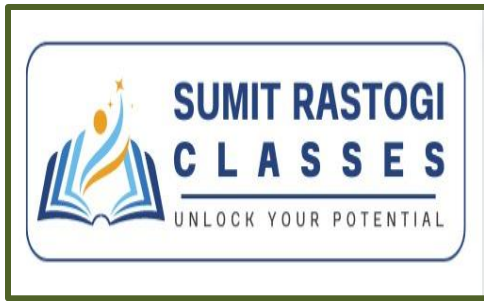




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TEST PAPER - 05

(Chapters Covered - Transfer Pricing, Divisional Performance Measurement, Responsibility Accounting, Decision Theory)

MANAGEMENT ACCOUNTING

Time Allowed: 3 Hours

Full Marks: 100

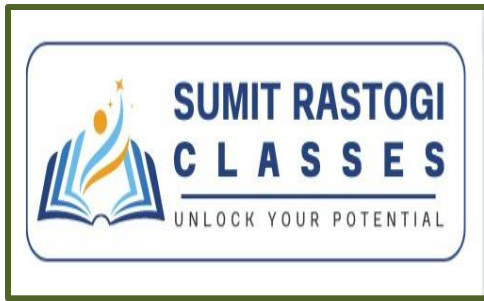
Section A contains Question Number 1. All parts of this question are compulsory. Working notes should form part of the relevant answer.

SECTION - A

- 1. Choose the correct answer from the given alternatives (you may write only the Roman number and the alphabet of your answer).**

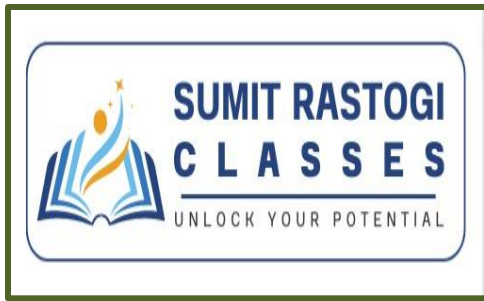
(15 X 2 = 30)

- (i) Method of pricing, when two separate pricing methods are used to price transfer of products from one subunit to another, is called:**
- (A) Dual pricing**
 - (B) Functional pricing**
 - (C) Congruent pricing**
 - (D) Optimal pricing.**
- (ii) MNC Consciously manipulate the transfer Price as an instrument of maximizing achievement of:**
- (A) Investors Goals**
 - (B) Divisional Goals**
 - (C) Managers Goals**
 - (D) Corporate Goals**
- (iii) Transfer Price are normally set for:**
- (A) Intermediate Products**
 - (B) Giffen Products**
 - (C) Finished Products**
 - (D) None of these**



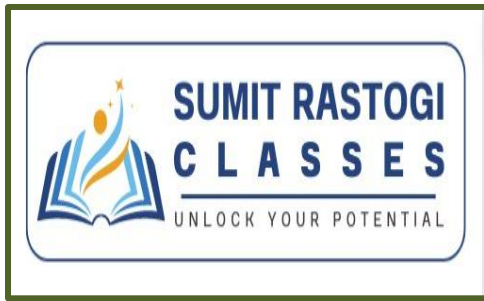
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- (iv) **Responsibility Accounting is used for _____.**
(A) Cost control
(B) Planning
(C) Decision making
(D) Pricing
- (v) **_____ Center is defined as a business entity's segment by which both revenues are earned and costs are incurred.**
(A) Profit
(B) Cost
(C) Break Even Point
(D) Margin of Safety
- (vi) **According to Norton and Kaplan, the balanced scorecard should be used as ____.**
(A) A Control System
(B) A Diagnostic System
(C) A Strategic System
(D) All of the above
- (vii) **Economic Value Added (EVA) can be calculated as under.**
(A) Return to Equity Shareholders fund - Cost of capital Employed.
(B) Return to providers of fund - Cost of capital Employed.
(C) Return to Long term loan fund - Cost of capital Employed.
(D) Return to Equity Shareholders fund - Cost of Equity.
- (viii) **Which of the following Concepts suggests a basis for correct staffing in continuously expanding production?**
(A) Growth Curve
(B) Learning Curve
(C) Exponential Curve
(D) Production Curve
- (ix) **According to DuPont methodology, the parameter(s) that drive Return on Equity (ROE) is/are:**
(A) Operating performance
(B) Asset usage performance
(C) Financial leverage
(D) All of the above



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- (x) Which of the following factors does not affect Learning Curve?
- (A) Method of Production
 - (B) Labour Strike
 - (C) Shut Down
 - (D) None of these
- (xi) Another name for the 'Learning Curve' is:
- (A) Exponential Curve
 - (B) Growth Curve
 - (C) Production Curve
 - (D) Experience Curve
- (xii) The Minimum Expected Opportunity Loss (EOL) is
- (A) Equal to EVPI
 - (B) Minimum Regret
 - (C) Equal to EMV
 - (D) Both (A) and (B)
- (xiii) Material costs, labour costs and variable overhead costs are 125, 150 and 50 per unit respectively. If the fixed expenses for 20,000 units are 6,40,000 and the required rate of return is 25% on the transfer price, then find out the transfer price per unit.
- (A) 325
 - (B) 476
 - (C) 357
 - (D) 350
- (xiv) Which one of the following is not considered as a method of Transfer Pricing?
- (A) Negotiated Transfer Pricing
 - (B) Market Price Based Transfer Pricing
 - (C) Fixed Cost Based Transfer Pricing
 - (D) Opportunity Cost Based Transfer Pricing
- (xv) A/An _____ is an organizational unit whose manager is responsible for generating revenue and managing expenses related to current activity.
- (A) Expense Centre
 - (B) Revenue Centre
 - (C) Cost Centre
 - (D) Profit Centre



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SECTION – B

Answer any five questions from question number 2 to 8.

