

18537

FINAL EXAMINATION

December, 2022

P-15(SCMD)

Syllabus 2016

Strategic Cost Management—Decision Making

Time Allowed: 3 Hours

Full Marks: 100

The figures in the margin on the right side indicate full marks.

Working Notes should form part of the respective answers.

Wherever necessary, candidates may make appropriate assumptions and clearly state them in Answer.

Section-A is compulsory and contains Question No. 1 for 20 marks. Section-B contains Question Nos. 2 to 8, each carries 16 marks.

Section-A

Answer all the questions. Each question carries two marks.

1. Choose the most appropriate answer to the following questions giving justification/reasonable workings: (One mark is for the correct choice and one mark is for the justification/workings.) 2×10= 20

(i) The Income statement of BOMA Ltd. is summarized as below:

	(₹ in Lakh)
Net Revenue	120
Less: Expenses (including ₹Rs.60 lakh of fixed cost)	132
Net Loss	12

The Manager (F&A) believes that an increase of ₹ 30 lakh as fixed expenditure in advertising outlays will increase the sales substantially. At what sales volume will the company have break even?

- (A) ₹ 250 lakh
- (B) ₹ 225 lakh
- (C) ₹ 200 lakh
- (D) None of the above

- (ii) SOVI Ltd., a mobile phone manufacturer, is planning to introduce a new mobile phone. The potential market over the next year is 10,00,000 units. The SOVI Ltd. has the capacity to produce 4,00,000 units and could sell 1,00,000 units at a price of ₹ 10,000. Demand would double for each ₹ 1,000 fall in the selling price. The company has a 25% profit margin on sales for the similar products. What is SOVI Ltd.'s target cost per unit to the nearest Re?
- (A) ₹ 8,000
(B) ₹ 7,000
(C) ₹ 6,000
(D) ₹ 4,000
- (iii) SIXT Ltd. has developed a new product and just completed the manufacture of the first four units of the product. The first unit took 3 hours to manufacture and the first four units together took 8.3667 hours to produce. The learning curve rate is
- (A) 83.50%
(B) 75.00%
(C) 60.65%
(D) 58.50%
- (iv) Depreciation of product testing equipment is
- (A) Internal Failure Cost
(B) Appraisal Cost
(C) Not a Quality Cost
(D) Irrelevant, but Quality Cost
- (v) AMRIT Ltd., a manufacturer of doors using a Throughput costing system, is experiencing a bottleneck in its plant. Set up time at one of its work stations has been identified as the offender. The Manager (Finance) has proposed a plan to reduce the set up time at a cost of ₹ 5,24,000. The change will result in 500 additional doors. The selling price per door is ₹ 19,300, Direct Labour costs are ₹ 2,400 per door and the cost of Direct Materials is ₹ 8,000 per door. All units produced can be sold. The change will result in an increase in the Throughput Contribution of _____.
- (A) ₹ 60,20,000
(B) ₹ 56,50,000
(C) ₹ 44,50,000
(D) None of the above

- (vi) RON Ltd., a manufacturer of product CEMO using a standard costing system provides the following information pertaining to the Direct Materials for the month of November, 2022:

1 tonne of material input yields standard output of (units)	1,00,000
Standard price of material per kg (₹)	20
The Actual quantity of material used (Tonnes)	10
Actual price of material per kg (₹)	21
Actual output obtained for the month (units)	9,00,000

Material cost variance will be—

- (A) ₹ 40,000 (Adv)
(B) ₹ 40,000 (Fav)
(C) ₹ 30,000 (Adv)
(D) ₹ 25,000 (Adv)
- (vii) The constraints in a linear programming Model are —
- (A) Included in the Objective function
(B) Costs
(C) Scarce Resources
(D) Dependent Variables
- (viii) A PERT network has only two activities on its critical Path. The Standard Deviation of these activities are 6 and 8 respectively. What is the Standard Deviation of the Project completion time?
- (A) 7
(B) 10
(C) 14
(D) 100

(ix) MN Ltd. sales for the years 2018 and 2019 were ₹ 8,00,000 and ₹ 7,92,000. The cost of goods sold correspondingly were ₹ 4,80,000 and ₹ 4,64,000. In the year 2019 selling price was reduced by 10% as compared to 2018. What was the decrease in gross profit caused by the change in selling price?

