Total cost	695,000	528,000	932,000	2,155,000
EBT (loss)	55,000	(28,000)	68,000	95,000

Required: i. Should the Co. discontinue Table product line assuming the released facilities remain idle?

ii. Suppose that if the Co. discontinues the Table product line, the released capacity could be used to sale additional sofa sets worth Rs. 400,000. This would require the Co. to hire machinery and tools for Rs. 20,000. Also assume that no additional variable selling cost would require. Under these circumstances should the Co. drop Table product? [3+4]

Ans: (i) Continue (profit decrease by Rs. 48,000) (ii) Drop (profit increase by Rs. 36,000)

3. 2067 (I) Q.No.2

A company manufactures three related product lines. For many years the company has been profitable and has operated at capacity. However, in the last year prices on all products were reduced and selling expenses increased to meet competition and keep the plant operating at capacity. Third-quarter results for the current year are:

	Product P (Rs.)	Product Q (Rs.)	Product R (Rs.)	Total (Rs.)
Sales revenue	200,000	120,000	100,000	420,000
Less: Variable cost	100,000	40,000	80,000	220,000
Contribution margin	100,000	80,000	20,000	200,000
Less: Fixed cost:				
Allocated fixed cost	40,000	30,000	30,000	100,000
Departmental fixed cost	40,000	15,000	15,000	70,000
Total fixed cost	80,000	45,000	45,000	170,000
Net income before tax	20,000	35,000	(25,000)	30,000

After reviewing the third quarter result, the management is thinking of the following two alternatives:

Alt. 1: Discontinue Product R immediately, Product R would not be returned to the product line unless the problems with the product can be identified and resolved.

Alt. 2: Increase quarterly sales promotion cost by Rs. 20,000 on Product P in order to increase sales volume by 40% and discontinue Product R.

Required: (i) Is the management correct in proposing that the Product R be eliminated?

(ii) Is the management correct in promoting Product P line rather than Product R?

(iii) Which of the alternative is better based on Income Statement prepared under Alt. 1 & Alt. 2? [3+3+1=7]

Ans: (i) No. Profit decreased by Rs. 5,000 (ii) No change in profit (iii) Alternative 2

4. 2062 Q.No. 2

The details about a manufacturing company having two production departments and one service department have been summarized below:

Particulars	Production Department		Service Dept.
Products	A	B	Repairs
Product in units	10,000	10,000	—
Selling price per unit	Rs. 20	Rs. 15	—
Variable manufacturing cost including DM and D labor	15	12	—
Manufacturing overhead cost after primary distribution	20,000	20,000	35,000
Machine hours per unit	1 MH	0.75 MH	—

Company has adopted a policy of distributing repairs cost on the basis of machine hours used.

Required: a. Income statement after secondary distribution

b. Differential income statement to suggest that the management should or should not drop product 'B'. [3+3]

Ans: (a) Profit$_A$ = Rs. 10,000, Loss$_B$ = Rs. (5,000); (b) Profit decrease by Rs. 10,000

5. 2061 (II) Q.No. 2

The Nepal Manufacturers Ltd. is a manufacturing company, which produces and sells three products. The income statement of the company has been presented below:

Products	A	B	C	Total
Production in units	5,000	5,000	5,000	15,000
Sales revenue (Rs.)	200,000	150,000	100,000	450,000
Less: Variable cost of goods (Rs.)	100,000	100,000	50,000	250,000
Contribution margin (Rs.)	100,000	50,000	50,000	200,000
Less: Fixed cost:				
Departmental fixed costs	30,000	40,000	20,000	90,000
Allocated fixed costs	20,000	15,000	10,000	45,000
Total fixed cost	50,000	55,000	30,000	135,000
Net income/BT	**50,000**	**(5,000)**	**20,000**	**65,000**

Product B has suffered losses for many years in the past, therefore company has been considering to drop out product B. If it does so the company will lose sales of other product by 10%. The departmental fixed cost of the company consists of depreciation cost of Rs. 30,000 of a machine which has a service life of another three years and the machine has a salvage value of Rs. 150,000 to day.

Required: a. Differential income statement to analysis whether the company should or should not drop out product B.

b. Would your answer be different, if the capacity render unutilized from product B can be rented out for an annual rent of Rs. 50,000; and the salvage value will not be available. [3+3]

Ans: (a) Profit reduced by Rs. 68,000 if dropped (b) NI decreased by Rs. 15,000 if B dropped.

6. 2061 (I) Q.No. 2

The Income Statement of Nepal Snack Food Ltd. has been provided below:

Products	Crack	Jumpy	Gum	Total
Sales in packet	4,000	3,000	1,000	8,000
Sales revenue	Rs.800,000	Rs.450,000	Rs.100,000	Rs.1,350,000
Less: Variable costs	400,000	270,000	50,000	720,000
Contribution margin	400,000	180,000	50,000	630,000
Less: Fixed costs:				
Allocated fixed costs	120,000	90,000	30,000	240,000
Departmental fixed costs	150,000	60,000	40,000	250,000
Total fixed cost	270,000	150,000	70,000	490,000
Net income/BT	**130,000**	**30,000**	**(20,000)**	**140,000**

Departmental fixed costs of Gum production department also include the depreciation cost of special machine used in production of Gum. The machine was purchased two years before at a cost of Rs. 100,000. Straight-line depreciation policy with a zero salvage at the end of year five had been followed by the company. The company would like to see the possibility of dropping out the Gum product from next year. The Gum product if dropped out the sales of other remaining product would also decrease by 10%. The machine used in Gum production line could bring after tax cash salvage value of Rs. 60,000 to day.

Required: a. Differential income statement showing consequent effect of the decision.

b. Should the Gum product be discontinued? [4+2]

Ans: By dropping profit reduced by Rs. 68,000 (b) No

MBA

1. 2061 (I) Q.No. 1

The product wise budget information of a multi-product company has given below:

	Product A	Product B
Capacity %	20%	80%
Sales in units	3,000	8,000
Selling price per unit	Rs. 25	Rs. 50

Cost per unit:		
Direct material	Rs. 10	Rs. 20
Direct wages @ Rs. 2 per hour	8	10
Variable overhead	4	5
Fixed overhead	8	7
Total cost	30	42
Profit per unit	Rs. 8	Rs. 13

In order to improve the performance the following proposals are under considerations.

* To drop product A and transfer the available capacity to product B
* To transfer the available capacity of product A to a new product C. The units being 2,000 units

The particulars relating to per unit of product C are as under.

Direct material	Rs. 15
Direct wages	6
Variable overhead	5
Total	26
Selling price per unit	Rs. 40

Required: a. Budget income statement showing the profitability of A and B.
b. Budget among three, alternatives should the company choose and why? [6+6+6+2]

Ans: Produce B. Profit = Rs. (80,000– 68,000) = Rs. 12,000

2. 2054 Q.No. 1

The income statement of a multi product company has been given below:

Product	A	B	C	Total
Capacity utilization	40%	30%	30%	100%
Units products & sold	5,000	4,000	4,000	13,000
Sales revenue (Rs.)	4,00,000	2,40,000	2,00,000	8,40,000
Less: Variable cost	2,00,000	80,000	1,60,000	4,40,000
Contribution margin	2,00,000	1,60,000	40,000	4,00,000
Less Fixed cost:				
Joint fixed cost	80,000	60,000	60,000	2,00,000
Department fixed cost	40,000	30,000	30,000	1,00,000
Total fixed cost	1,20,000	90,000	90,000	3,00,000
Net income / B.T.	**80,000**	**70,000**	**(50,000)**	**1,00,000**

Seeing the state of product C, the company has been considering to drop the product and take the following alternative.

Alternatives:

i. To drop product C, and keep capacity unutilized and avoid department fixed cost by cent percent.
ii. To transfer the available capacity to produce product A, and the result will be increase in production of A by 2,000 units and increase in department fixed cost by Rs. 40,000.
iii. To transfer the available capacity of C product to produce product B. the result will be increase in production volume by 100% and an increase of variable cost of addition product by Rs. 10 per unit over above the regular V cost and increase in departmental fixed by Rs. 20,000.