(14×5=70)

2 (a) GREEN ENVIRON LTD. has two Divisions-M and N. Division-M manufactures product A-15 which it sells in outside market as well as to Division-N which processes it to manufacture Z-25. The Manager of Division-N has expressed the opinion that transfer price is too high. The two Divisional Managers are about to enter into discussions to resolve the conflict and Manager of Division-M to supply him with some information prior to discussions.

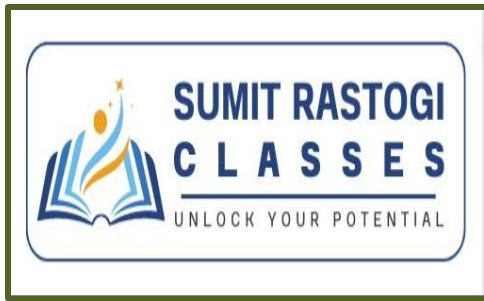
Division-M has been selling 50,000 units to outsiders and 10,000 units to Division-N, all at ₹25 per unit. It is not anticipated that this demand will change. The variable cost is ₹15 per unit and the fixed costs are ₹3 lakhs. Divisional investment in assets is ₹12 lakhs.

The Manager of Division-M anticipates that Division-N will want a transfer price of ₹22. If he does not sell to Division-N, ₹40,000 of fixed costs and ₹2,00,000 of assets can be avoided. The Manager of Division-M would have no control over the proceeds from the sale of the assets and is judged primarily on his rate of return.

Required:

- (i) Should the Manager of Division-M transfer its products at ₹22 to Division-N?
- (ii) What is the lowest price that the Division-M should accept?

(8 Marks)



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2 (b) RADIANCE ENGINES LTD. manufacture engines mounting for Akash airlines. They have been asked to bid on a prospective contract for 30 engines mounting for the Jet aircraft. They have just completed and initial run of 10 of these mounting at the following costs:

Particulars	Amount in ₹
Direct Materials	7,000
Direct labour (2000 hours @₹4)	8,000
Variable overhead (₹0.50 per labour hour)	1,000
Fixed overhead (₹1 per labour hour)	2,000
	18,000

An 80% learning curve is thought to be pertinent in this case. Marketing Director believes that the quotation is unlikely to be accepted if it exceeds ₹38,000 and as the company are short of work, he believes the contract to be vital.

You are required to comment whether it is worth accepting at ₹38,000. (6 Marks)

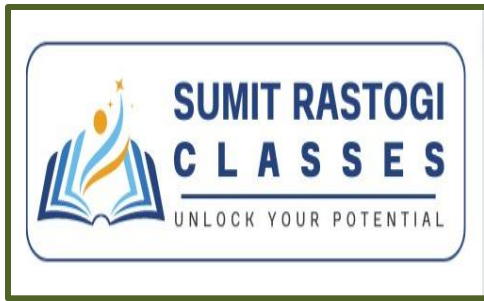
3 (a) Mr. Kunch, a business man, has two independent investments A and B available to him but he lacks the capital to undertake both of them simultaneously.

He can choose to take A first and then stop, or, if A is successful then take B, or, vice versa. The probability of success on A is 0.7 while for B it is 0.4. Both investments require an initial capital outlay of ₹2000; and both return nothing if the venture is unsuccessful. Successful completion of A will return ₹3,000 (over cost), and successful completion of B will return ₹5,000 (over cost).

Required:

- Represent Mr. Kunch's problem as decision tree.
- Suggest Mr. Kunch as to which investment he should chose.

(7 Marks)



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3 (b) XYZ Ltd., which has a system of assessment of Divisional Performance on the basis of residual income, has two Divisions, Alfa and Beta. Alfa has annual capacity to manufacture 15,00,000 units of a special component that it sells to outside customers but has idle capacity. The budgeted residual income of Beta is ₹1,20,00,000 and that of Alfa is ₹1,00,00,000.

Other relevant details extracted from the budget for the current year are as follows:

Particulars of Alfa:

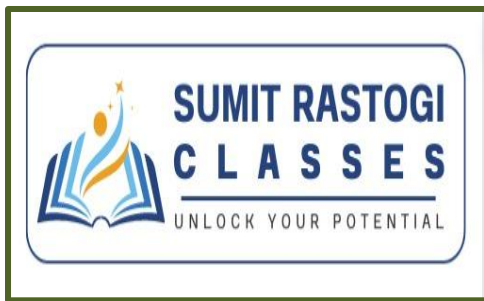
Sale (Outside Customers)	12,00,000 Units	@ ₹180 Per Unit
Variable Cost Per Unit		160
Divisional Fixed Cost		₹80,00,000
Capital Employed		₹7,50,00,000
Cost of Capital		12%

Beta has received a special order for which it requires components similar to the ones made by Alfa. Fully aware of the idle capacity of Alfa, Beta has asked Alfa to quote for manufacture and supply of 3,00,000 units of the components with a slight modification during final processing. Alfa and Beta agreed that this will involve an extra variable cost to Alfa amounting to ₹5 per unit.

1. Calculate the transfer price, which Alfa should quote to Beta to achieve its budgeted residual income.
2. If Beta can buy the required components from open market at a price of ₹180 (situation A), ₹172 (situation B) or ₹160 (situation C), what should be its autonomous decision: buying from market at market price or buying from Alfa at the transfer price, in each of the situations?

Also state with reason in what situation the decision of Beta may result in a sub-optimal decision for the company as a whole.