- (A) ₹ 8000
- (B) ₹ 72,000
- (C) ₹ 79,200
- (D) ₹ 88,000

(x) The Holiday Card Company, a producer of specialty cards, has asked you to complete several calculations based upon the following information:

Income tax rate	30%
Selling price per unit	₹ 6.60
Variable cost per unit	₹ 5.28
Total fixed costs	₹ 46,200

How many cards must be sold to earn an after-tax net income of ₹ 18,480?

- (A) 60,000 units
- (B) 45,000 units
- (C) 75,000 units
- (D) 55,000 units

Section-B

(Answer any five Questions)

16×5=80

2. (a) ABC Enterprises has prepared a draft budget for the next year as follows:

Quantity	10,000 units
Sales price per unit (₹)	30
Variable costs per unit:	
Direct Materials (₹)	8
Direct Labour (₹)	6
Variable overhead(2hrs×1) (₹)	2
Contribution per unit (₹)	14
Budgeted Contribution (₹)	1,40,000
Budgeted Fixed Costs (₹)	1,25,000
Budgeted Profit (₹)	15,000

The Board of Directors are dissatisfied with this budget, and asks working party to come up with alternate budget with higher target profit figures. The working party reports back with the following suggestions that will lead to budgeted profit of ₹ 25,000. The company should spend ₹ 30,000 on advertising and set the target sales price up to ₹ 32 per unit. It is expected that the sales volume will also rise, in spite of the price rise to 12,000 units.

In order to achieve the extra production capacity, however, the workforce must be able to reduce the time taken to make each unit of the product. It is proposed to offer a pay and productivity deal in which the wage rate per hour is increased to ₹ 4. The hourly rate for variable overhead will be unaffected.

Ascertain the target labour time required to achieve the target profit.

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2. (b) POBIX Ltd. has been approached by a customer who would like a special job to be done for him and willing to pay ₹ 22,000 for it. The job would require the following materials:

Material	Total units required	Units already in stock	Book value of units in stock ₹/Unit	Realisable value ₹/Unit	Replacement cost ₹/Unit
A	1,000	0	-	-	6
B	1,000	600	2	2.5	5
C	1,000	700	3	2.5	4
D	200	200	4	6	9

- (i) Material B is used regularly by POBIX Ltd. and if stocks are required for this job, they would need to be replaced to meet other production demand.
- (ii) Materials C and D are in stocks as the result of previous excess purchase and they have a restricted use. No other use could be found for material C but material D could be used in another job as substitute for 300 units of material E which currently cost ₹ 5 per unit (of which the company has no units in stock at the moment).
- (iii) All other expenses on the contract to be specially incurred besides the relevant cost of material is ₹ 550.

Required:

What are the relevant cost of material in deciding whether or not to accept the contract? (Show the reasons for relevancy of cost elements)

4+2=6

3. TOCON Ltd. manufactures plastic cans of a standard size. The variable cost per can is ₹ 4 and the selling price is ₹ 10 each. The factory of the company has eight machines of identical size. Any individual machine can produce 30 cans per hour. The factory works on 300 days per annum basic and the actual available hour per machine per day is 7.5. The company has an order of 4,20,000 cans from an oil company, to supply. The yearly fixed cost of the company is ₹ 20 lakhs. TOCON Ltd. has received an order from another firm for supplying 60,000 nos. of plastic moulded toys. The price of the toys is ₹ 60 each and the variable cost is ₹ 50 each. While this order would be acceptable for supplying for total quantities only on acceptance, a special mould costing ₹ 2,25,000 would be required to be acquired to manufacture the toys. The time study exercise has revealed that 15 nos. of toys can be produced per hour by any of the machines.

Required:

Advise the company, with reasons in the following situations:

- (i) Whether to accept the order of manufacturing moulded toys, in addition to supplying 4,20,000 nos. of cans or not;
- (ii) Whether to accept the order of manufacturing moulded toys, if order of cans increases to 5,40,000 nos. or not;
- (iii) While a sub-contractor is willing to supply the toys, either whole or part of the required quantities at an all-inclusive rate of ₹ 57.50 each, what would be the minimum excess capacity needed to justify the manufacturing of any portion of the toys order, instead of sub-contracting?
- (iv) The company had an understanding that the orders of the cans will be increased during the year on negotiations and planned and manufactured 4,50,000 cans during the year. For utilizing the excess capacity, they also accepted the toys order and sub-contracted only 15,000 nos. of toys. At the year's end, however, it was revealed that the order of the cans could be for 4,80,000 nos., if it was properly negotiated. How much loss has been suffered by the company due to improper prediction of demand and negotiation?

