01. A manufacturer has a proposal for production of high quality product. The cost of the necessary equipment to produce the product is tk. 80,000. The equipment would last for 5 years with tk. 10,000 salvage value. The product can be sold at tk. 5 each. Regardless of the level of production, the manufacturer will incur cash of tk. 30,000 each year if the project is undertaken. The variable cost is estimated at tk. 2.5 per unit. The manufacturer estimates that it will sell about 75,000 units per year. The straight line depreciation method will be used. The corporate tax rate is 30% and the cost of capital of the firm is 12%.

    Required: should the proposed equipment be purchased under the IRR rules?

02. BD enterprise is considering a new product line. The details of the investment proposal are as follows:-

    Initial cash outlay Tk.1,00,000
    Expected life 5 years
    Residual value tk. 10,000
    Working capital tk. 20,000

The company's cost of capital is 10% and tax rate is 45%. The project will depreciated on a straight line basis. The cash-flow before depreciation and taxes:

Year	CFBT
1	25,000
2	30,000
3	32,000
4	35,000
5	40,000

You are required to calculate and comment on whether the project should be accepted or not:

i. Average Rate of Return (ARR)
ii. Net present value (NPV)
iii. Internal Rate of Return (IRR)
iv. Profitability Index (PI)

03. A company is considering the purchase of a new machine that cost tk. 60,000. The company uses straight line method of depreciation. The annual cash flows have the following projections:

Year	Cash flow
1	21,000
2	29,000
3	36,000
4	16,000
5	12,000

a. If the cost of capital is 10%, what is the net present value?

b. What is the internal rate of return?

c. Should the project be accepted? Why?

d. If the reinvestment assumption of IRR method is used, what will be the total value of inflows after five year assuming 14% is the IRR?

04. An Engineering company is considering an investment proposal to install new equipment facility. The project will cost Tk. 1,00,000. The facility has a life expectancy of 5 years and no salvage value. The company's tax rate is 40%. The firm uses straight line method of depreciation. The estimate gross cash inflows from the proposed investment proposal are as follows:-

Year	Gross Cash inflows (Tk.)
1	20,000
2	30,000
3	28,000
4	30,000
5	40,000

You are required to compute the following:-

i. Average Rate of Return
ii. Net present value at 10% discount rate
iii. Internal Rate of Return
iv. Profitability Index at 10% discount rate

05. Dhaka electronics can make either of two investments at time 0. Assuming a required rate of return 14 percent, determine for each project (a) Payback period, (b) Average rate of return (c) Net present value and (d) Internal rate of return. Assume the company uses straight line method of depreciation and that the corporate tax rate is 34 percent. The initial investments required and yearly savings before depreciation and taxes are shown below:

	End of year							**(Amount in Tk.)**
Project	0	1	2	3	4	5	6	7
A	(28,000)	8,000	8,000	8,000	8,000	8,000	8,000	8,000
B	(21,000)	5,000	5,000	6,000	6,000	7,000	7,000	7,000

06. Fin Corporation is planning to replace one of its existing equipment. The book value of the equipment is Tk. 1,50,000 and its net realized value is expected to be Tk. 1,25,000. After 5

years its resale value is expected to be Tk. 20,000. Its annual operating expense is Tk. 65,000. A new and sophisticated equipment is available at a cost of Tk. 2,25,000. Its annual operating cost will be Tk. 33,000. After 5 years it can be disposed of at Tk. 80,000 net at cost. The working capital requirements will increase by Tk. 10,000 if the existing equipment is replaced by the new one. The cost of capital of the company is 15% and corporate tax rate is 40%.

Using NPV method of evaluation, comment on whether FIN Corporation will replace the existing equipment or not?

07. An Engineering company is considering an investment proposal to install new equipment facility. The project will cost Tk. 50,000. The facility has a life expectancy of 5 years and no salvage value. The company's tax rate is 40%. The firm uses straight line method of depreciation. The estimate cash flows before tax (CFBT) from the proposed investment proposal are as follows:-

Year	CFBT (Tk.)
1	10,000
2	15,000
3	14,000
4	15,000
5	20,000

You are required to compute the following:-

i. Pay-back period
ii. Average Rate of Return
iii. Net present value at 10% discount rate
iv. Internal Rate of Return
v. Profitability Index at 10% discount rate

08. An Engineering company is considering an investment proposal to install new equipment facility. The project will cost Tk. 50,000. The facility has a life expectancy of 5 years and no salvage value. The company's tax rate is 35%. The firm uses straight line method of depreciation and the same is allowed for tax purposes. The estimate cash flows before tax (CFBT) from the proposed investment proposal are as follows:-

Year	CFBT (Tk.)
1	10,000
2	10,692
3	12,769

4	13,462
5	20,385

You are required to compute the following:-

i. Pay-back period
ii. Average Rate of Return
iii. Net present value at 10% discount rate
iv. Internal Rate of Return
v. Profitability Index at 10% discount rate

09. Each of two mutually exclusive projects involves an investment of Tk. 1,20,000. Each cash-flow from the two investments is as follows:-

Year	**Project- M**	**Project- N**
1	70,000	10,000
2	40,000	20,000
3	30,000	30,000
4	10,000	50,000
5	10,000	80,000

i. Compute ARR and payback period of each project.

ii. Compute NPV and IRR of each project when the firm's cost of capital is 12%

10. Jamuna Ltd. is considering a proposal to install a new machine. The project will cost Tk. 1,00,000 and its expected life is 5 years. The estimated cash inflows before tax (CFBT):

Year	**CFBT**
1	25,000
2	25,000
3	20,000
4	20,000
5	25,000

The tax rate of that company is 50% and charges depreciation on straight line basis.