Required: a. Should the company drop product C it alternative (ii) and (iii) are not available. [8]
b. Which of the other two alternatives the company should choose and why? [6+6]

Ans: (a) Should not drop, decreased in profit = Rs. 10,000 (b) Third alternative is to be applied.

3. 2052 Q.No. 1

The Bottlers Nepal Ltd, a producer of soft drink, produces three standard products called Coke, Fanta and Soda. The results of the operation for the last year ending on 30th Chaitra are presented below in an income statement.

Products/Particulars	Coke	Fanta	Soda	Total
Number of bottles sold	10,000	10,000	5,000	25,000
Sales revenue (Rs.)	2,00,000	2,00,000	1,00,000	5,00,000
Less: Cost of production				
Direct material	40,000	40,000	20,000	1,00,000
Direct labour	40,000	40,000	20,000	1,00,000
Manufacturing overheads				
Variable overhead	20,000	20,000	10,000	50,000
Fixed overhead	40,000	40,000	30,000	1,10,000
Total cost of production	1,40,000	1,40,000	80,000	3,60,000
Gross margin available	60,000	60,000	20,000	1,40,000
Less: Other costs				
Variable selling and adm. cost	10,000	10,000	5,000	25,000
Fixed selling and adm. cost	20,000	20,000	20,000	60,000
Total other cost	30,000	30,000	25,000	85,000
Net income before tax	**30,000**	**30,000**	**(5,000)**	**55,000**

The result of operation shows product Soda have suffered losses for years, therefore, the management is considering to drop out soda from its production schedule. If it does so it will be able to avoid all variable costs associated with the product soda and will be able to reduce its fixed manufacturing overhead cost by Rs. 10,000 as depreciation cost of specialized machine. All other fixed cost are allocated fixed cost will remain there irrespective of decision, but the company will loose its sales of other products by 5%.

Required: Should the company drop out Soda? [20]

Ans: Should not drop the product sod. Loss = Rs. 44,000

4. 2042 Q.No. 2

A Manufacturing Company produces and sells two products- product X and product Y besides the company enjoys virtual monopoly on its product. Their cost and sales data in product wise are presented below:

	Product X	Product Y	Total
Production in units	1,00,000	50,000	1,50,000
Sales revenue	20,00,000	15,00,000	35,00,000
Less Variable costs	7,00,000	5,00,000	12,00,000
Less Department fixed cost	3,00,000	3,00,000	6,00,000
Total cost	10,00,000	8,00,000	18,00,000
Contribution to joint cost absorption	10,00,000	7,00,000	17,00,000
Joint fixed cost			12,00,000
Profit before tax			5,00,000

The further investigation on departmental fixed cost reveals us that:

- 25% of them are wages and salaries paid to supervisors.
- 25% of them are for space rentals and heat light and power.

Remaining 50% are the depreciation cost and other unclassifiable items. The company's facing the shortage of raw materials that is also the materials used in the manufacturing of product X. As a result the company is seriously considering to curtail the production of product X by 50%.

If the company does so, it can avoid all variable costs relating to this product (x) as well as if can reduce the supervision cost and space rental cost proportionately. The company has not been able to utilize its plant capacity in the past and a further curtailment in the regular production will increase further more idle capacity.

It is also doubtful that the company will be able to utilize the excess capacity in the production of product Y, because the machine now being used in product Y can be utilized twice the capacity that it is using at present. Should the company want to maintain its present production volume, the material cost per unit increase by Rs. 3,00 per unit.

Required: a. Should the company curtail its product X by 50%?

b. If those capacity utilization clauses are removed completely, and an assumption is made that the company can, push as many as product Y it can, in the market, should company drop product? [20]

Ans: (a) No. loss Rs. 42,500 (b) Yes. Profit = Rs. 12,00,000

D. LEASE OR PURCHASE

MBS

1. 2061 (I) Q.No. 5

The blowing machine of Nepothene Ltd. has worn out and need a replacement. The company could do so either by a bank borrowing or through lease purchase. Both leasing company and bank would like to have a return of 10% on the amount lend. The machine would cost Rs. 300,000 and it would have zero book salvage value of the end of five years' of useful life. However, it would have after tax cash salvage value of Rs. 20,000. Nepothene and the leasing company both would apply straight-line depreciation to write off the machine. The amount would be payable at the beginning of the year. The tax rate to the company would be 50%.

Required: Which purchases should the company made? [6]

Ans: Cost lease purchase = Rs. 164,225.29; Cost of bank borrowing = Rs. (154,445)

2. 2059 Q.No. 5

The Krishna Pauroti Ltd. has been considering replacing its old 'Bread Slicing' machine with a new machine. The new machine would cost Rs.8,00,000 as an initial outlay for outright purchase. However, the company could obtain a hundred percent lease for an annual payment of Rs.2,20,000 at the end of the year for five years. The company applies straight-line depreciation on its fixed assets and the new assets would have the service life of 5 years with zero salvage value. The corporate tax rate applicable to company and cost of capital would be 50% and 10% respectively.

Required: a. Evaluation for outright purchase or lease purchase.
b. Decision regarding purchase. [2.5+2+1]

Ans: (a) NPV of lease = Rs. 416,988; NPV of purchase = Rs. 496,736

3. 2058 Q.No. 2

A company is contemplating to hire a plant on lease instead of erecting it with the bank finance it has got. The details are as follows:

Cost of equipment	Rs.1,000,000
Lease period	7 years
Net salvage value	Rs.50,000
Annual operating cost	Rs.50,000
SLM rate of depreciation	11%
Tax rate (T)	46%
After tax cost of Capital	8%

It is assumed that the leasing company expects a 12% return.

Required: a. Benefit of leasing b. Lease payment
c. Cost benefits forgone d. Worthwhileness of lease [1.5×4]

Ans: (b) Rs. 191,217 (c) Rs. 487,000 and (d) Lease save cost by Rs. 41,828

E. RESOURCE CONSTRAINT AND SALES MIX

MBS

1. 2068 Q.No. 2

Faxtronics Company manufactures and sells two models of high quality fax machines for which the following information is available.

	Cost per unit for	
Product Model	**FM–101**	**FM–102**
Direct materials	Rs. 120	Rs. 160
Direct labour (Rs.20 per hour)	50	80

Variable support cost (Rs. 5 per machine hour)	20	40
Fixed support	20	20
Total unit cost	**Rs. 210**	**Rs. 300**
Price per unit	**Rs. 260**	**Rs. 400**

At present, the monthly demand is 8,000 units for FM–101 and 5,000 units for FM–102. Monthly capacity is limited to 60,000 machine hours.

Required: i. Determine the product mix that maximizes profit

ii. Suppose faxtronics has received a special order from a new customer willing to buy 2,00 units of FM - 101 at Rs. 300 each. Should Faxtronics accept the special order? What is the opportunity cost associated with this order? [3+4=7]

Ans: (i) 8,000 units; 3,500 units (ii) Accept (profit increased by Rs. 100,000); Rs. 120,000

2. 2067 (il) Q.No.2

A factory, making three products, is running at full DLH capacity.

	Note book	Exercise book	Diary book
Sales in set	1,000	2,000	1,600
Sales revenue	Rs. 50,000	Rs. 100,000	Rs. 80,000
Less: Cost of goods sold			
Materials	25,000	42,000	30,000
Direct wages @ Rs. 20, per DLH	8,000	16,000	8,000
Work overheads	5,000	7,000	12,000
	38,000	65,000	50,000
Fixes cost	15,000	16,000	14,800
	53,000	81,000	64,800
Profit or loss	**(3,000)**	**19,000**	**15,200**

The current issue on note book has drawn attention of the factory executive to shift the spare direct labour that would be available on account of dropping note book product either in the production of Exercise book or Diary book.

Required: i. Reason for enforcing the extension of either Exercise book or Diary book showing necessary calculations.

ii. Additional production of the product chosen on account of using the spare direct labour hours left by Note book drop. [2+1+4=7]

iii. Comparative income statement showing the existing and future course of action.

