Total Marks:35

Your overall performance is good. Revise all your previous topics at least once in a week rather allocate a day in a week for revision and evaluating your performance. This will help you memorize topics and bind out shortcomings in your preparation.

SCMPE

Unit - 3

Q.1 * Didn't understand this que, so referred solution for guidance

Soln: (i) Variable cost per unit that will be affected by learning & experience curve = 4400 × 50% = 2200

Let r be the learning curve rate

No of batch	Cumulative avg. cost / unit
1	2200
2	$2200r$
4	$2200r^2$

6 marks

$\therefore 2200r^2 = 4120 - 2200$

$2200r^2 = 1920$

$r^2 = .8727$

well attempted!!!

$r = .934$ or 93.4%

(ii) Calculation of optimum price

Price per unit	Demand	VC * per unit	VC ** per unit	Total VC per unit	Contr p.u.	Total Contr p.u.
11,100	1000	2200	2200	4400	6700	67,00,000
10,700	2000	2046	2200	4246	6454	1,29,08,000
9600	3000	1960.86	2200	4160.86	5439.14	1,63,17,420
8700	4000	1902.78	2200	4102.78	4597.22	1,83,88,800

* This represents VC affected by learning curve

** This represents VC not affected by learning curve

W.N. VC per unit

Output in batches	Avg. cost of first unit	$x^{-0.1047}$	Cumulative avg. cost per unit
1	2200	1.0000	2200
2	2200	.9299	2046
3	2200	.8913	1960.86
4	2200	.8649	1902.78

$Y = a x^b$

b = log of learning ÷ log of 2

= log 0.93 ÷ log 2

= 0.0315 ÷ 0.3010

= -0.1047

Q.2

Soln:

Impact of dropping flight GP 022:

Loss of contribution	5,88,000
less: Savings in costs.	
Salaries flight assistants	31,500
Liability insurance $(\frac{1,47,000}{3})$	49000
Overnight costs	12600
Fuel of aircraft	2,32,000
Flight promotion	28000
Net loss	228900

Notes:

1) Salaries of flight assistants, liability insurance, overnight cost, fuel of aircraft, flight promotion etc are variable costs & relevant for decision making

2) Salaries of flight crew, Baggage loading & flight preparation, Dep of aircraft, Hangar parkers fee are fixed expenses and hence irrelevant for decision making.

5 marks

you have correctly solved this question.

Conclusion: If flight is discontinued, it would result in loss of 228900. The statement showing loss of 188100 is misleading as it considers fixed

& irrelevant cost.

∴ Thus flight GP 02 must continue.

Q 3

Soln (i) Unit contribution margin for each product

8 marks

	Super Grade	Good Grade	Normal grade
Unit Selling price	3600	3400	3000
Direct material p.u.	2100	1900	1720
Variable conversion cost p.u.	1200 (12 x 100)	1200 (12 x 100)	1000 (10 x 100)
Cost p.u.	300	300	280

(ii) As the furnace is a bottleneck, contribution per unit per furnace hour should be calculated

	Super Grade	Good grade	Normal grade
Contribution p.u.	300	300	280
Furnace hours per unit	6	5	4
Contribution per furnace hr.	50	60	70
Ranking	III	II	I

you did this question accurately.

Analysis: Super grade & Good grade have higher contribution of ₹ 300 per unit whereas Normal grade has lower contribution of ₹ 280 per unit. However this information is misleading as the furnace activity is a bottleneck. When contribution per bottleneck activity is computed, normal grade shows the highest contribution of ₹ 70 per furnace hour.

(ii) Revised price of super grade:

$$70 = \frac{\text{Revised SP} - (2100 + 1200)}{6}$$

Revised SP = 420 + 2100 + 1200

= ₹ 3720

Revised price of Normal grade

$$70 = \frac{\text{Revised SP} - (1900 + 1200)}{5}$$

Revised SP = 350 + 1900 + 1200

= ₹ 3450

Q 4

Sol^n: (i) Computation of labour & overhead rate:

Particulars	Core making	Melting & Pouring	Moulding	Cleaning & grinding
Labour & OH	18000	26000	9000	6500
Labour & OH rate per hr	9	6.5	6	5.2
No. of hours	2000	4000	1500	1250
Labour	10,000	16000	6000	4500
Variable OH	3000	1000	1000	1000
Labour rate / hr	5	4	4	3.6
Variable OH / hr	1.5	0.25	0.67	0.8

8 marks

(ii) Computation of price for the order.

you did this question correctly.