You are required to compute the following:-

i. Pay-back period
ii. Average Rate of Return

iii. Net present value at 10% discount rate
iv. Internal Rate of Return
v. Profitability Index at 10% discount rate
vi. Net Profitability Index (NPI)

11. The details of the investment proposals of company given below**:**

Initial cash outlay	Tk.10,000
Expected life	5 years
Scrap value	nil

The company's cost of capital is 10% and tax rate is 50%. The project will depreciated on a straight line basis.

Year	**CFAT**
1	6,000
2	3,000
3	2,000
4	5,000
5	5,000

You are required to compute the following:-

i. Pay-back period (PBP)
ii. The Rate of Return on original investment
iii. The Rate of Return on average investment
iv. Net present value (NPV)

12. The cash flows of two mutually exclusive projects of Fas trance ltd. are:

Year	0	1	2	3	4	5
Project - A	13,555	4,444	3,333	9,9999	5,555	9,789
Project - B	15,777	7,777	6,666	5,555	8,190	6,156

Suggest Fas Trance whether either of the projects are acceptable using payback period, discounted payback period, NPV, IRR, PI techniques of capital budgeting. The required rate of return is 12%.

13. An investment is required Tk. 5,00,000 initial outflow that will provide Tk. 2,00,000; 2,50,000; 1,50,000 and 1,90,000 in year 1,2,3 and 4 respectively. The opportunity cost of

fund is 13.50%. Calculate the following and comment about making investment: NPV and IRR.

14. A company has to choose one of the following two projects. Both the projects have a life of 5 years and will be depreciated on straight line basis. The firm's cost of capital is 15% and tax rate is 40%. Both the projects require an initial cash outlay of Tk. 2,00,000 each. The estimated earnings from the projects are as follows:

Year	Project- A	Project- B
1	40,000	40,000
2	42,000	45,000
3	70,000	40,000
4	80,000	85,000
5	70,000	50,000

Which project should the company accept? If the following criteria are used?

i. Pay-back period (PBP)
ii. Accounting Rate of Return (ARR)
iii. Net present value (NPV)
iv. Profitability Index (PI)

15. From the following data of two machine A and B, you are required to calculate IRR and suggest which machine should be purchased –

	Machine -A		Machine - B		
Cost	Tk. 60,000		Tk. 60,000		
Annual estimated income after depreciation and income tax:					
Machine - A	6,300	5,400	7,300	10,000	12,000
Machine - B	12,000	10,000	8,000	5,000	6,000

Estimated life 5 years, estimated salvage value Tk. 3,000 for both machine. Cost of capital 12%. Depreciation has been charged on straight line basis. Tax rate 40%.

16. You are a financial analyst of Tanjina Electronics Company. The director of capital budgeting has asked you to analyze two proposed capital investments project A and B. Each project has a cost of Tk. 10,000 and the cost of capital for each project is 12%. The projects expected net cash flows are as follows:

Year	0	1	2	3	4
Project - A	10,000	6,500	3,000	3,500	1,500
Project - B	10,000	3,500	3,500	3,000	2,500

You are required to compute the following:-

i. Pay-back period (PBP), Net present value (NPV), Profitability Index (PI)

ii. Which project(s) should be accepted if they are independent?

iii. Which project(s) should be accepted if they are mutually exclusive?

17. If present value of future cash inflows of a project is equal to its present value of each outflow at 10 percent cost of capital, what is the project NPV and PI?

18. Raxtore Ltd. is considering an investment proposal to install new equipment costing Tk. 60,000. The facility has life expectancy of five years and has no salvage value. Assume that the company uses straight line depreciation. The tax rate is 35%. The cash-flows before depreciation and tax (CFBTD) from the investment are as follows: -

Year	**CFBTD**
1	10,000
2	12,000
3	15,000
4	20,000
5	25,000

You are required to compute the following:-

a. Pay-back period

b. Average Rate of Return

c. Internal Rate of Return

d. Net present value at 10% discount rate

19. Your company is considering two mutually exclusive projects C and R whose cost and cash flows are shown in the following table:-

Year	**Expected net cash flow**	
	Project - C	**Project – R**
0	**(Tk. 14,000)**	**(Tk. 22,840)**
1	8,000	8,000

2	6,000	8,000
3	2,000	8,000
4	3,000	8,000

The projects are equally risky and their required rate of return is 12%. You must make recommendation concerning which projects should be purchased.

i. Calculate the PBP, NPV, IRR and MIRR

ii. Which project should you recommendation if they are mutually exclusive?