Ans: (i) CMPB of Diary book is higher (ii) 1,500 books (iii) Increase profit Rs. 17,200

11. PRICING DECISION

MBS

1. 2071 Q.No. 3

A Rubber Factory has three autonomous divisions i.e. Tubes, Tyres and Fan Belts. All are working at capacity. The Tube division can sell its product to open market or transfer to Tyre division. The relevant cost of Tube is Rs. 900 each and selling price in the market is Rs. 1000. The Tyre division could buy tubes it needs to produce tyres from Tube division or from wholesaler at Rs. 1,000 each.

The wholesaler also suppliers the ingredient material to Fan Belt division at Rs. 200 each. The market price of which is Rs. 250 each. If Tyre division buys the tubes from Tube division, the wholesaler also stops the supply of materials to Fan Belt division.

Required: i. What transfer price should be used to maximize the overall net income?

ii. What alternative should be the best for Co. as a whole, buy from wholesaler or from Tube division?

iii. Suppose Tube division has enough extra capacity, how would this change your answer in part (i) and (ii)? [3+2+2]

Ans: (i) Rs. 1,050 (ii) Saving Rs. 50 per unit; Purchase from outside (iii) Increase profit by Rs. 50 per unit; Purchase from Tube division

2. 2070 Q.No. 2 OR

CFL Bulb Company manufactures different size. CFL bulb that it sells primarily to other division of the same company. The half of the total production was sold to outside market at a price of Rs. 20 each. The remaining half sent to company's buying division. Cost data for CFL bulb manufacturing division are given below:

Production units	50,000
Variable manufacturing cost	Rs. 300,000
Fixed manufacturing cost	Rs. 50,000
Selling expenses (40% fixed)	Rs. 50,000
Administrative expenses (20% variable)	Rs. 100,000

Required: Transfer price for CFL bulb if the company uses:

i. Variable cost pricing.
ii. A negotiated transfer price that will yield a mark up 20% on its production cost (absorption cost) for CFL bulb manufacturing division.
iii. A negotiated transfer price that will yield a mark up 10% on its total product cost (full cost) for CFL manufacturing division. [3 + 3 + 1]

Ans: (i) Rs. 6.4 (ii) Rs. 7 (iii) Rs. 7.7

3. 2070 Old Q.No. 4

A manufacturing company has two division-- Div. A and Div. B. Output of Div. A is the input of Div. B Vairable cost of producing the component of Div. A is Rs. 8 per unit. Div. A either can transfer the component to Div. B or sell it in the market at Rs. 12 per unit, on the other hand Div. B can buy the component either from the outside supplier X at Rs. 12 per unit or from Div. A.

If Div. B buys the component from outside supplier X, he will supply the other material required for Div. B at Rs. 6 per unit. If Div. B does not purchase the component from the outside supplier X, he will charge Rs. 7 per unit for the other material required for Div. B.

Required: ❶ Should the Div. B buy the component from outside supplier, if there is capacity constraint in case of Div. A, support with cash flow chart

❷ Transfer price under general rule with capacity constraints and no-capacity constraints of Div. A. [2+4=6]

Ans: ❶ Yes, Cost saved by Rs. 1 per unit ❷ Rs. 13 (with); Rs. 9 (without)

4. 2069 (Old) Q.No. 1 OR

The variable manufacturing costs incurred by a factory were Rs. 360,000 for 40,000 units of output. The variable selling and distribution overheads of Rs. 2 were expected to sell each unit. The factory's fixed manufacturing overheads were Rs. 240,000 and fixed non-manufacturing overheads were Rs. 40,000 for the period. The factory expects of Rs. 90,000 after tax profit at a tax rate of 25 percent.

Required: ❶ Mark-up percentage based on full cost pricing system.

❷ The factors affecting pricing decision. [3+3=6]

Ans: (i) 16.67%

5. 2068 Q.No. 3

A company has two divisions, Fabrication Division and Assembly Division. The Fabrication Division transfers partially completed componetns to the Assembly Division at a predetermined price. The Fabrication Division's standard variable cost per unit is Rs. 400. The Division has no excess capacity, and it could sell all of its components to outside buyer at Rs. 520 per unit in a perfectly competitive market.

Required: 1. Transfer price using general rule

2. Transfer price if the Fabricatio Division had excess capacity [2.5+2.5+2=7]
3. Write briefly the goal congruence' is importance to an organization's success.

Ans: (1) Rs. 520 (ii) Rs. 400

6. 2068 (Old) Q.No. 5

A limited company specialized in the manufacturing of a particular type of product. Recently, it has developed a model. The company is confident of selling 10,000 units in the coming year. The required capital would be Rs. 2,000,000.

The variable cost of producing and selling one unit of product would be Rs. 125. The fixed operating cost at the budgeted level of output would be Rs. 750,000. The selling and administration fixed expenses estimated to be Rs. 500,000.

The management expects a return of 15% after tax on investment (ROI) in the new product. Assume a tax rate of 40%.

Required: (a) Total cost per unit of the product
(b) Mark-up percentage to get ROI
(c) Price per unit of the product [2+2+2=6]

Ans: (a) Rs. 250 (b) 20% (c) Rs. 300

7. 2067 (i) Q.No.3

An industry reveals the costs incurred in the last year for 36,000 units of output of its 80% capacity operation.

Direct material costs	Rs. 324,000
Direct labour costs	Rs. 216,000
Variable factory overheads	Rs. 180,000
Variable selling and distribution overheads	Rs. 72,000
Fixed factory overheads	Rs. 180,000
Fixed administrative, selling and distribution overheads	Rs. 90,000

The industry has approved its schedule to attain 100% capacity operation with a target of generating profit after tax of Rs. 135,000 in the current year.

The industry pays 40% tax on incomes.

The industry adopts full cost pricing technique.

Required: ❶ Mark up percentage ❷ Sales price per unit to be set for the current year
❸ State the differences between full cost pricing and ROI pricing systems. [3+2+2=7]

Ans: ❶ 17.86% ❷ Rs. 33

8. 2067 (Ii) Q.No.3

A company manufactures high-quality commodities and one of the company's price analysts, is involved in setting a price for the company's new product. During the next year, the company's plan to produce 50,000 units. The controller has provided the following data to price analyst:

Capital of company	Rs. 500,000
Working capital	Rs. 100,000
Yearly fixed cost production Rs.	Rs. 125,000
Non-production cost	Rs. 25,000
Variable cost per unit	Rs. 3

Required: ❶ Total cost ❷ mark-up percentage with 20% return on investment
❸ Unit selling price
❹ "Return on investment pricing is a cost-plus-pricing method." Do you agree? Comment. [1+2+2+2=7]

Ans: (1) Rs. 300,000; Rs. 6 per unit (2) 40% (3) Rs. 8.4 per unit

9. 2067 (II) (Old) Q.No.5

A Multi Divisional Manufacturing Company has following three production divisions:

A	Mobile Division
B	Charger Division
C	Sim Card Division

It also deals with Sam Co. and Lam Co

Mobile division can buy Sim from Sim Division or from Sam Co. which will meet Sim Division is market price of Rs. 200 per Sim. If Mobile Division buys from Sam Co., Sam Co. in turn buys chargers, from Charger Division for Rs. 140 per charger; the outlay costs to Charger Division for supplying the charger are Rs. 120 per charger. In filling Mobile Division's order, Sim Division would incur outlay costs of Rs. 165 per Sim.

Assume that Sim Division is working in full capacity and can provide the Sim to an outside buyer – the Lam Co. at the same market price of Rs. 200 per Sim and with the same outlay costs of Rs. 165 per Sim.