(7 Marks)



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4 (a) DANDIA LTD., a manufacturing company, received an order for 16 units of a new product. So far, 4 units have been completed; the first unit required 40 direct labour hours and a total of 102.40 Direct Labour Hours has been recorded for the 4 units. The Production Manager expects on 80% learning effect for this type of work. The Direct Cost attributed to the center in which the unit is manufactured and its costs are as follows:

	₹
Direct Material	30.00 per unit
Direct Labour	6.00 per hour
Variable Overhead	0.50 per direct labour hour
Fixed Overheads Apportioned	5.00 per direct labour hour

You are required to produce an estimated product cost for the initial order based on the cost data given. (6 Marks)

4 (b) Zen Limited produces four products- A, B, C & D in Division-X. Products are sold in the external market and the cost data for the month of July, 2022 is as under:

Particulars	Product A	Product B	Product C	Product D
Selling price per unit in external market (₹)	250	450	300	350
Hours required to produce one unit	5	10	10	8
P/V Ratio	30%	40%	45%	50%

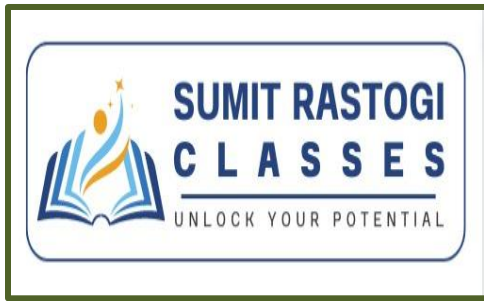
Product-D can be transferred to Division-Y. However, maximum quantity that might be required by Division-Y is 1500 units of Product-D. The maximum sales of the products in the external market are:

Product A	-	3,000 Units
Product B	-	4,000 Units
Product C	-	3,500 Units
Product D	-	2,000 Units

What should be the transfer price for each unit of Product-D if the total labour hours available in Division-X Are:

- (i) 70,000 Hours
- (ii) 80,000 Hours

(8 Marks)



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5 (a) A company fixes the inter-divisional transfer prices for its products on the basis of cost plus an estimated return on investment in its division. The relevant portion of the budget for Division A for the year 2016-17 is given below:

Fixed assets	₹5,00,000
Current assets (other than debtors)	₹3,00,000
Debtors	₹2,00,000
Annual fixed cost of the division	₹8,00,000
Variable cost per unit of product	₹10
Budgeted volume of production per year (units)	4,00,000

Desired return on investment 28%. You are required to determine the transfer price for the division A. (5 Marks)

5 (b) SIDSORY Ltd., a food products company, is contemplating the introduction of a revolutionary new product with new packaging to replace the existing product at a much higher price (S_1) or, a moderate change in the composition of the existing product with a new packaging at a small increase in price (S_2), or a small change in the price (S_3). The possible states of nature or events are (i) high increase in the sales (N_1) (ii) no change in the sales (N_2) and (iii) decrease in the sales (N_3). The marketing department of the company worked out the pay-offs in terms of yearly net profits for each of the strategies for these events (expected sales). This is represented in the following table.

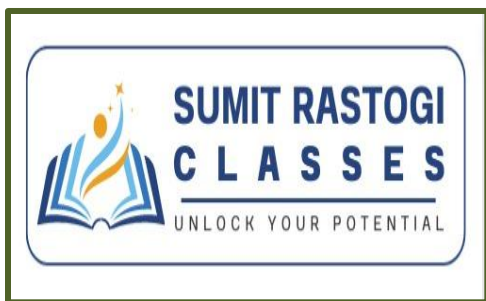
Pay-offs (in ₹)

Strategies	State of Nature		
	N_1	N_2	N_3
S_1	7,00,000	3,00,000	1,50,000
S_2	5,00,000	4,50,000	0
S_3	3,00,000	3,00,000	2,00,000

Required: Develop a course of action for SIDSORY Ltd. based on-

- Maximin Criterion
- Maximax Criterion
- Laplace Criterion
- Hurwicz Criterion [$\alpha = 0.4$]

(9 Marks)



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6 (a) From the following information obtained from the books of M/s AYC Limited, Calculate Economic Value Added (EVA).

Equity Share of 100 each	1,50,000 Shares
10% Debenture of 10 each	20,00,000 Debentures
Tax rate	30%
Degree of Financial Leverage (DFL)	1.1 times
Securities Premium (₹)	1,50,00,000
Reserve & Surplus (₹) (including Capital Reserve of 90 Lakhs)	2,00,00,000

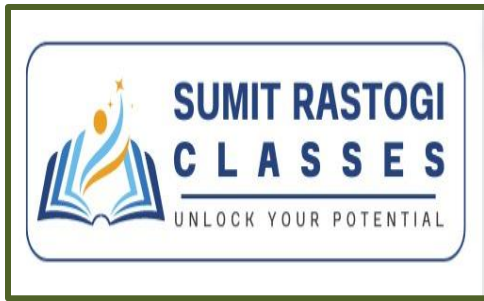
It is the prevailing practice for the companies in the industry to which AYC Limited belongs to pay at least a dividend of 14% p.a. to its Equity Shareholders.

(6 Marks)

6 (b) A manufacturing company has two divisions - X and Y mainly engaged in production of an electronic device and Division Y packs and labels the product and sells it in the market. Division X supplies 25,000 units of the product per month to Y for packaging and labeling. Division X incurs ₹16 as the variable cost for the product and fixed cost of ₹8,40,000 per year. Investment in fixed assets is ₹9,60,000. The division plans to have 12% return on fixed assets as normal profits. Division Y incurs ₹10 per product as variable expenses for packaging and marketing.

- Find the Transfer Price per unit of the product that Division X can charge for transfer to Y.
- What will be profit of Division Y if it can sell all the products in the market at ₹80 per unit?
- If Division Y can sell only 15,000 units of the product per month and asks Division X to supply only 15,000 units, what will be the effect on the Transfer Price and the profits of the divisions?