20. You are a financial analyst of the ABC Company. There are two proposed capital investments project X and Y. Each project has a cost of Tk. 10,00,000 and the cost of capital for each project is 12%. The projects expected net cash flows are as follows:

Year	**Project- A**	**Project- B**
0	(10,00,000)	(10,00,000)
1	6,50,000	3,50,000
2	3,00,000	3,50,000
3	3,00,000	3,50,000
4	1,00,000	3,50,000

i. Calculate the PBP, NPV, IRR, PI and MIRR

ii. Which project should you recommendation if they are mutually exclusive?

21. A company has to choose one of the following two projects. Both the projects have a life of 5 years. The firm's cost of capital is 15% and both the projects require an initial cash outlay of Tk. 2,00,000 each. The estimated cash inflows from the projects are as follows:

Year	1	2	3	4	5
Project - Sun	40,000	42,000	70,000	80,000	70,000
Project - Mon	40,000	45,000	40,000	85,000	50,000

Which project should the company accept? If the following criteria are used: Net present value (NPV), Internal Rate of Return (IRR), Modified Internal Rate of Return (MIRR), and construct the NPV profile for both project.

22. Considering two mutual exclusive project: X and Y with Tk. 5,00,000 investment constraint and expected cash flows of Tk.300,000, Tk.250,000 and Tk.50,000 for project X and Tk.280,000, Tk.255,000 and Tk.55,000 for project Y for succeeding three years. If the cost of

capital is assumed to be 12.5% for both projects, which project should be selected for investment? (use NPV, IRR and payback period method)

23. You are a financial analyst of the star Company. There are two proposed capital investments project A and B. Each project has a cost of $5,00,000 and the cost of capital for each project is 12%. The projects expected net cash flows are as follows:

Year	Project- A	Project- B
1	3,25,000	1,75,000
2	150,000	1,75,000
3	150,000	1,75,000
4	50,000	1,75,000

i. Calculate the NPV, IRR, and MIRR

ii. Justify your project accept-reject decision criterion when the projects are independent and /or mutually exclusive.

iii. Prepared the NPV profiles for the said projects

24. Mr. Omayer Engineering Ltd. is considering including two pieces of equipment, a truck and an overhead pulley system, in this year's capital budget. The projects are independent. The cash outlay for the truck is Tk.17,100, and that for the pulley system is Tk.22,430. The firm's cost of capital is 14 percent. After-tax cash flows, including depreciation, are as follows:

Year	Truck	Pulley
1	Tk.5,100	Tk.7,500
2	5,100	6,500
3	5,100	8,500
4	5,100	7,000
5	5,100	7,500

Calculate each project's payback period, net present value (NPV), and internal rate of return (IRR) and indicate the correct accept or reject decision for each.

25. You are a financial analyst of Hilton Company. The director of capital budgeting has asked you to analyze two proposed capital investments project Woven and Synthetics. Each project has a cost of $10,000 and the cost of capital for each project is 12%. The projects expected net cash flows are as follows:

Year	Expected net cash flow	
	Cocktil	**Simple**
0	**($10,000)**	**($10,000)**
1	8,000	8,000
2	6,000	8,000
3	2,000	8,000
4	3,000	8,000

i. Calculate each project's payback period, net present value (NPV), internal rate of return (IRR) and modified internal rate of return (MIRR)

ii. Justify your project accept-reject decision criterion when the projects are independent and /or mutually exclusive.

26. You are the financial analyst of CRABEXPO LTD. The director of capital budgeting has asked you to analyze two proposed capital investment. Project-EXPO-I and EXPO-II. Each project has a cost of BDT10,00,000 and the cost of capital for both projects is 13% per cent. The projects net expected cash inflows are as follows:-

Year	EXPO-1	EXPO-11
1	650000	325000
2	350000	325000
3	350000	325000
4	200000	325000

i. Calculate each projects Net present value (NPV), internal rate of Return (IRR), and Modified Internal Rate of Return (MIRR).

ii. Prepare the NPV Profiles of the said Projects.

27. You are the financial analyst of CRAVANUS LTD. The director of capital budgeting has asked you to analyze two proposed capital investment. Project-VANUS-I and VANUS-II. Each project has a cost of Tk. 1,00,000 and the cost of capital for both project is 13% percent. The projects net expected cash inflows are as follows:-

Year	**VANUS-I**	**VANUS-II**
1	65,000	35,000
2	35,000	35,000
3	35,000	35,000
4	20,000	35,000

i. Calculate each project Net Present Value (NPV), and Internal Rate of Return (IRR) MIRR.

ii. Justify your project accept reject decision criteria when the projects are independent and or mutually exclusive.

28. You are trying to determine whether or not to expand your business by building a new manufacturing plant. The plant has an installation cost of Tk.12 million, which will be depreciated on straight line to zero over its 4 years life. If the plant has projected income of tk.8, 9, 15 and 13 million over these 4 years, discount rate 5% and corporate tax rate is 40%, then what the project's –

    i. Net present value (NPV)
    ii. Internal rate of return (IRR)
    iii. Should the project be accepted? Why?