Required: ❶ What transfer price should be used to guide the managers of both Divisions – Mobile & Sim to maximize overall company net income, i.e. cash inflow?
❷ If there is no capacity constraints then what will the year transfer price? Show supporting calculations. [3+3=6]

Ans: (1) Rs. 220 (2) Rs. 185

10. 2066 Q.No. 3

A Equipment Manufacturing Ltd., has three independent segments/ divisions, viz
a. Valve Division
b. Cut Machine Division, and
c. Pump Division

These divisions enjoy full autonomy. The cut machine division either could buy the valve it would need to produce cut machine from the valve division or from outside supplier- a wholesaler. The wholesaler also supplies "Fanbelt" needed for the manufacturing the pump. If the cut machine division would purchase required valves from valve division, the wholesaler would also stop the supply of "Fanbelt" The further details other than mentioned above have been summarized below:

Valve Division	Cut Machine Division	Pump Division
a. Transfer price (SP) Cost plus 20% b. Cost of production per unit Rs. 25	Buying cost from wholesaler Rs. 30 per unit	a. Buying cost of Fanbelt from wholesaler Rs. 10 per unit b. Buying cost from open market Rs. 13 per fanbelt

Required: a. Transfer pricing with no capacity constraint
b. Transfer pricing with capacity constraint (Use/draw boxes with supporting figures)[3.5+3.5= 7

Ans: (a) Rs. 28 (b) Rs. 33

11. 2066 Partial Q.No. 1 OR

A manufacturing company prepared the income statement under absorption costing technique for pricing its product under full cost basis.

Income statement under Absorption Costing Technique

Output units	600 units	
Variable manufacturing cost @ Rs.400/net	240,000	
Fixed manufacturing cost	150,000	
Total manufacturing cost		390,000
Non- manufacturing cost / overhead:		
Variable selling & administrative overhead costs	24,000	
Fixed selling & administrative costs	48,000	72,000
Total cost		462,000
Cost per unit (462,000 ÷ 600)		Rs.770

The Company expected 20% rate of return on its average investment of Rs.450,000.

Required: a. Mark-up percentage to earn the target return base on full cost [1]
b. Price of the product using pricing formula for full cost base [2]
c. Explain in short the factors to be considered for pricing the product & give the objective of pricing policy [3]

Ans: (a) 19.48% (b) Rs. 920

12. 2066 Partial Q.No. 5

A Manufacturing Company has three departments: X, Y and Z. It also deals with two companies: supplier company A and buying company B

Department X can buy part H either from Department Y or from supplier company A at a market price of Rs. 100 per unit. If Department X buys from Co. A, Co. A in tern buys a component from Dept. Z for Rs.50 per unit; the outlay costs to Dept. Z of supplying the components are Rs.30 per unit. Dept. Y would incurred the outlay costs of Rs.65 per unit for producing part H for Dept. X. Dept. Y can supply the part II to the buying company B at the same market price of Rs. 100 per unit for which outlay costs also remain same, i.e. Rs.65 per unit.

Required: (a) Transfer price to be used for maximising the overall company's net income
(b) Transfer price to be used if Dept. Y has enough extra capacity to supply part H simultaneously to both Dept. X and buying Co. B. [3+3]

Ans: (a) Rs. 120 (b) Rs. 85

13. 2065 Q.No. 5

A Company Ltd., is a multidivisional company which produces and sells electronic goods. Its managers have been delegated full profit responsibility and complete autonomy to accept or reject transfers from the other divisions. It has three manufacturing divisions: Radio, Televisions and Components.

The component division produces electronics components that can be used by the Radio Manufacturing Division. All the components this division produces can be sold to outside customers.

Similarly the other departments also can buy the components from outside.

The market price of the component which requires for Radio Manufacturing Department is Rs. 100 per unit and the department can purchase from X Co. Ltd. If the department buys the components form X Co. Ltd., it will in turn buy selected components from Component Manufacturing Department for Rs. 20 per unit. The variable cost of these components is Rs.10 per unit. The Component Manufacturing Department is working at full capacity and it can sale the components in a competition market for Rs. 100 per unit. The variable manufacturing cost of these components is Rs. 80 per unit.

Required: (i) Will the company as a whole benefit if Radio Manufacturing Division purchases the components from X. Co.? Show details supporting calculations.
(ii) Transfer price with and without capacity constraint. [4+2]

Ans: (i) Yes, cash flow decrease by Rs 10 (ii) TP without capacity constraint = Rs 90 and TP with capacity constraint = Rs. 110

14. 2064 Q.No. 1 OR

The costs per unit of a factory for 70,000 units of normal capacity are as follows:

Costs	Rs.
Variable manufacturing	8.00
Fixed manufacturing	4.00
Variable non-manufacturing	7.00
Fixed non-manufacturing	2.00

The factory has scheduled production plan to support 60,000 units of sales in the coming year. The factory expects Rs. 72,000 profit after tax for the year. The levy of tax rate on the factory's income will be 40%.

Required: (a) Mark up percentage based on variable cost pricing system.
(b) How the variable cost pricing system differs from the target cost pricing system [3+3]

Ans: (a) 60%

15. 2061 (ii) Q.No. 3

A company has three departments: Department A, Department B and Department C. The finished product of Department A is the raw material for Department B and Department C is an independent department with indigenous product. All the departments are under decentralized conditions, and have their autonomy in decision-making. Therefore, Department A either can sell its product to department B or in the open market. The variable manufacturing cost of Department A is Rs.200 and its selling price in the market is Rs.240. Similarly, Department B can either buy product from the market or receive a transfer from Department A. The market price of the raw material used in Department B is also Rs. 240. Department C also buys the raw material needed for the department from the same supplier from which B receives its raw materials at a reduced price of Rs. 20 per unit. The regular market price of the raw materials required for department C is Rs. 40. The supplier will also cease to supply the raw material needed for Department C, if Department B receives transfer from Department A.

Required: a. Transfer price under the condition of access capacity.
b. Transfer price under capacity constraint. [2+4]

Ans: (a) Rs. 220 (b) Rs. 260

16. 2060 Q.No. 4

Kathmandu Television Ltd., has two independent divisions; Tube and Television divisions. Television division produces and sales television in the market and Tube division manufactures LDC tubes, which could be used in production of television. The variable manufacturing cost of tubes would be Rs.250 and they could be sold in the market at a price of Rs.300. The television division either could receive LDC tubes from the tubes division or purchase it from a supplier at a price of Rs.300. The supplier would also lift the scraps of tube division at a price of Rs.25 per unit and it would stop buying scraps if television would receive LDC tubes from tube division.

Required: a. Transfer price of LDC tubes to television divisions, where no capacity constraint exists.

b. Transfer price where capacity constraint exists. [2+4]

Ans: (a) Rs. 275 (b) Rs. 325

17. 2058 Q.No. 5

Nepal Beltronics Products Ltd. is a highly competitive industry in which markups are about 45% of cost of manufacture. The company is anxious to introduce a new product line (now being sold by several competitors) that would require a Rs.1,500,000 investment for the equation of needed equipment and for working capital purposes. The following estimated costs have been developed for the new product.

	Per unit	Total
Direct material	Rs.12	
Direct labour	20	
Variable overhead	3	
Fixed overhead	10	Rs.300,000
Variable selling and administrative expenses	5	
Fixed selling and administrative expenses	14	420,000

These costs are based on the production and sale of 30,000 units per year. The company will not introduce a new product unless it is able to provide at least a 16% ROI.

Required: a. Selling price per unit with regular mark-up

b. Mark-up to meet require ROI (16%) [2+2+2]

c. Would you recommend that the company take up on the new line of product? Explain.

Ans: (a) Rs. 65.25 (b) 60% (c) No

18. 2057 Q.No. 3

The Electronics Ltd. has three autonomous units viz; circuit designing, television manufacturing and refrigerator manufacturing enjoying a full autonomy. The television-manufacturing unit could either buy the circuit it would need to produce televisions from the circuit-designing unit or from a wholesaler. The wholesaler also supplies "Thermostat" needed for the manufacturing of refrigerators. If the television-manufacturing unit purchased the required circuits from the circuit-designing unit, the wholesaler would stop to supply thermostat to refrigerator manufacturing unit. The further details other than those mentioned above have been summarized below:

Circuit Designing Unit	Television Manufacturing Unit	Refrigerator Manufacturing Unit
a. Transfer pricing cost plus 25%	a. Buying cost from the wholesaler Rs. 300 per unit	a. Buying cost of thermostat from the wholesaler Rs. 50
b. Cost of production Rs. 240 per unit		b. Buying cost from the open market Rs. 80

Required: a. Transfer price with no capacity constraint.

b. Transfer price with a capacity constraint. [2+4]

Ans: (a) Rs. 270 (b) Rs. 330

12. LONG-TERM INVESTMENT DECISIONS [CAPITAL BUDGETING]

MBS

1. 2071 Q.No. 6 OR

A multilateral company of USA has been considering launching a project in Nepal. The project in Nepal, the project will cost $ 900 today and will have an after tax salvage value of Rs. 30,000 in three years from now. The spot exchange rate between the currency of Nepal and USA is Rs. 100 for one US dollar. The annual inflation rate in Nepal has been expected to remain at a steady increasing rate of 10% p.a. The value of rupee in terms of US $ will also decline gradually at par with inflation rate. The risk free rate of return is 5%. The cash flows generates over three years and assigned probabilities are as follows:

Year 1		Year 2		Year 3	
Cash flow	Probability	Cash flow	Probability	Cash flow	Probability
Rs. 25,000	0.1	Rs. 30,000	0.3	Rs. 30,000	0.1
30,000	0.2	35,000	0.1	35,000	0.2
35,000	0.4	40,000	0.2	40,000	0.4
40,000	0.2	45,000	0.1	45,000	0.2
45,000	0.1	50,000	0.3	50,000	0.1

In order to accommodate probability distribution the company has adopted a policy to equate salvage value available at the end of with investment cost.

