FINAL EXAMINATION

June 2019

P15(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.

Section-A

1. Choose the most appropriate answer to the following questions giving justification: 2×10=20

(i) XYZ Ltd. has the following alternative planned activity levels.

Level	E	F	G
Total cost	₹ 1,00,000	₹ 1,50,000	₹ 2,00,000
No. of units produced	5000	10000	15000

If fixed overhead remains constant, then fixed overhead cost per unit at Level E is

(A) ₹ 20

(B) ₹ 15

(C) ₹ 13·33

(D) ₹ 10

(ii) T Ltd. produces and sells a product. The company expects the following revenues and costs in 2018:

Revenues (400 sets sold @ ₹ 600 per product)	₹ 2,40,000
Variable costs	₹ 1,60,000
Fixed costs	₹ 50,000

What amount of sales must T Ltd. have to earn a target net income of ₹ 63,000 if they have a tax rate of 30%?

(A) ₹ 4,20,000

(B) ₹ 4,29,000

(C) ₹ 3,00,000

(D) ₹ 4,89,000

(iii) Excel Products Ltd. manufactures four products e.g. Product E, Product F, Product G and Product H using same raw materials. The input requirements for Products E, F, G and H are 1kg, 2kgs, 5kgs and 7kgs, respectively. Product-wise Selling Price and Variable Cost data are given hereunder:

Products	E	F	G	H
Selling Price (₹)	100	150	200	300
Variable Cost (₹)	50	70	100	125

Assuming raw material availability is a limiting factor, the correct ranking of the products would be:

(A) E, F, G & H

(B) E, F, H & G

(C) F, E, G & H

(D) F, E, H & G

(iv) S Ltd. recently sold an order of 50 units having the following costs:

	₹
Direct materials	1,500
Direct labour (1000 hours @ ₹ 8·50)	8,500
Variable overhead (1000 hours @ ₹ 4·00)[1]	4,000
Fixed overhead[2]	1,400
	15,400

[1]Allocated on the basis of direct labour-hours.

[2]Allocated at the rate of 10% of variable cost.

The company has now been requested to prepare a bid for 150 units of the same product.

If an 80% learning curve is applicable, Stone Isle's total cost on this order would be

(A) ₹ 38,500

(B) ₹ 37,950

(C) ₹ 26,400

(D) ