;					
					(Rupees in thousands)
Year ending					
20 × 1	20 × 2	20 × 3	20 × 4	20 × 5	(ten years)
A Cost of Production					
Administrative expenses					
Administrative salaries					
Remuneration to directors					
Professional fees					
Light, postage, telegrams,					
and telephones, office supplies					
(stationery, printing, etc.)					
Insurance and taxes on office property					
Miscellaneous					
B Total Administrative Expenses					
C Total Sales Expenses					
D Royalty and Know-how Expenses					
E Total Cost of Production (A+B+C+D)					
F Expected Sales					
G Gross Profit Before Interest (F–E)					
Financial expenses					
Interest on term loans					
Interest on borrowings for working capital					
Guarantee commission					
H Total Financial Expenses					
I Depreciation					
J Operating Profit (G–H–I)					
K Other Income, if any (Given details)					
L Preliminary Expenses Written Off					
M Profit/Loss before Taxation (J+K – L)					
N Provision for Taxation					
O Profit After Tax (M–N)					
Less Dividend on					
Preference Capital					
P Retained Profit					
Add Depreciation					
Preliminary Expenses Written Off					
Q Net Cash Accruals					

# Cash Flow Statement

## Sources of Funds

1. Share issue
2. Profit before taxation with interest added back
3. Depreciation provision for the year
4. Development rebate reserve
5. Increase in secured medium and long-term borrowings for the project
6. Other medium/long-term loans
7. Increase in unsecured loans and deposits
8. Increase in bank borrowings for working capital
9. Increase in liabilities for deferred payment (including interest) to machinery suppliers
10. Sale of fixed assets
11. Sale of investments
12. Other income (indicate details)
- Total (A)

## Disposition of Funds

1. Capital expenditure for the project
2. Other normal capital expenditure
3. Increase in working capital\*
4. Decrease in secured medium and long-term borrowings
  - All India Institutions
  - SFCs
  - Banks
5. Decrease in unsecured loans and deposits
6. Decrease in bank borrowings for working capital
7. Decrease in liabilities for deferred payments (including interest) to machinery suppliers
8. Increase in investments in other companies
9. Interest on term loans
10. Interest on bank borrowings for working capital
11. Taxation
12. Dividends
  - Equity
  - Preference
13. Other expenditure (indicate details)
- Total (B)
  - Opening balance of cash in hand and at bank
  - Net surplus/deficit (A – B)
  - Closing balance of cash in hand and at bank

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\* Working capital here is defined as: (Current assets other than cash) – (Current liabilities other than bank borrowings)

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# Balance Sheet

<i>Liabilities</i>	<i>Assets</i>
Share capital	Fixed assets
Reserves and surplus	Investments
Secured loans	Current assets, loans and advances
Unsecured loans	Miscellaneous expenditures and losses
Current liabilities and provisions	

# Interest Service Ratio

- It is a measure of a company's ability to meet its interest payments.
- It is a measure of the number of times a company could make the interest payments on its debt with its EBIT.
- It determines how easily a company can pay interest expenses on outstanding debt.
- **Interest Coverage Ratio=  $\text{EBIT} / \text{Interest Expenses}$**

# Debt Service Coverage Ratio

- It refers to the amount of cash flow available with the firm to service the interest and principal cost for one year.
- It is reliable tool to determine the repayment capacity of the firm.
- **DSCR= (NPAT+ Depreciation + Interest)/ (Principal + Interest)**
- DSCR below 1 indicates that company is not having enough cash flow to cover annual debt payments.

# Numerical Problem

- Following is the data pertaining to a project, in which Rs 4,00,000 is invested. Applicable tax rate is 30%

	Y1	Y2	Y3	Y4	Y5
PBDIT	10000	13000	18000	20000	20000
Depreciation	2000	2000	2000	2000	2000
Interest	3000	3000	3000	2000	1000
Principal Repayment				10000	10000

# Numerical Problem

- Sales are projected at Rs. 2,00,000, Rs. 2,50,000 and Rs. 3,00,000 for May, June and July 2023 respectively.
- Cost of Goods sold are estimated at Rs 1,00,000, Rs. 1,20,000 and Rs 1,30,000 for May, June and July 2023 respectively.
- Selling expenses are estimated to be 5% of the value of sales.
- Rent is Rs. 7,000 per month.
- Administrative expenses for May are expected to be Rs. 50,000 but an increase of 2% per month is projected.
- The Company has Rs. 1,00,000 loan for which interest rate is 10%.
- Corporate Tax rate is 50%



# Proforma Income Statement

Particulars	May (in Rs.)	June (In Rs.)	July (In Rs.)
Sales			
Less- COGS			
<b>Gross Profit (A)</b>			
Operating Expenses			
Administrative Expenses			
Rent			
Selling Expenses			
<b>Total Operating Expenses (B)</b>			
PBIT (A-B)			
Less- Interest			
PBT			
Tax			
Profit After Tax			

# Numerical Problem

- A company intends to produce a single product whose estimated demand in a year 1 is 1700 units.
- It is expected to increase by 85 units each subsequent year.
- Estimated price for year 1 is Rs. 600/- unit which is expected to increase by Rs. 15/- each subsequent year.
- Operating expenses excluding depreciation and interest on term loan for year 1 to be Rs. 1,78,000/- which are expenses to increase by Rs. 20,000/- each subsequent year.

# Numerical Problem (Continued)

- A company has a term loan of Rs. 12 lakhs which is for 5 years with equal annual installment and rate of interest on the same is 12%.
- Assets includes Land worth Rs. 1,00,000/- and Fixed Assets worth Rs. 17,00,000/-.
- Fixed assets are depreciated at 10% per year under WDV method.
- Calculate DSCR and ICR for year 1 and 2.

# Solution

Particulars	Year 1	Year 2
Units		
Selling price Per unit		
<b>Sales (Unit * Selling Price per unit)</b>		
Less- Operating Cost		
NPBDIT		
Less- Depreciation		
NPBIT		
Less- Interest		
NPBT		
Less- Tax		
NPAT		

# Numerical Problem

- Initial outlay for the project is Rs. 50 Lakhs and salvage value is Rs. 5 Lakhs.
- Cost of Capital is 12%.
- Working capital requirement is Rs. 4 Lakhs which will be liquidated at the book value when the project is terminated.
- Life of the project is 6 years.

# Numerical Problem

- Yearly cost of the project is Rs. 12 Lakhs excluding depreciation and tax.
- Revenue for the first year is Rs. 24 Lakhs which will increase by Rs. 4 lakhs each year.
- Depreciation will be charged at WDV method and rate is 25%.
- Income tax rate is 40%.
- Determine cash flow of the project and using NPV decide project is worth or not?

# Solution

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Sales						
Less- Cost						
NPBDT						
Less- Depreciation						
NPBT						
Less- Tax						
NPAT						
Add- Depreciation						
CF						
PV						
PV of CF						