Particulars	Amount
Materials	15000
Labour & variable OH (W.N.)	25645.5
Additional fixed OH	1000
Total cost per month	41645.5
No. of months	6
Total price for the order	249873

W.N. Computation of Labour & Variable OH for order

Particulars	Core making	Melting & Pouring	Moulding	Cleaning & Grinding
Labour rate / hr	5	4	4	3.6
Variable OH / hr	1.2	0.25	0.67	0.3
Total rate / hr	6.2	4.25	4.67	3.9
Hours required	1350	2250	900	900
	$\left(\frac{90000 \times .09}{6}\right)$	$\left(\frac{90000 \times .15}{6}\right)$	$\left(\frac{9000 \times .06}{6}\right)$	$\left(\frac{90000 \times .06}{6}\right)$
Total cost	8370	9562.5	4203	3510

$\therefore$ 8370 + 9562.5 + 4203 + 3510

= 25645.5

Calculation of area to be cultivated in respect of each crop to achieve the largest total profit

Soln. (i)

	Potatoes	Peas	Carrots	Tomatoes
Boxes per hectare	350	100	70	180
Market price	30.76	31.74	36.8	64.55
less. variable costs:				
Direct material	2.72 (952/350)	4.32 (432/100)	5.49 (384/70)	3.47 (624/180)
Labour growing	5.12 (1792/350)	12.16 (1216/100)	10.63 (744/70)	5.87 (1056/180)
Harvesting & packing	7.2	6.56	8.8	10.4
Transport per box	10.4	10.4	8	19.2
Contr per box	5.32	(1.7)	3.83	5.61
Contr per hectare	1862	(170)	271.6	1009.8
Ranking	(1)	(4)	(3)	(2)

give proper heading.

Land available for all four vegetables = 340 hectares

Land for peas & carrots = 140

Total land : 480

Min req for each variety = 5000 boxes

Max req for each variety = 113750 boxes.

Best cultivation plan:

From 140 hectares of peas & carrots

Peas: Minimum 500 boxes = 5000 ÷ 100 = 50 hectares

Carrots: Balance land 140 hectares - 50 hectare = 90

From 340 hectares all four vegetables

Since ranking of peas & carrot is lowest & has already been allocated 140 hectares, no further land shall be allotted

Tomatoes: Minimum 5000 boxes = 5000 ÷ 15 = 28 hectares

Potatoes: Balance of land i.e. 340 - 28 = 312 hectares

8 marks

you have good concept clarity of this question.

Area to be cultivated for each variety

	Potatoes	Peas	Carrots	Tomatoes
Hectares	312	50	90	28
Contribution / hectare	1862	(170)	271.6	1009.8
Contribution	580944	(8500)	24444	28274.4

∴ Total contribution = 625162.4

less. Fixed exp (424000)

Profit 201162.40

(ii) Analysis to show whether land development should be undertaken

carrot yield a lower contribution per hectare than potatoes & tomatoes, but it is grown in excess of the requirement of 5000 boxes or 72 hectares i.e. 5000 boxes / 700. Therefore 18 hectares i.e. 90 - 72 can be made available for potatoes and tomatoes by land improvement

Contribution after land improvement

Present contribution per hectare	1009.8
Savings per hectare after improvement	460 (2.6 × 180)
	1477.8

∴ Allocation of 18 hectares available

Crop	Maximum Sales (boxes)	Present prod^{n} (boxes)	Addl^{l} req (boxes)	Yield	Addl^{n} hectares
Potatoes	113750	109200	4550	350	13
Tomatoes	113750	5000	900	180	5

∴ Profit by revised cultivation plan

	Potatoes	Peas	Carrots	Tomatoes	Total
Hectares	325	50	72	33	480
Cont^{r} / hectare	1862	(170)	271.6	1477.8	
Total cont^{n}	605150	(8500)	19555.2	45767.4	664972.6
less: Fixed cost					(440200)
Profit					2224772.6
Capital expenditure					108000
Interest @ 15%.					16200
Existing fixed exp.					424000
					440200

∴ Since the profit after land development is greater, the company should implement the proposal to develop 18 hectares of land.