(8 Marks)



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7 (a) For the upcoming planting season, farmer Visal can plant corn (A_1), wheat (A_2), or soyabeans (A_3) or use the land for grazing (A_4). The payoffs associated with the different actions are influenced by the amount of rain: heavy rainfall (S_1), moderate rainfall (S_2), light rainfall (S_3), or drought (S_4). The payoff matrix (in thousands of rupees) is estimated as:

	S_1	S_2	S_3	S_4
A_1	-20	60	30	-5
A_2	40	50	35	0
A_3	-50	100	45	-10
A_4	12	15	15	10

Develop a course of action for farmer Visal based on each of the Four Decision Criterion Under Uncertainty.

(9 Marks)

7 (b) The following information relates to the operating performance of two divisions of SINTRA Ltd. for last year:

Particulars	Division M	Division N
Operating Income	₹15,00,000	₹25,00,000
Operating Assets	₹60,00,000	₹1,25,00,000
ROI	25%	20%

Required:

- Analyse which division is more successful in terms of ROI.
- Using 15 % as the minimum required rate of return, calculate the Residual Income for each division.
- Identify the division which is more successful under the measure in (ii).

(5 Marks)

8 (a) What are the methods of fixing "Transfer Price" for transfer of a product from one profit centre to another? Mention one demerit of each method.

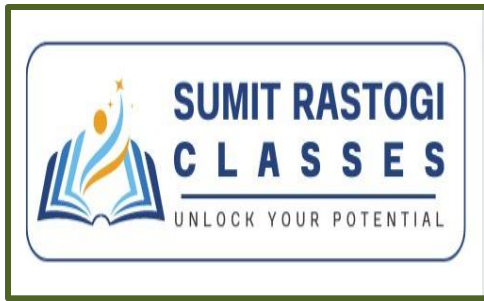
(5 Marks)

8 (b) What do you mean by Learning Curve? State the applications of Learning Curve.

(4 Marks)

8 (c) What is Responsibility Accounting? Also state the Principles of Responsibility Accounting.

(5 Marks)

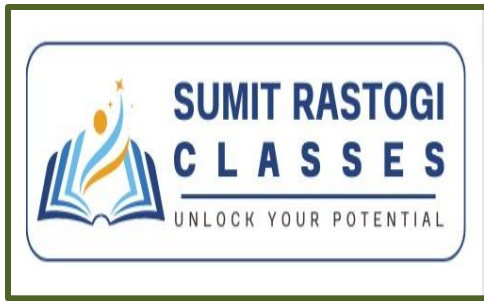


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SUGGESTED ANSWERS - TEST PAPER 05

SECTION - A

- (i) (A) Dual Pricing
- (ii) (D) Corporate Goals
- (iii) (A) Intermediate Products
- (iv) (A) Cost Control
- (v) (A) Profit
- (vi) (C) A Strategic System
- (vii) (C) Return to Long term loan fund – Cost of capital Employed.
- (viii) (C) Learning Curve
- (ix) (D) All of the above
- (x) (D) None of these
- (xi) (D) Experience Curve
- (xii) (D) Both (A) and (B)
- (xiii) (B) ₹476
- (xiv) (C) Fixed Cost Based Transfer Pricing
- (xv) (D) Profit Centre



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SECTION - B

Ans. 2 (a)

(i) COMPARATIVE PROFITABILITY STATEMENT OF DIVISION M

Particulars	Transfer at ₹25	Transfer at ₹22	Don't Transfer
Sales Revenue: External sales (50,000 × 25)	12,50,000	12,50,000	12,50,000
Transfer to N: (10,000 units @ ₹25 or ₹22)	2,50,000	2,20,000	-
Total Revenue	15,00,000	14,70,000	12,50,000
Variable cost @ ₹15 per unit	(9,00,000)	(9,00,000)	(7,50,000)
Contribution	6,00,000	5,70,000	5,00,000
Fixed Cost	(3,00,000)	(3,00,000)	(2,60,000)
Profit	3,00,000	2,70,000	2,40,000
Total Assets	12,00,000	12,00,000	10,00,000
Return on Assets (%)	25%	22.50%	24%

Comments: The manager of Division M should not agree to sell at ₹22 per unit, as it lowers down its rate of return (ROI) i.e. (25% to 22.50%)

(ii) The lowest transfer price acceptable to Division M is one, which maintains its rate of return of 24% (ROI without selling to Division N):

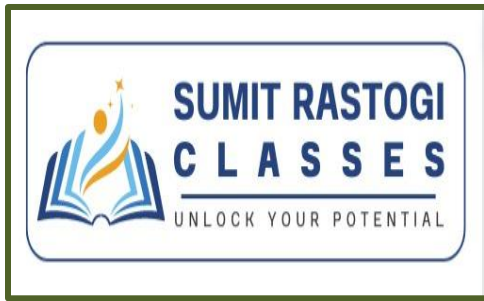
$$= (\text{Total sales Revenue} - \text{Total Cost}) / \text{Total Assets} = 0.24$$

$$[(12,50,000 + 10,000 \times \text{Transfer Price (TP)}) - 12,00,000] \div ₹12,00,000 = 0.24$$

$$10,000 \text{ TP} = 2,88,000 - 50,000 = 2,38,000$$

$$\text{Transfer Price} = 2,38,000 \div 10,000 = ₹23.80$$

The lowest transfer price acceptable to Division - M is ₹23.80 per unit.