Required: a. Net present value of expected value
b. Standard deviation of expected value
c. Probability of NPV being zero or less
d. Probability of NPV being more than 40,000 [3+3+3+3=12]

Ans: (a) Rs. 15,717 (b) Rs. 8,464.64 (c) 3.14% (d) 0.21%

2. 2070 Q.No. 6

A firm of USA has been considering to launch a project costing $900 in Nepal. The project will run for three years. The current exchange rate between Nepal and USA has been remained at Rs. 100 for one US dollar. The risk free rate of return will be at 10%. The firm expects the following cash flow after tax for three years:

Year 1		Year 2		Year 3	
CFAT	Probability	CFAT	Probability	CFAT	Probability
Rs. 20,000	0.1	Rs. 25,000	0.05	Rs. 30,000	0.1
25,000	0.2	30,000	0.2	35,000	0.2
30,000	0.4	35,000	0.5	40,000	0.3
35,000	0.2	40,000	0.2	45,000	0.3
40,000	0.1	45,000	0.05	50,000	0.1

Required: ❶ Net present value of the project
❷ Internal rate of return of the project
❸ Standard deviation of the expected cash flows
❹ Probability of NPV of expected cash flows being zero or less
❺ Probability of NPV of expected cash flows more than Rs. 5,000. [3+3+2+2+2=12]

Ans: ❶ (Rs. 3,375.35) ❷ 7.96% ❸ 7,527.12 ❹ 67.36% ❺ 13.35%

3. 2070 Old Q.No. 6 OR

A Multinational Company of UK has been considering launching a project in Nepal. The project will cost £ 6,000 today. The exchange rate between the currency of Nepal and UK has remained at Rs. 160 per £. The cash flows generated over three years and assigned probabilities are as follows:

Year 1		Year 2		Year 3	
Cash flows	Probability	Cash flows	Probability	Cash flows	Probability
Rs. 300,000	0.1	Rs. 250,000	0.1	Rs. 350,000	0.1
Rs. 350,000	0.2	Rs. 300,000	0.3	Rs. 400,000	0.2

Rs. 400,000	0.4	Rs. 400,000	0.3	Rs. 450,000	0.4
Rs. 450,000	0.2	Rs. 450,000	0.2	Rs. 500,000	0.2
Rs. 500,000	0.1	Rs. 500,000	0.1	Rs. 550,000	0.1

The probability distribution is assumed to be independent. The risk free rate of return is 15%.

Required: i. Net present value of expected cash flow
ii. Standard deviation of expected cash flow
iii. The probability of NPV being ❶ less than zero ❷ more than Rs. 100,000 [3+3+2+2=10]

Ans: (i) (Rs. 66,772) (ii) 86,034 (iii) ❶ 78.23% ❷ 2.62%

4. 2069 Q.No. 6

Gham Power Co. Ltd. was operating its production schedule with semi-automatic machine purchased two years ago at a cost of Rs. 80,000 with an effective life of five years. The company is considering replacing this machine by fully automatic machine. The new machine will have purchase price Rs. 90,000 and Rs. 30,000 as installation cost. The new machine will require an additional working capital of Rs. 25,000. The new machine will last for three years, at the end of which it will have net salvage value of Rs. 25,000. The old machine can be sold at Rs. 50,000 net today. The cash flows (CFAT) and respective probabilities are as follows:

Year 1		Year 2		Year 3	
CFAT	Probability	CFAT	Probability	CFAT	Probability
Rs. 30,000	0.20	20,000	0.25	10,000	0.30
40,000	0.40	30,000	0.50	15,000	0.40
50,000	0.40	40,000	0.25	20,000	0.30

The risk-free cost of capital is 10%. Assume cash flows for future period are independent. To make the calculation simple, adjust the final years salvage value and working capital in investment cost.

Required: i. Net investment cost (NCO)
ii. Net present value
iii. Standard deviation of cash flows
iv. Probability being NPV between Rs. 10,000 and 25,000
v. Why discounted cash flow technique is used to evaluate the project? [2+2+3+3+2=12]

Ans: (i) Rs. 57,435 (ii) Rs. 16,808.7 (iii) Rs. 9,428.61 (iv) 5

5. 2069 (Old) Q.No. 6 OR

Foreign Investment Corporation of USA has recently completed feasibility study of a project to be executed in Ilam of Nepal for a period of four years in foreign partnership programme.

The initial investment projected is $20,000 and will produce after tax salvage value of Rs. 125,000 after four years of the project period.

The dollar value is equivalent to Rs. 72 to-day. The annual inflation rate in Nepal would be 10% for the coming four years. The purchasing power of rupee in terms of dollar will decline at par with the inflation rate. The risk free rate of return is 8%.

The expected correlated annual cash flows (net of tax) for four years period of the project would be Rs. 400,000; Rs. 500,000; Rs. 700,000; and Rs. 800,000 with standard deviation of Rs. 40,000; Rs. 25,000; Rs. 30,000 and Rs. 50,000 respectively.

Required: ① The expected NPV of the project
② Internal rater of return
③ Standard deviation from the expected NPV
④ The chance of deviation from the expected NPV to Rs. 180,000
⑤ The chance of deviation from the expected NPV between Rs. 180,000 to Rs. 250,000

[2+2+2+2+2=10]

Ans: (i) Rs. 161,920 (ii) 24.22% (iii) 94,378.15 (iv) 7.54% (v) 24.84%

6. 2068 Q.No. 6 OR

The Honda International Moter Company of Japan, upon market potentiality of its product, has shown interest to set-up a drive-in service wing in Kathmandu.

The drive-in service wing will need Japanese yen 30 million investment in plant to set up service facility and 4 million Japanese yen in net working capital, both the investments in the beginning.

The service wing will run for 3-year and the plant set-up for the purpose depreciates straight-line to Rs. 0.3 million after which it realizes Rs. 0.5 million.

The uncorrelated cash flows of 3-year are as follows:

Year 1		Year 2		Year 3	
OCF	Probability	OCF	Probability	OCF	Probability
Rs. 10 million	0.30	Rs. 11 million	0.20	Rs. 13 million	0.15
Rs. 11 million	0.40	RS. 13 million	0.60	Rs. 14 million	0.70
Rs. 12 million	0.30	Rs. 15 million	0.20	Rs. 15 million	0.15

The Honda International Motor Company of Japan will approve the investment if it meets 6% risk free return. The corporate tax rate in Nepal is 25%.

The currency exchange rate is Japanese yen 10 equivalent to Rs. 8.50 at present. The inflation rate in Nepal will run up by 10% and Japanese currency will run up by 6% every year.

Required: 1. Expected cash flows of each year
2. NPV in Japanese currency
3. Standard deviation
4. The percentage of NPV moving to the limit of Japanese yen 9 million [3+4+3+2=12]

Ans: (1) Rs. 11,000,000; Rs. 13,000,000; Rs. 14,000,000 (2) ¥ 6.4986 million (3) ¥ 1.556 million (4) 94.63%

7. 2068 (Old) Q.No. 6 OR

A manufacturing company is considering to add one more unit in its operation to expand its production. The project will cost the company an investment of Rs. 20,000 and it will have a service life of three years. The company expects the following net cash inflows for the three years period.