3+3+3+7=16

4. (a) The budgeted output of SAB Ltd., a single product manufacturing company for the year ending 31st March was 5,000 units. The financial results in respect of the actual output of 4,800 units achieved during the year were as under:

	₹
Direct Material	29,000
Direct Wages	45,000
Variable Overheads	72,500
Fixed Overheads	40,000
Profit	37,000
Sales	2,23,500

The standard wage rate is ₹ 4.50 per hour and the standard variable overhead rate is ₹ 7.50 per hour.

The cost accounts recorded the following variances for the year:

Variations	Favourable (₹)	Adverse (₹)
Material price		70
Material usage		130
Wage rate	450	
Labour efficiency		2,250
Variable overheads expenses	3,000	
Variable overhead efficiency		3,500
Fixed overhead expenses		2,500
Selling price	7,500	

Required:

- (i) Prepare the standard product cost sheet per unit.
- (ii) Compute the Fixed Overhead volume variance, Sales volume variance, Sales price variance and Standard profit for the year.
- (iii) Prepare a statement showing the reconciliation of Standard profit and the Actual profit.

5+4+3=12

4. (b) Enumerate the requisites for installation of an Uniform Costing in an organization. 4
5. (a) BON Ltd. manufactures 3 types of biscuits F,G and H in a fully mechanized factory. The company has been following conventional method of costing and wishes to shift to Activity Based Costing (ABC) System and therefore wishes to have the following data presented under both the system for the month.

	₹
Inspection Cost	73,000
Machine-Repairs & Maintenance	1,42,000
Dye Cost	10,250
Selling Overheads	1,62,000

	Products		
	F	G	H
Prime Cost (₹ Per unit)	12	9	8
Selling Price (₹ Per unit)	18	14	12
Gross Production (units/production run)	2,520	2,810	3,010
No. of defective (units/production run)	20	10	10
<u>Inspection:</u>			
No. of hours/Production run	3	4	4
Dye Cost/Production run (₹)	200	300	250
No. of Machine hours/Production run	20	12	30
Sales— No. of Units/Month	25,000	56,000	27,000

The following additional information is given:

- (i) No accumulation of inventory is considered. All goods units produced are sold.
- (ii) All manufacturing and selling overheads are conventionally allocated on the basis of units sold.
- (iii) Product F needs no advertisement. Due to its nutritive value, it is readily consumed by diabetic patients of a Hospital. Advertisement costs included in the total selling overhead is ₹ 83,000.
- (iv) Product G needs to be specially packed before being sold, so that it meets competition. ₹ 54,000 was the amount spent for the month in specially packing G, and this has been included in the total selling overhead cost given.

Required:

- (i) Present product-wise profitability of statement under the conventional system and
- (ii) Present product-wise profitability of statement under the Activity Based Costing (ABC) system and accordingly rank the products. 10

5. (b) Division Z of ZUML Ltd. is a profit centre which produces four products P,Q,R and S. Each product is sold in the external market also. Data for the period is:

	P	Q	R	S
Market price per unit (₹)	150	146	140	130
Variable cost of production per unit (₹)	130	100	90	85
Labour hours required per unit	3	4	2	3

Product S can be transferred to division M of ZUML Ltd. but the maximum quantity that may be required for transfer is 3000 units of S.

The maximum sales in the external market are:

P	3,360 units
Q	3,000 units
R	2,760 units
S	1,920 units

Division M can purchase the same product at a price of ₹ 125 per unit from outside instead of receiving transfer of product S from Division Z.

Required:

What should be the transfer price for each unit for 3,000 units of S, if the total labour hours available in division Z are 24,000 hours? 6

6. (a) In a textile sales emporium of SONTEX Ltd. four salesmen A,B,C and D are available to four counters W,X, Y and Z. Each salesman can handle any counter. Their services (in hour) of each counter, when manned by each salesman is given below:

Counter	Salesman			
	A	B	C	D
W	41	72	39	52
X	22	29	49	65
Y	27	39	60	51
Z	45	50	48	52

Required:

How should the salesmen be allocated appropriate counters so as to minimize the service time? Each salesman must handle only one counter. 8

6. (b) The output of a production line of SONPIM Ltd. is checked by an inspector for one or more of three different types of defects, called defects Major, Minor and Medium. If defect Major occurs, the item is scrapped. If defect Minor or Medium occurs, the items must be reworked. The time required for reworking for a Minor defect and a Medium defect is 15 minutes and 30 minutes respectively.