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Ans. 2 (b)

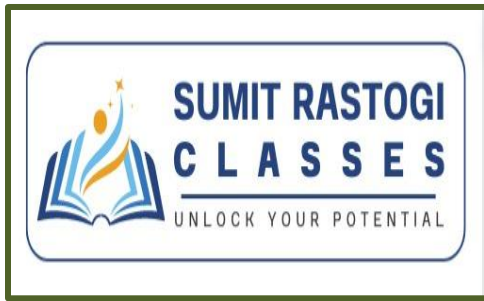
COMPUTATION OF LABOUR HOURS REQUIRED

Cumulative units manufactured	Average Time per run (Hours)	Total time (Hours)
10	2,000	2,000
20	$2,000 \times 80\% = 1,600$	$1,600 \times 20/10 = 3,200$
40	$1,600 \times 80\% = 1,280$	$1,280 \times 40/10 = 5,120$

Time for order of 30 engines = $5,120 - 2,000 = 3,120$ hours

Incremental cost for 30 engines:	₹
Direct Material ($7,000 \times 30/10$)	21,000
Direct Labour ($3,120 \times 4$)	12,480
Variable overhead ($3,120 \times 0.50$)	1,560
Fixed Overhead	-
Total Cost	35,040

Comments: The contract is worth accepting, if more profitable work is not being turned away, as it yields a contribution of only ₹2,960 (i.e. ₹38,000 – 35,040).



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Ans. 3 (a)

(i) Pay-off: Starts with A:

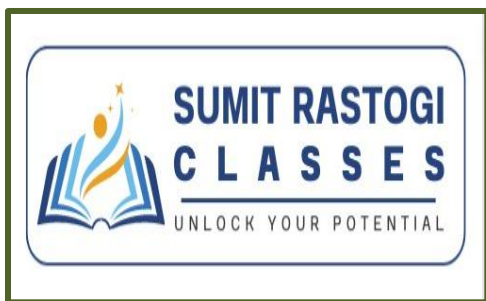
- (1) A is Unsuccessful and stop
Pay-off $(2,000) \times 0.30 = \text{(600)}$
- (2) A is successful and Take B:
B is Successful $= 5,000 \times 0.40 = 2,000$
B is Unsuccessful $= (2,000) \times 0.60 = (1,200)$
Pay-off for B $2,000 - 1,200 = 800$
Total Pay-off $(3,000 + 800) \times 0.70 = \text{2,660}$
- (3) A is successful and Stop:
Pay-off $= 3,000 \times 0.70 = \text{2,100}$

Starts with B:

- (4) B is Unsuccessful and stop
Pay-off $(2,000) \times 0.60 = \text{(1,200)}$
- (5) B is successful and Take A
A is Successful $= 3,000 \times 0.70 = 2,100$
A is Unsuccessful $= (2,000) \times 0.30 = (600)$
Pay-off for A $= 2,100 - 600 = 1,500$
Total Pay-off $(5,000 + 1,500) \times 0.40 = \text{₹2,600}$
- (6) B is successful and Stop:
Pay-off $= 5,000 \times 0.40 = \text{2,000}$

Note: Students are also required to Draw Decision tree in exams.

- (ii) **Suggestion: Mr. Kunch should opt for strategy number 2. i.e. Start with investment A and if it is successful than opt for Investment B as this gives the highest expected pay-off ₹2,660.**



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Ans. 3 (b)

(i) CONTRIBUTION REQUIRED FOR BUDGETED RESIDUAL INCOME OF ALFA:

Fixed Cost ₹	80,00,000
Add: Capital Charge on 7,50,00,000 × 12%	90,00,000
Add: Residual Income	1,00,00,000
Total Contribution required	2,70,00,000

Contribution from existing units = 12,00,000 (180 – 160) = ₹2,40,00,000

Balance Contribution required from 3,00,000 units = ₹30,00,000

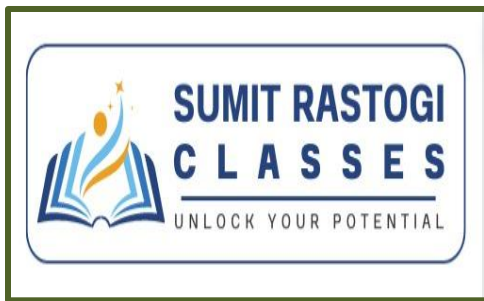
Contribution per unit = 30,00,000/3,00,000 = ₹10

Variable cost = (160 + 5) = ₹165

Transfer Price = 165 + 10 = ₹175

(ii) STATEMENT SHOWING OPTIMALITY OF AUTONOMOUS DECISION OF BETA

	A	B	C
Market Price per unit (₹)	₹180	₹172	₹160
Transfer Price per unit (₹)	₹175	₹175	₹175
Autonomous decision for beta	Buy from Alfa	Buy from Market	Buy from Market
Cost to the company for divisional transfer	₹165	₹165	₹165
Cost of Buying from market	₹180	₹172	₹160
Decision from company's view point	Buy from Alfa	Buy from Alfa	Buy from Market
Optimality of Beta's decision	Optimal	Not Optimal (As for buying from market company suffers Extra cost of ₹7 per unit)	Optimal



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Ans. 4 (a)

80% LEARNING CURVE RESULTS

Cumulative units manufactured	Average Time (Hours)	Total Time (Hours)
1	40	40
2	32	64
4	25.60	102.40
8	20.48	163.84
16	16.384	262.144

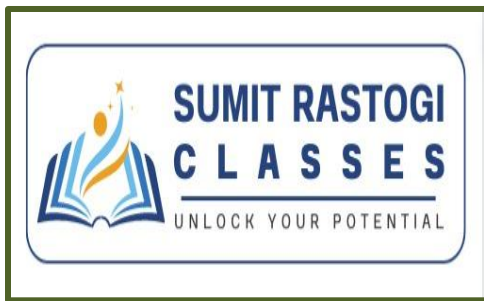
COMPUTATION OF TOTAL COST FOR THE INITIAL ORDER OF 16 UNITS:

Particulars	₹
Material (30×16)	480.00
Direct Labour (262.144×6)	1,572.86
Variable Overheads (0.5×262.144)	131.07
Fixed Overhead Apportioned (5×262.144)	1,310.72
Total Cost	3,494.65

Ans. 4 (b)

**STATEMENTS SHOWING RANKING OF PRODUCT ON THE BASIS OF TIME
BEING THE KEY FACTOR**

Particulars	A (₹)	B (₹)	C (₹)	D (₹)
Selling Price	250	450	300	350
P/V Ratio	30%	40%	45%	50%
Contribution per unit	75	180	135	175
Hours per unit	5	10	10	8
Contribution per hour	15	18	13.5	21.875
Ranking	III	II	IV	I



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(i) 70,000 Hours

Calculation of Production:

Available hours	70,000
Production of F ($2,000 \times 8$)	(16,000)
Production of B ($4,000 \times 10$)	(40,000)
Production of A (Balance)	14,000

Units of A = $14,000/5 = 2,800$ units

There is no surplus capacity for manufacture of product D to transfer division Y. Hence, in order to manufacture D for division Y, sacrifice of A has to be made, which will result in loss of contribution as follows:

Total Hours Required = $1,500 \times 8 = 12,000$
Loss of contribution = $(12,000 \times 15) = ₹1,80,000$

This loss is to be recovered from Product D to be transferred to division Y, So contribution per unit = $1,80,000/1,500 = 120$ per unit.

Minimum transfer price = Variable Cost + Contribution = $175 + 120 = ₹295$.

(ii) 80,000 Hours

Calculation of Production:

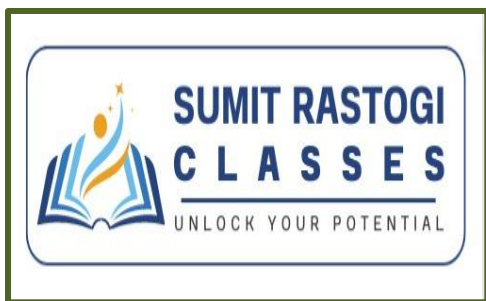
Available hours	80,000
Production of D ($2,000 \times 8$)	(16,000)
Production of B ($4,000 \times 10$)	(40,000)
Production of A ($3,000 \times 5$)	(15,000)
Production of C (Balance)	9,000
Units of A = $9,000/10$	900 units

There is no surplus capacity for manufacture of product D to transfer division Y. Hence, in order to manufacture D for division Y, sacrifice of C and A has to be made, which will result in loss of contribution as follows:

Total Hours Required = $1,500 \times 8 = 12,000$
Hours to be sacrificed from C = 9,000
Hours to be sacrificed from A = 3,000
Loss of contribution = $(9,000 \times 13.5) + (3,000 \times 15) = ₹1,66,500$

This loss is to be recovered from Product D to be transferred to division Y. So contribution per unit = $1,66,000/1,500 = 111$ per unit.

Minimum transfer price = Variable Cost + Contribution = $175 + 111 = ₹286$.

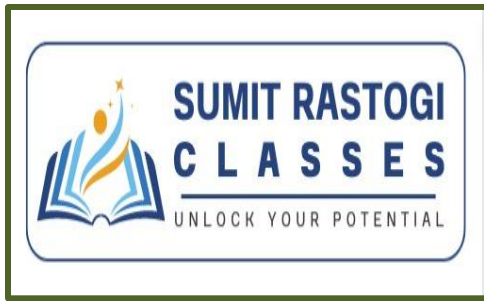


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Ans. 5 (a)

STATEMENT SHOWING THE TRANSFER PRICE FOR DIVISION-A

Particulars	Amount (₹)
Fixed Assets	5,00,000
Current Assets (other than debtors)	3,00,000
Debtors	2,00,000
Total investment	10,00,000
Desired return (28% × 10,00,000)	2,80,000
Budgeted production (units)	4,00,000
Return Per Unit (2,80,000/4,00,000)	0.70
Variable Cost Per Unit	10.00
Fixed Cost Per Unit (8,00,000/4,00,000)	2.00
Transfer Price	12.70



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Ans. 5 (b)

(i) THE MAXIMUM CRITERION (₹)

	N ₁	N ₂	N ₃	Row Minimum
S ₁	7,00,000	3,00,000	1,50,000	1,50,000
S ₂	5,00,000	4,50,000	0	0
S ₃	3,00,000	3,00,000	2,00,000	2,00,000

Maximum = ₹2,00,000

Optimal Decision is to select S₃.

(ii) THE MAXIMAX CRITERION (₹)

	N ₁	N ₂	N ₃	Row Minimum
S ₁	7,00,000	3,00,000	1,50,000	7,00,000
S ₂	5,00,000	4,50,000	0	5,00,000
S ₃	3,00,000	3,00,000	2,00,000	3,00,000

Maximax = ₹7,00,000

Optimal Decision is to select S₁.

(iii) THE LAPLACE CRITERION (₹)

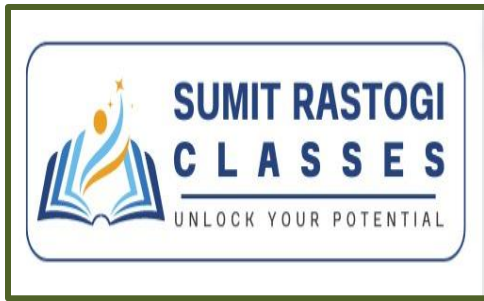
	N ₁	N ₂	N ₃	Row Minimum
S ₁	7,00,000	3,00,000	1,50,000	3,83,333
S ₂	5,00,000	4,50,000	0	3,16,667
S ₃	3,00,000	3,00,000	2,00,000	2,66,667

Since it is a Profit maximization, decision S₁ would be selected which implicates the highest profit of ₹3,83,333.