Year 1		Year 2		Year 3	
Net cash inflow	Probability	Net cash inflow	Probability	Net cash inflow	Probability
2,000	0.10	4,000	0.15	6,000	0.10
6,000	0.20	8,000	0.25	10,000	0.20
10,000	0.40	12,000	0.40	14,000	0.30
14,000	0.30	16,000	0.20	18,000	0.40

The expected cash inflows are independent over the period of time and the company expects a minimum risk free rate of return of 10%.

Required: i. Desirability of the project from the view point of expected net present value (NPV)
ii. The standard deviation (σ) of the expected cash inflows over the period of time.
iii. The probability of NPV being Rs. 4,000 or less.
iv. The probability of NPV being Rs. 15,000 or more. [3+3+2+2=10]

Ans: (i) Rs. 8,005.40 (ii) 5,562 (iii) 23.58% (iv) 10.38%

8. 2067 (I) Q.No.6

A Venture Incorporation of UK is considering an investment project through Subsidiary Company in Nepal requiring on Net outlay of £1300 today with an expected life of 3 years having no life-end salvage value. The project's expected monetary value and standard deviation are given below:

Year	Expected monetary value	Standard deviation
1	Rs. 69,000	Rs. 13,000
2	Rs. 70,000	Rs. 17,321
3	Rs. 71,000	Rs. 20,712

The exchange rate between UK £ and Nepali rupee remained Rs. 130 to £1.00.

Assume that the probability distribution of cash flow for future periods are independent, the

company's cost of capital is 12% and company can invest in 6% treasury bills The annual inflation rate in Nepal has been expected to remain 3 percent in the coming three years from now.

Required: ❶ Net present value of the project ❷ Internal rate of return of the investment project ❸ Standard deviation of expected cash flows ❹ Probability of NPV being greater than zero ❺ Probability of NPV being between Rs. 42,000 and Rs. 48,000. [2+2+2+3+3+=12]

Ans: ❶ Rs. 8,045.80 at 9% ❷ 11.65% ❸ Rs. 24,709.8 ❹ 62.93% ❺ 3.27%
OR ❶ Rs. 7,476.5 at 9.18%❷ 11.65% ❸ Rs. 24,621 ❹ 61.79% ❺ 3.13%

9. 2067 (II) Q.No.6

A company is considering purchasing a machine costing Rs. 60,000 including installation cost of Rs. 5,000. Following are the probability distribution of future generated cash inflows during its useful life of 3 years.

Period I		Period II		Period III	
CFAT Rs.	Probability	CFAT Rs.	Probability	CFAT Rs.	Probability
15,000	0.2	20,000	0.3	25,000	0.2
20,000	0.4	25,000	0.2	30,000	0.3
25,000	0.3	25,000	0.3	35,000	0.2
30,000	0.1	30,000	0.2	40,000	0.3

The future generated cash flows are assumed independent. The company's cost of capital is 10% and risk free return 5%.

Required: ❶ Expected NPV of future cash flows ❷ Standard deviation of future cash flows ❸ Probability of expected NPV at least mean ❹ Probability of expected NPV being zero or less ❺ Comment on riskiness of the project [3+3+2+2+2=12]

Ans: (1) 11,203.50 (2) 7,181.7841 (3) 50% (4) 5.94% (5) Risky project

10. 2067 (II) (Old) Q.No.6 OR

An American development project has been considering to launch a mini project in the remote area of Nepal. The project will cost US $ 1000 today and will have an after tax net salvage of Rs. 4,000 at the end of project's life of three years. The US $ has remained Rs. 74 for one US $ today. The annual inflation rate is expected to remain 10% in the coming three years from current year. The risk free rate f return will be at 10%.

The mini project will bring net expected cash flow (CFAT) of Rs. 35,000; Rs. 40,000 and 41,000 for one to three years with standard deviation of expected cash flow of 5,000; 5,600 and 6,000.

Assume independent cash flows.

Required: ❶ NPV of the mini project ❷ IRR of the project ❸ Standard deviation of the expected NPV ❹ Probability of NPV being Rs. 8,000 ❺ Probability of NPV between Rs. 6,000 and Rs. 9,000. [2+2+2+2+2=10]

Ans: (1) Rs. 7,646.50 (2) 27.6% (3) 6,570.82 (4) 1.99% (5) 18.19%

11. 2066 Q.No. 6OR

A firm is considering a proposal to purchase a new machine. The machine has an initial cost of Rs. 16,000. The capital Budgeting Department has developed the following discrete probability distribution for each cash flow generated by the project during its useful life of three years.

Year 1:	Cash flows	10,000	8,000	6,000	4,000	2,000
	Probability	0.10	0.20	0.40	0.20	0.10
Year 2:	Cash flows	12,000	10,000	8,000	6,000	4,000
	Probability	0.10	0.15	0.50	0.15	0.10
Year 3:	Cash flows	14,000	12,000	10,000	8,000	6,000
	Probability	0.10	0.20	0.40	0.20	0.10

The probability distribution of cash flows for future period are independent.

The risk free cost of capital applicable to the company is 10%.

Required: (1) Expected Net Present Value (2) Standard Deviation of Expected Cash Flows (3) Probability of Net Present Value being zero or less (4) Probability of Net Present Value being more than Rs. 4,000. [4 +4+2+2=12]

Ans: (1) Rs. 3,580 (2) 3111.539 (3) 12.51 (4) 44.83%

12. 2066 Partial Q.No. 6 OR

A recently completed market survey made clear that a new product "Gold Mat" has plenty market potentials. The estimated initial investment on the plant needed for manufacturing of the product is Rs.30,000. The plant will operate for 3 years. The plant will depreciate on straight line method to zero salvage value. The probability of year 1, 2 and 3 with correlated cash flows are finalized.

The investment needs minimum return of 14 percent.

Probability	EAT	Probability	EAT	Probability	EAT
0.25	Rs. 1,000	0.30	Rs. 2,000	0.35	Rs. 1,000
0.50	Rs. 3,000	0.40	Rs. 4,000	0.30	Rs. 6,000
0.25	Rs. 5,000	0.30	Rs. 6,000	0.35	Rs. 11,000

Required: (a) Expected NPV (b) Standard deviation of the expected NPV (c) Possibility of the expected NPV ranging between Rs.2,000 and Rs.5,000. [4+4+2]

Ans: (a) 2,976.60 (b) 5,256.13 (c) 22.34%

13. 2065 Q.No. 6 OR

European Union has been considering to launch a project in Myagdi District in Nepal. The project will cost Euro 1000 today and will have an after tax salvage value of Rs. 10,000 at the end of third of the project's life. Euro has remained Rs. 100 for one Euro today. The annual inflation rate in Nepal has been expected to remain 10% in the coming three year from now. The value of Rupee in term of Euro will also decline steadily at par with inflation rate. The risk free rate of return will be at 10%.

The project will bring net expected cash flow (CFAT) of Rs. 40,000; Rs. 50,000 and Rs. 60,000 for one to three years with a standard deviation of expected cash flow of 8,000; 10,000 and 12,000 respectively. Assume independent cash flows.

Required: (i) NPV of the project (ii) Internal Rate of Return of the project (iii) Standard deviation of expected cash flow (iv) Probability of NPV being Rs. 20,000 (v) Probability of NPV being between Rs. 15,000 and Rs. 25,000. [2+2+2+2+2]

Ans: (i) NPV = Rs 6,721; (ii) 25.29% (iii) S.D. = Rs 11,672; (iv) 37.08%; (v) 18.07%

14. 2064 Q.No. 6 OR

A Multinational Corporation of UK is planning to install a plant in Nepal. The initial project cost is estimated to be £1000. The initial exchange rate is £1 = Rs. 140. The cash flows generated over three years and assigned probabilities are as under:

Year 1		Year 2		Year 3	
Cash flows	Probability	Cash flows	Probability	Cash flows	Probability
Rs. 50,000	0.3	Rs. 40,000	0.2	Rs. 50,000	0.2
60,000	0.4	50,000	0.3	60,000	0.4
70,000	0.2	80,000	0.2	80,000	0.3
100,000	0.1	100,000	0.3	110,000	0.1

The probability distribution is assumed to be independent. The risk free rate of return is 10%.