The probabilities of Major, Minor and Medium defects are 0.15, 0.20 and 0.10 respectively.

Use the following Random Numbers (RN) of three defects:

RN for Defect Major	48	55	91	40	93	01	83	63	47	52
RN for Defect Minor	47	36	57	04	79	55	10	13	57	09
RN for Defect Medium	82	95	18	96	20	84	56	11	52	03

(i) For 10 items coming off the assembly line, you are required to present data table with Random Number assigned and the existence of defect in Major, Minor and Medium type separately.

(ii) Determine the number of items without any defects and with defects, the number of item scrapped and the total minutes of reworked time. $(2+4)+(1+1)=8$

7. (a) Projects India Limited undertakes special contracts. The following table gives estimates of time and cost for activities involved in completing one contract which has just been offered to them:

Activity	Previous activities	Normal time (Days)	Normal cost (₹)	Minimum time	Cost of minimum time (₹)
A	-	12	10,000	8	14,000
B	-	10	5,000	10	5,000
C	A	0	0	0	0
D	A	6	4,000	4	5,000
E	B, C	16	9,000	14	12,000
F	D	16	3,200	8	8,000

(i) Draw a network diagram and identify the critical path for normal procedures.

(ii) Recommend the least number of days required to be crashed to achieve the minimum time and calculate the total cost. $4+6=10$

7. (b) A manufacturer of medicine is proposed to prepare a production plan for medicines A and B. There are sufficient ingredients available to make 20,000 bottles of medicine A and 40,000 bottles of medicine B. But there are 45,000 bottles into which either of the medicine can be filled. Further it takes 3 hours to prepare enough material to fill 1,000 bottles of medicine A and 1 hour to prepare enough material to fill 1,000 bottles of medicine B and there are 66 hours available for this operation. The profit is ₹ 8 per bottle of medicine A and is ₹ 7 per bottle of medicine B.

Formulate the above as a Linear Programming Problem. (Do not solve)

8. Write Short Notes on *any four* out of the following five questions:

- (a) Lean Accounting
 - (b) Pareto Analysis in Quality Management
 - (c) Areas where Backflush costing is useful
 - (d) Enumerate the situations where Fixed Costs become relevant for Decision Making
 - (e) Sealed Bid Pricing
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SUGGESTED ANSWERS TO QUESTIONS

SECTION – A

1.

2X10 = 20 Marks

- (i) (B)
- (ii) (C)
- (iii) (A)
- (iv) (B)
- (v) (B)
- (vi) (C)
- (vii) (C)
- (viii) (B)
- (ix) (D)
- (x) (D)

SECTION –B

(Answer any five questions)

2 (a) :

10 Marks

Time required to achieve the target profit = 21,600 hours

2 (b) :

4+2 = 6 Marks

Relevant cost of Material and the Job = Rs. 16,000

Decision: Contract should be accepted since offered is Rs 22000 in relation to relevant cost of Rs 16000.

Reasons for Relevancy of Cost Elements :

- (i) Material A is not yet owned. It would have to be purchased in full at the replacement cost of Rs.6.00 per unit.
- (ii) Material B is used by the company regularly. There is already existing a stock of 600 units. If these are used in the contract, a further 600 units would have to be purchased.
Relevant cost is therefore 1000 units at the replacement.
- (iii) Material C : 1000 units of material C are, required and 700 units are already in stock. If it is used for the contract, a further 300 units will have to be purchased at a replacement cost of Rs.4.00 each. The existing stock of 700 units will not be replaced. If they are used for the contract, they cannot be used @ Rs.2.50 each unit. The realisable value these 700 @ RS. 2.50 per units represent an opportunity cost of sales revenue forgone.
- (iv) Material D is already in stock and will not be replaced. There is an opportunity cost of using D in the contract, because there are alternative opportunities either to sell the existing stock for Rs. 6 per unit (Rs.1200 in total) or avoid other purchases (of material E) which cost $300 \times 5 = \text{Rs.}1500$, since substitution for E is more beneficial. Rs 1500 is the opportunity cost.