(iv) THE HURWICZ CRITERION (₹)

	Row Minimum	Row Maximum	α (Row Maximum) + (1- α) (Row Minimum)
S ₁	1,50,000	7,00,000	$0.40 \times 7,00,000 + 0.6 \times 1,50,000 = 3,70,000$
S ₂	0	5,00,000	$0.4 \times 5,00,000 + 0.6 \times 0 = 2,00,000$
S ₃	2,00,000	3,00,000	$0.4 \times 3,00,000 + 0.6 \times 2,00,000 = 2,40,000$

Optimal decision is S₁. Since, its expected profit is highest i.e. ₹3,70,000.



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Ans. 6 (a) Working Notes:

(1) CALCULATION OF NOPAT:

Interest on Debentures = $20,00,000 \times 10 \times 10\% = ₹20,00,000$

FL = EBIT/EBT

$1.1 = \text{EBIT} / (\text{EBIT} - 1)$

$1.1 = \text{EBIT} / (\text{EBIT} - 20,00,000)$

$1.1 \text{ EBIT} - 22,00,000 = \text{EBIT}$

$0.1 \text{ EBIT} = 22,00,000$

EBIT = ₹2,20,00,000

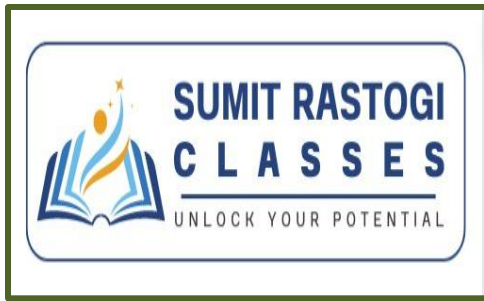
NOPAT = $2,20,00,000 (1 - 0.30) = ₹1,54,00,000$

(2) CALCULATION OF WACC:

Sources of Fund	Amount (₹ in lakhs)	Weight	Cost	Weight × Cost
Equity shareholders fund (150 + 150 + 200)	500	0.7143	14	10
Debentures	200	0.2857	7	2
Total	700			12%

Cost of Debt = $10 (1 - 0.3) = 7\%$

Economic Value Added = Net Operating profit after tax – [WACC × Capital Employed]
= $154 - [12\% \times 700] = 154 - 84 = ₹70 \text{ lakhs}$

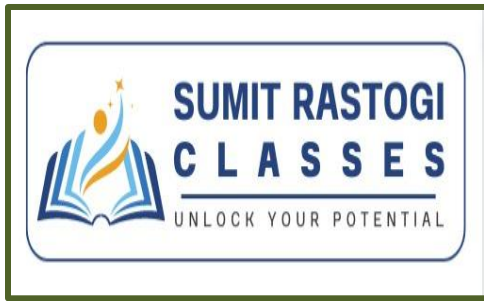


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Ans. 6 (b)

- (i) Variable cost of Division X = ₹16
Units per annum = $25,000 \times 12 = 3,00,000$
Fixed cost per unit = $8,40,000 / 3,00,000 = ₹2.80$
Return per unit = $(9,60,000 \times 12\%) / 3,00,000 = ₹0.384$
Transfer price = Cost + Return = $16 + 2.80 + 0.384 = ₹19.184$
- (ii) Cost of Division Y = Variable cost + Transfer Price = $10 + 19.184 = ₹29.184$
Contribution per unit = $80 - 29.184 = ₹50.816$
Total Contribution = $50.816 \times 3,00,000 = ₹1,52,44,800$
Fixed Cost = NIL
Profit = ₹1,52,44,800
- (iii) If only 15,000 units are to be transferred:
Variable cost of Division X = ₹16
Units per annum = $15,000 \times 12 = 1,80,000$
Fixed cost per unit = $8,40,000 / 1,80,000 = ₹4.67$
Return per unit = $(9,60,000 \times 12\%) / 1,80,000 = ₹0.64$
Transfer price = Cost + Return = $16 + 4.67 + 0.64 = ₹21.31$
- (iv) Cost of Division Y = Variable cost + Transfer Price = $10 + 21.31 = ₹31.31$
Contribution per unit = $80 - 31.31 = ₹48.69$
Total Contribution = $48.69 \times 1,80,000 = ₹87,64,200$
Fixed Cost = NIL
Profit = ₹87,64,200

Note: In absence of information in the question, solution has been worked out assuming rate of return of 12% is per annum



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Ans. 7 (a)

(i) THE MAXIMIN CRITERION (₹'000)

	S ₁	S ₂	S ₃	S ₄	Row Minimum
A ₁	-20	60	30	-5	-20
A ₂	40	50	35	0	0
A ₃	-50	100	45	-10	-50
A ₄	12	15	15	10	10

Maximum = ₹10,000

Optimal Decision is to select A₄.

(ii) THE LAPLACE CRITERION (₹ IN '000)

	S ₁	S ₂	S ₃	S ₄	Expected Value
A ₁	-20	60	30	-5	$(-20+60+30-5)/4 = 16.25$
A ₂	40	50	35	0	$(40+50+35+0)/4 = 31.25$
A ₃	-50	100	45	-10	$(-50+100+45-10)/4 = 21.25$
A ₄	12	15	15	10	$(12+15+15+10)/4 = 13$

Since it is a Profit maximization, decision A₂ would be selected which implicates the highest profit of ₹31,250.