Required: (a) The desirability of the project from the point of view of expected Net Present Value (b) Standard deviation from expected value (c) The probability of NPV being (i) less than zero (ii) more than Rs. 30,000 [3+4+3]

Ans: (a) NPV = Rs. 26,134.60 (b) Rs. 27,255 (c) 16.85% and 44.43%

15. 2063 Q.No. 4

A replacement machine to replace an old worn out Lathe machine of Balaju Yantrashala would cost Rs. 100,000. This Lathe machine would be depreciated to zero salvage under straight-line method in three years from now. The machine would have an after tax cash salvage value of Rs. 20,000 at the end of year three. To permit smooth operation of probability distribution approach the company would like to equate this salvage value with an investment cost. The machine would generate net cash flows independent over times for three years as under.

	Year I		Year II		Year III	
	Cash flow	Probability	Cash flow	Probability	Cash flow	Probability
Best	50,000	0.10	60,000	0.10	70,000	0.10
V.Good	40,000	0.20	50,000	0.15	60,000	0.20
Good	30,000	0.40	40,000	0.50	50,000	0.40
Fair	20,000	0.20	30,000	0.15	40,000	0.20
Bad	10,000	0.10	20,000	0.10	30,000	0.10

The risk free cost of capital applicable to the company would be 10%.

Required: a. Net present value of the investments. [2]
b. Value of the standard deviation of expected cash flow. [2]
c. Probability of net present value of expected cash flow being zero and less. [2]

Ans: (a) 12,920 (b) 15,557 (c) 20.33%

16. 2061 (II) Q.No. 1

A firm in America has been considering launching a project in Nepal. The project will cost $1,000 today and will have an after tax salvage value of Rs. 20,000 in three years from now. The current exchange rate between Nepal and America has remained at Rs.80 for one US dollar. The annual inflation rate in Nepal has been expected to remain at a steady increasing rate of 10% p.a. The value of Rupee interim of US $ will also decline gradually at par with inflation rate. The risk-free rate of return will be at 5%. The company expects the following net cash flow (CFAT) for three years.

Year I		Year II		Year III	
Cash flow	Probability	Cash flow	Probability	Cash flow	Probability
Rs. 20,000	0.10	Rs. 25,000	0.05	Rs. 30,000	0.10
Rs. 25,000	0.20	Rs. 30,000	0.20	Rs. 35,000	0.20
Rs. 30,000	0.40	Rs. 35,000	0.50	Rs. 40,000	0.40
Rs. 35,000	0.20	Rs. 40,000	0.20	Rs. 45,000	0.20
Rs. 40,000	0.10	Rs. 45,000	0.05	Rs. 50,000	0.10

In order to accommodate probability distribution the company has adopted a policy to equate salvage value available at the end with investment cost.

Required: a. Net present value of expected cash flow.
b. Standard deviation of expected cash flow.
c. Probability of NPV of expected cash flow being zero or less.
d. Probability of NPV of expected cash flow being more than 35,000. [10]

Ans: (a) 11,150 (b) 6,809 (c) 5.05% (d) Nil

MBA

1. 2064 Q.No. 3 a

A Company is considering an investment in a project, which requires and initial investment of Rs. 4,00,000 with zero salvage value and estimated life of five years. The yearly cash benefits for next five years will have the following probability distribution:

Cash flows	Probability
Rs. 60,000	0.2
1,20,000	0.4
1,50,000	0.3
1,80,000	0.1

The cost of capital is 10 %

Required: (1) Expected Net Present Value (2) Standard deviation of expected NPV [10]

2. 2061 (I) Q.No. 6 a

A company is considering for investing in a new project with an expected life of three years. The project will cost Rs. 7,000 as investment cost. The company expects the following net cash flows for 3 years.

	Probabilities		
Cash flows	Year 1	Year 2	Year 3
2,000	0.1	0.4	0.3
3,000	0.2	0.3	0.1
4,000	0.3	0.2	0.4
5,000	0.4	0.1	0.2

Assume that the probability distribution of cash flows for future periods is independent. Also assume that the after tax rates 10%.

Required: a. Expected value of the NPV
b. Standard deviation about expected value. [10]

Ans: $\overline{NPV}$ = Rs. 1,745.15 (b) Rs. 1,702.24

3. 2060 Q.No. 2 b

The initial investment of a project is Rs. 16,000. The risk free rate of return desired is 10%. The expected net cash in flows after tax from the project are given below:

Years	1	2	3
Net cash inflows after tax	Rs. 8,000	7,000	5,000
Standard deviation	500	500	500

Required: a. NPV of the project
b. Standard deviation of the expected value
c. Probability of NPV being more than zero
d. Probability of NPV being less than Rs. 500 [3+3+2+2]

Ans: (a) Rs. 809 9b) 720 (c) 86.86% (d) 33.36%

4. 2059 Q.No. 7 a

The expected initial investment for a project is Rs. 200,000.The estimated net cash inflows (CFAT) for the 3 years of the project life are Rs. 80,000. Rs 100,000, and Rs. 120,000. The minimum return expected is 15%.

Required: a. NPV of the project b. Desirability of the project [4+1]

Ans: NPV = Rs. 24,078 (b) NPV is +ve, project is desired.

5. 2058 Q.No. 5 a

A company is considering of replacing one of its current hand-operated machines with a new fully automated machine. The existing machine was purchased 6 year ago a cost of Rs. 50,000 and remaining life of the machine is 4 years. The replacement machine being considered has a purchase of Rs. 60,000 and its installation cost is Rs. 20,000. The book and cash salvage value of both machines after 4 years from now will be zero. The existing machine could be sold today at Rs. 14,000. The company fails in a tax bracket of 50%. The expected differential cash flow after tax and their certainly -equivalent co-efficient are as under:

Years	1	2	3	4
Expected CFAT	Rs. 40,000	25,000	40,000	50,000
C.E. coefficient	0.5	0.8	0.5	0.4

The risk free rate of return is 6%.

Required: a. Net investment or net cash outlay
b. Net present value of adjusted cash flows
c. Desirability of the project [4+4+2]

Ans: (a) Rs. 63,000 (b) Rs. 6,300 (c) NPv is +ve, project should be selected.

6. 2057 Q.No. 2 a

Expected monetary value and standard deviation of a project for different years are as under:

Years	1	2	3
E.M.V	4,000	4,000	2,000
Standard deviation	1,000	1,000	1,000

Assume the probability distribution of cash flow for future period is independent. Also assume that the expected return over the net amount of investment would be Rs. 2.442

Required: a. Net investment cost of the project
b. Standard deviation of expected value
c. Probability of NPV being less than zero
d. Probability of NPV being more than Rs. 2,000. [4+4+1+1]

Ans: (a) Rs. 6,000 (b) Rs. 1,440 (c) 4.55% (d) 62.17%

7. 2056 Q.No. 4 a

A company has been considering to replace its old machine with a new machine. The replacement machine would cost Rs. 1,00,00 and installation cost of 20,000 with zero salvage value at the end of three years. The old machine would bring after tax salvage of Rs. 40,000 to days. The new machine would bring net expected cash flow (CFAT) of Rs. 30,000 in the first year Rs. 40,000 in the second year and Rs. 60,000 is the third year with a standard deviation of expected cash flow of 6,000, 8,000 and 12,000 respectively. The risk free rate of return would be 10%. Assume independent cash flows.

Required: a. Net present value of the project
b. Probability of NPV being less than 10,000
c. Probability of NPV being between 20,000 and 40,000 [2+3+5]

Ans: (a Rs. 25,370 (b) 10.75% (c) 54.74%

8. 2055 Q.No. 4 a

The various information's relating to an investment proposal have been summarized below:

Year	1	2	3	4
Investment cost	50,000	-	-	-
Expected cash	-	25,000	25,000	25,000
Standard deviation of expected cash (0)	-	5,000	5,000	5,000

Company's risk free cost of capital is 10%.