3 :

3+3+3+7 = 16 Marks

(i)

Increase in Net Profit = Rs. 375000

Decision : It is advisable for the company to accept the order of 60000 moulded toys as it will increase its profit by Rs. 375000.

(ii)

	Rs. (Lacs)
Profit from 540000 cans	<u>12.40</u>
Alternatively, the production would be 420000 cans and 60000 moulded toys	
Profit from 420000 cans	5.20
Profit from 60000 moulded toys	<u>3.75</u>
Total profit	<u>8.95</u>

Decision:

The production of 120000 additional cans instead of 60000 moulded toys will result an additional profit of Rs. 3.45 lacs (Rs. 12.40 lacs - Rs. 8.95 lacs). Therefore, the company is advised not to accept the order of manufacturing moulded toys.

(iii)

Let the minimum excess capacity needed to justify the manufacturing of any portion of the moulded toys order be A.

If toys are manufactured, the profit is = (Rs. 60 – Rs.50) A – Rs. 225000

and, if toys are subcontracted, the profit is =(Rs.60– Rs.57.50) A indifference point would be 10A - Rs. 225000 = 2.5 A

$$\text{or } A = 30000 \text{ moulded toys}$$

Toys produced per hour = 15 toys

Therefore, 2000 (30000 toys / 15 toys) excess machine hours are required to justify manufacturing of toys by the company, instead of sub-contracting.

(iv)

Profit under existing production plan :

	Rs. (Lacs)
Contribution from 450000 Cans	27.00
Contribution from 45000 Toys	<u>4.50</u>
Total contribution	31.50
Less: Fixed cost	<u>22.25</u>
Profit	9.25
Profit from 15000 sub-contracted toys	<u>0.375</u>
Total profit	<u>9.625</u>

If demand was accurately forecasted and 480000 cans were manufactured, excess machine hour capacity available was 2000 hrs such excess being the point of indifference i.e. profit from toys order would be the same by either manufacturing 30000 toys or sub-contracting them along with the rest of 30000 toys.

Profit under properly negotiated production plan :

	(Rs. Lacs)
Contribution from 480000 Cans	28.80
Less : Fixed cost	<u>20.00</u>
Profit	8.80
Profit from toys	1.50
Total profit	<u>10.30</u>

Therefore, the loss for improper prediction and negotiation is Rs. 1030000 – Rs. 962500 = Rs. 67500

4 (a) :

5+4+3 = 12 Marks

- (i) Standard Material Cost per Unit : =Rs 6
Standard Wage rate per Unit : = Rs 9
Standard Variable overhead per unit: = Rs 15
Standard Fixed overhead rate per Unit: = Rs 7.50

- (ii) Fixed overhead Volume Variance: Rs 1500 (Adv.)
Sales Volume Variance: = Rs 9000 (Adv.)
Sales Price Variance: = Rs 7500 (Fav)
Standard Profit: = Rs 36000

- (iii) Statement Showing Reconciliation of the Standard Profit and the Actual Profit :

		Rs	
Standard Profit		36000	
Add : Sales Price Variance (Favourable)		7500	
		<u>43500</u>	
Add :Favourable Cost Variances :			
Wages Rate Variance	450		
Variable overhead expenses	3000	3450	
		<u>46950</u>	
Less : Adverse Cost Variances			
Material price	70		
Material usage	130		
Labour efficiency	2250		
Variable overhead efficiency	3500		
Fixed overhead Expense	2500	8450	
		<u>38500</u>	
Less :Fixed overhead volume variance (Adverse)		1500	
Actual Profit		<u>37000</u>	

4. (b) :

4 Marks

The requisites for installation of a Uniform Costing are enumerated below:

- (i) There should be a spirit of mutual trust, co-operation and a policy of give and take amongst the participating members.
- (ii) There should be a free exchange of ideas and methods.
- (iii) The bigger units should be prepared to share with the smaller ones, improvements, achievements of efficiency, benefits of research and know-how.
- (iv) There should not be any hiding or withholding of information.
There should be no rivalry or sense of jealousy amongst the members

5. (a) :

10 Marks

- (i) Profitability Under Conventional Accounting System.