(iii) THE SAVAGE CRITERION (₹ IN '000)

Regret table: Highest value in each column is deducted from all the values in the column

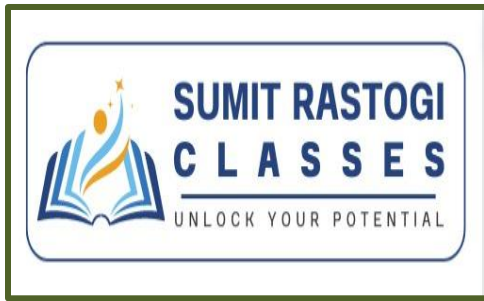
	S ₁	S ₂	S ₃	S ₄
A ₁	-60	-40	-15	-15
A ₂	0	-50	-10	-10
A ₃	-90	0	0	-20
A ₄	-52	-85	-30	0

The negative signs are dropped as the represents loss (regret) matrix while the original matrix is a profit matrix

	S ₁	S ₂	S ₃	S ₄	Row Maximum
A ₁	60	40	15	15	60
A ₂	0	50	10	10	50
A ₃	90	0	0	20	90
A ₄	52	85	30	0	85

Minimax Regret = ₹50,000

Optimal Decision is to select A₂.



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(iv) THE HURWICZ CRITERION (₹ IN '000)

	Row Minimum	Row Maximum	α (Row Maximum) + (1- α) (Row Minimum)
A ₁	-20	60	$80\alpha - 20$
A ₂	0	50	50α
A ₃	-50	100	$150\alpha - 50$
A ₄	10	15	$5\alpha + 10$

The decision maker will have to decide upon the appropriate α , and thus he can decide upon the optimum alternative.

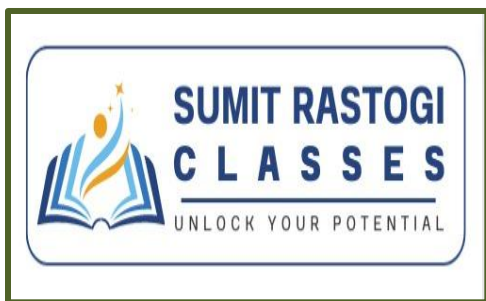
Ans. 7 (b)

(i) Division M is more successful in terms of ROI as its return is 25% against 20% of N.

(ii)

Particulars	Division M (₹)	Division N (₹)
Operating Income	15,00,000	25,00,000
Minimum required Income	(9,00,000)	(18,75,000)
	$(60,00,000 \times 15\%)$	$(1,25,00,000 \times 15\%)$
Residual Income	6,00,000	6,25,000

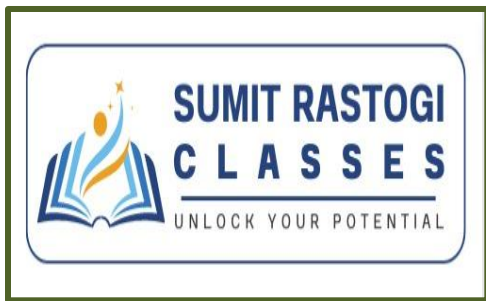
(iii) Division N is more successful under Residual Income.



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Ans. 8 (a)

Transfer Pricing Method	Demerits
Absorption Cost	Inefficiency of transferor borne by receiving centre
Standard Cost	Standards may be unrealistic or out dated creating an unfair price for any of the divisions
Marginal Cost	While fixed costs have to be incurred by transferring division, the receiving division does not pay for it
Two-Part Tariff	Supplying division has no incentive to supply units swiftly, because individual units do not generate a profit.
Market based Pricing	Market price may not be available if product is made to the specification of the receiving division. Market prices may be fluctuating
Negotiated Pricing	If the negotiating range is not mutually beneficial to both the divisions, there is clash of interest and management intervention may become necessary. The more powerful division may have its way. Goal congruence may be sacrificed, adversely affecting the overall Company profits.
Opportunity Cost Pricing	Since this method sets the minimum price for the selling division and the minimum price for the buying division, clash of interest may arise. The more powerful division may exercise heavier bargaining power. Company's overall interest may be sacrificed or the divisional managers may be demotivated



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Ans. 8 (b)

Learning Curve: The learning curve theory proposes that a learner's efficiency in a task improves over time the more the learner performs the task.

Applications of Learning Curve:

- 1. Improvement of Productivity:** As the experience is gained the performance of workers improves, time taken per unit reduces and thus his productivity goes up.
- 2. Cost Predictions:** Learning curve provides better cost predictions to enable price quotations to be preferred for potential orders.
- 3. Work scheduling:** Learning curve enables us to predict the inputs required more effectively and helps in the preparation of accurate delivery schedules.
- 4. Standards setting:** If budgets and standards are set without considering learning curve, it is meaningless because variances will arise.

Ans. 8 (c)

- It is a system of accounting that recognizes various responsibility centres throughout the organisation and reflects the plans and actions of each of these centres by assigning particular revenues and costs of the one having the pertinent responsibility.
- It is a system in which the person holding the supervisory posts as president, function head, foreman, etc. are given a report showing the performance of the company or department or section as the case may be.
- The report will show the data relating to operational results of the area and the items of which he is responsible for control.
- Responsibility accounting follows the basic principles of any system of cost control and standard costing.
- It differs only in the sense that it lays emphasis on human beings and fixes responsibilities for individuals.
- It is based on the belief that control can be exercised by human beings, so responsibilities should be fixed for individuals.

Principles of Responsibility Accounting:

- (i)** A target is fixed for each department or responsibility centre.
- (ii)** Actual performance is compared with the target.
- (iii)** The variances from plan are analysed so as to fix the responsibility.
- (iv)** Corrective action is taken by higher management and is communicated.