Required: a. Net present value of expected cash
b. Value of standard deviation of expected cash
c. Probability of NPV being zero (0) or less
d. Probability of NPV being more than Rs. 16,000 [3+3+2+2]

Ans: (a) Rs. 12,175 (b) Rs. 7,200.58 (c) 4.55% (d) 29.81%

9. 2054 Q.No. 6 a

A manufacturing company has been considering to investment Rs. 2,00,000 in a project. The project will last for 5 years will book and cash salvage value of Rs. 50,000 and Rs. 80,000 respectively. The project will yield a present value of Rs. 1,80,000 of expected cash excluding salvage value of machine at the end.

To make use of probability distribution approach easy the company has adopted a policy of comparing salvage value with the investment cost. The corporate tax rate is 50% and the present value of one rupee in 5 years time at risk free cost of capital is 0.621. The value of standard deviation of expected cash is Rs. 10,000.

Required: The probability of NPV of expected cash ranging between Rs. 10,000 and Rs. 30,000 [10]

Ans: 68.23%

10. 2053 Q.No. 6 a

A replacement assets would cost a company Rs. 1,00,000 plus Rs. 20,000 for transportation and installation. The old assets were purchased two years before at Rs. 1,00,000 with the expected life of 5 years and zero salvage value. These assets could be sold today at Rs. 50,000. The new machine would last for three years with no book and cash salvage value. The new machine would provide a net cash flow (CFAT) of Rs. 30,000; Rs. 30,000 and Rs. 50,000 in the first, second and third years respectively. The company's risk free cost of capital for three would be 10%, however, the company would like to have additional premium of 5% for possible risk in future. Company falls in a tax bracket of 40%.

Required: a. Net investment cost of new machine [2]
b. NPV of the project after risk adjustment [6]
c. Decision regarding desirability [2]

Ans: (a) Rs. 66,000 (b) Rs. 15,600 (c) Since NPV is +ve, replacement should be made.

11. 2052 Q.No. 7 a

The Nepal Batteries Co. Ltd. is operating its production functions with an old machine purchased two years before at a cost of Rs. 50,000. The life of the machine was estimated to be of 5 years with no book and cash salvage value. The company now is considering to replace this machine with a new machine. The new machine will cost Rs. 60,000 and will have an effective life of three years. The book and cash salvage value of the machine after three from now will be zero (0). The old machine can be sold today at Rs. 20,000.

The present value of expected cash flow for three year is Rs. 40,000. The value of standard deviation about expected cash is Rs. 2,500.

Required: a. Calculation of net investment cost assuming company's tax rate at 40%.

b. Possibility of NPV being more than zero. [10]

Ans: (a) Rs. 36,000 (b) 94.52%

12. 2051 Q.No. 6 a

The data retaining to certain investment project are as follows:

i. Probability distribution of NPV of expected cash flow is Rs. 10,000
ii. Standard deviation of expected cash flow is Rs. 5,000
iii. A normal distribution of probabilities is expected.

Required: a. Probability of NPV being less than zero.

b. Probability of NPV being less than Rs. 7,500

c. Probability of NPV being 15,000 or more

d. Probability of NPV being between 15,000 and 7,500. [10]

Ans: (a) 2.28% (b) 30.85% (c) 15.87% (d) 53.28%

13. 2050 Q.No. 6 a

The data relating to some investment project are given below:

i. Probability of NPV of expected cash flow is Rs. 7,500
ii. Standard deviation of expected cash flow is Rs. 5,000
iii. A normal distribution of probability is expected.

Required: a. Probability of NPV of expected cash flows being more than Rs. 5,000.

b. Probability of NPV of expected cash flow being more than Rs. 10,000. [10]

Ans: (a) 69.15% (b) 30.85%

14. 2048 Q.No. 4

A company is considering an investment in a project, which requires an initial outlay of Rs. 15,000 with an expected cash flow generated over three years as under:

Cash in flows	Year 1	Year 2	Year 3
400	0.3	0.2	0.2
500	0.4	0.4	0.5
750	0.2	0.3	0.2
1,000	0.1	0.1	0.1

The firm's cost of capital 10% and firm can invest in 5% treasury bills.

Required: a. Expected net present value, assuming the probability distribution of cash flows are independent.

b. Standard deviation about expected value.

c. Probability of NPV being at least Rs. 500. [20]

Ans: (a) (Rs. 13,407.50) (b) 292.50 (c) 0.499997133

15. 2046 Q.No. 3

Humphrey Corporation ahs determined the following discrete probability distributions for net cash flows generated by a contemplated project:

Period 1		Period 2		Period 3	
Prob.	Net cash flow	Prob.	Net cash flow	Prob.	Net cash flow
0.10	Rs. 3,000	0.10	Rs. 2,000	0.10	Rs 1,000
0.25	4,000	0.25	3,000	0.25	2,000
0.30	5,000	0.30	4,000	0.30	3,000
0.25	6,000	0.25	5,000	0.25	4,000
0.10	7,000	0.10	6,000	0.10	5,000

Required: a. Assume the probability distributions of cash flows for future periods are independent. Also assume that the after tax, risk free rate is 4 percent. If the project will require an initial outlay Rs. 10,000 determine the expected value of the net present value.
b. Determine the standard deviation about the expected value.
c. What is the probability that the project will have a net present (i) greater than zero (ii) less than zero (iii) more than Rs. 3,000 [20]

Ans: (a) 1177 (b) 1,827.72 (c) 74.22% and 15.87%

16. 2045 Q.No. 3

Gablu Corporation has determined the following discrete probability distributions for net cash flows generate by a contemplated project.

Period I		Period II		Period III	
Prob.	Net Cash flow	Prob.	Net Cash flow	Prob.	Net Cash flow
0.10	Rs. 4,000	0.10	Rs. 3,000	0.10	Rs. 2,000
0.25	5,000	0.25	4,000	0.25	3,000
0.30	6,000	0.30	5,000	0.30	4,000
0.25	7,000	0.25	6,000	0.25	5,000
0.10	8,000	0.10	7,000	0.10	6,000

a. Assume the probability distributions of cash flows for future periods are independent. Also assume that the after tax, risk free rate is 4 percent. If the project will require an initial outlay Rs. 10,000 determine the excepted value of the net present value.
b. Determine the standard deviation about the expected value.
c. What is the probability that the project will have a net present value (i) greater than zero (ii) Less than zero (iii) more than Rs. 4,000.

Ans: (a) 3,953 (b) Rs. 1,827.72 (c) 98.46% and 48.80%

17. 2042 Q.No. 4

M/s Balaju Yantrasala is considering to add one more unit in its operation to product solar rice cooker. The project will cost the company an investment of Rs. 20,000 and this will have service life of three years. The company expects the following net cash benefits for the three years.

Year I		Year II		Year III	
Net cash benefit in Rs.	Prob.	Net cash benefit in Rs.	Prob.	Net cash benefit in Rs.	Prob.
2,000	0.10	4,000	0.15	6,000	0.10
6,000	0.20	8,000	0.25	10,000	0.20
10,000	0.40	12,000	0.40	14,000	0.40
14,000	0.30	16,000	0.20	18,000	0.30

The expected cash flows have perfect correlation overtime and company expects a minimum risk free rate of return of 10%.

Required: a. A desirability of the project from NPV's point of view.
b. The standard deviation of the probability distribution of net present values (assume normal distribution).
c. The chances of NPV being zero (0) or less and chances of being NPV more than Rs. 10,000.

Ans: (a) NPV = Rs. 7,696.6 (b) 9,449.36 (c) 20.30% and 36.69%

18. 2041 Q.No. 4

The Bottlers Nepal is considering to bring a new soft drink 'Coca". The project will cost the company Rs. 20,000 as investment cost and it will have a service life of three years. The company expects a new profit after tax cash flows for the three years follows:

Year 1		Year 2		Year 3	
CF (Rs.)	Probability	CF (Rs.)	Probability	CF (Rs.)	Probability
2,000	0.10	6,000	0.15	8,000	0.10
6,000	0.15	10,000	0.20	12,000	0.20
10,000	0.50	14,000	0.40	16,000	0.50
14,000	0.25	18,000	0.25	20,000	0.20