	Products			
	Total	F	G	H
Sales – Units / Production (Goods Units)	108000	25000	56000	27000
Gross Margin (Rs)	533080	147600	278200	107280
Production Overheads (Rs)	225250	52141	116796	56313

Selling Over heads (Rs)	162000	37500	84000	40500
Sub-Total Overhead (Rs)	387250	89641	200796	96813
Net Profit (Rs)	145830	57959	77404	10467
Ranking		II	I	III

(ii) Profitability Under Activity Based Costing (ABC)

	Products		
	F	G	H
Sales – Units / Production (Goods Units)	<u>25000</u>	<u>56000</u>	<u>27000</u>
Gross Margin (Rs)	<u>147600</u>	<u>278200</u>	<u>107280</u>
Production Over head (Rs)	57000	94000	74250
Selling Overheads	5787	122963	33250
Sub-Total Overheads	62787	216963	107500
Net Profit	84813	61237	(220)
Ranking	I	II	III

5. (b) :

6 Marks

Ranking of products when availability of time is the key factor:

Products	P	Q	R	S
Market Price (Rs)	150	146	140	130
Less : Variable Cost (Rs)	130	100	90	85
Contribution per unit (Rs)	20	46	50	45
Labour hours per unit	3	4	2	3
Contribution / Labour hour (Rs)	6.66	11.5	25	15
Ranking	IV	III	I	II
Maximum demand (units)	3360	3000	2760	1920
Total no. of hours	10080	12000	5520	5760
Allocation of 24000 hours on the basis of ranking	720*	12000	5520	5760
* Balancing figure				

Transfer price = Rs 118.34

6. (a) :

8 Marks

Step : 1 Row subtraction

Column subtraction

Sales Man \ Counter	A	B	C	D
W	2	33	0	13
X	0	7	27	43
Y	0	12	33	24
Z	0	5	3	7

Sales Man \ Counter	A	B	C	D
W	2	28	0	6
X	0	2	27	36
Y	0	7	33	17
Z	0	0	3	0

Step 2 : Minimum straight lines to cover zeros.

Sales Man Counter	A	B	C	D
W	2	28	0	6
X	0	2	27	36
Y	0	7	33	17
Z	0	0	3	0

Step 3 : Smallest uncovered number subtracted from uncovered numbers, added to number at intersection of two lines

Sales Man Counter	A	B	C	D
W	4	28	0	0
X	0	0	25	34
Y	0	5	31	15
Z	2	0	9	0

In row Z, column3, should be 3 instead of 9.

Step 4 : Return to Step 2. Cover all Zeros. since the number of lines is 4, the optimality criteria is satisfied.

Sales Man Counter	A	B	C	D
W	4	28	0	6
X	0	0	25	34
Y	0	5	31	15
Z	2	0	3	0

It should be step 3 instead of 2.

Allocation of Sales men and Total Times

Counter	Salesmen	Times (Hours)
W	C	39
X	B	29
Y	A	27
Z	D	52
Total		147

6. (b) :

(2+4)+(1+1)= 8 Marks

The probabilities of occurrence of Major, Minor and Medium defects are 0.15, 0.20 and 0.10 respectively. So, tile numbers 00 – 99 are allocated in proportion to the probabilities associated with each of the three defects.

Defect Major		Defect Minor		Defect Medium	
Exists	RN Assigned	Exists ?	RN Assigned	Exists ?	RN Assigned
Yes	00 – 14	Yes	00 – 19	Yes	00 – 09
No	15 – 99	No	20 – 99	No	10 – 99

(i) Simulation of output of the assembly line for 10 items :

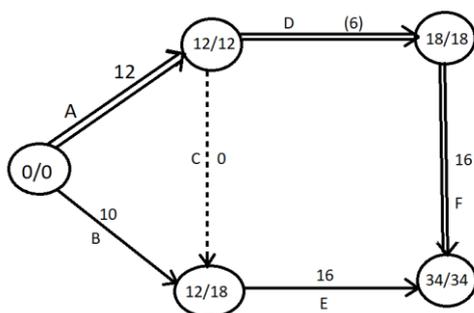
Item No.	RN : Defect Major	RN : Defect Minor	RN : Defect Medium	Defect Exist or Not	Rework time (in min.)	Scrap
1.	48	47	82	None	Nil	--
2.	55	36	95	None	Nil	--
3.	91	57	18	None	Nil	--
4.	40	04	96	Minor	15	--
5.	93	79	20	None	Nil	--
6.	01	55	84	Major	Nil	Scrap
7.	83	10	56	Minor	15	--
8.	63	13	11	Minor	15	--
9.	47	57	52	None	Nil	--
10.	52	09	03	Minor & Medium	15 + 30 = 45	--

(ii) During the simulated period, 5 items had defect and other 5 items had not defects.
One item was scrapped.

Total reworked time is required for four items = 90 minutes

7. (a) :

4+6 = 10 Marks



Critical Path with duration = A -> D -> F, 34 days

Activity	Normal time	Crash Time	Crash Cost	Normal cost	Cost Slope
	Days	Days	Rs.	Rs.	Rs.
A	12	8	14,000	10,000	1,000
B	10	10	5,000	5,000	-
C	-	-	-	-	-
D	6	4	5,000	4,000	500
E	16	14	12,000	9,000	1,500
F	16	8	8,000	3,200	600

Step	Critical Path	No of Days	Activity reduced	No days of	Cost slope	Crash cost	Cumulative Crash cost
1	A D F	34	D	2	500	1000	1000
2	A D F	32	F	4	600	2400	3400
3	A D F / A C E	28	A	2	1000	2000	5400
4	All Paths	26	F,E	2	2100	4200	9600

Revised time 24 days; Total Cost Rs.40,800.

7. (b) :

6 Marks

Let x_1 and x_2 be the no.of bottles of medicine A and B to be manufactured.

i)Objective function is Maximize $Z= 8x_1 + 7x_2$

S.T constraints:

Bottle capacity constraint= $x_1 + x_2 \leq 45,000$

Hour constraint= $(3x_1/1000) + (x_2/1000) \leq 66$

Or $3x_1 + x_2 \leq 66,000$

Ingredient constraint for Medicine A= $x_1 \leq 20,000$

Ingredient constraint for Medicine B= $x_2 \leq 40,000$

Answer any four from the following

4X4 = 16 Marks

8. (a) :

Lean Accounting :

Lean Accounting is a system of providing information in plain and simple terms for management decision-making and elimination of wasteful processes.

It supports lean manufacturing system whereby decisions are taken based on relevant parameters.

It supports value stream measurements and value based pricing.

8. (b) :

Pareto analysis in Quality Management:

Pareto analysis is based on the principle that 80% of the volume relates to 20 % value and vice - versa. In the context of problem solving, it says that 80% of the problems can be solved by taking 20% effort. The 80 - 20 rule can be modified to 70 - 30 or 75 - 25, etc., but the essence is that larger volumes are concentrated on a smaller area of attention. When resources are limited and the problems seem very large, this approach gives a good analysis for an action plan that could be effective.

The problems or say defects are arranged according to types. They are arranged in decreasing order of percentages and the cumulative is found out. When the cumulative reaches 80%, (or 70 to 80%) it is often observed that a few actions of quality control will address these issues. Then, the available resource for quality control can be applied to effectively solve most of the problems.

8. (c) :

Areas where back flush Accounting is useful:

Back flush costing is generally used by companies that keep low levels of inventory and experience high turnover in inventory. It is because costs are still recorded relatively close to the day they are incurred. Companies with slow inventory turnover tend to record costs as they are incurred, as the product may remain unsold for a longer duration of time.

The back flush costing method works particularly well, where many different costs go into the production of a good. In such an instance, it can simplify the accounting process significantly. As a result, many manufacturing companies with complex production processes use back flush costing. However, companies that sell more customized products are less suited to a back flush costing method, as the unit cost will vary.

8. (d) :

Enumerate the situations where fixed costs become relevant for decision marking:

In the following circumstances, fixed costs become relevant for decision making:

- (i) When Fixed Costs are specifically incurred for any contract
- (ii) When fixed costs are incremental in nature
- (iii) When the fixed portion of semi variable cost whereas due to change in level of activity consequent to acceptance of a contract.
- (iv) When fixed costs are avoidable or discretionary.
- (v) When fixed costs are such that one cost is incurred in lieu of another (the difference in costs will be relevant for decision-making)

8. (e) :

Sealed Bid Pricing:

The competitive pricing method is adopted in situations where firms compete for jobs on the basis of bids. The bid is the firms offer price and it is a prime example of pricing based on the expectations of how competitors will price rather than on a rigid relation based on the concerns own costs or demand. The objective of the firm in bidding situation is to get the contract and therefore it tries to set its prices lower than the other bidding firms.
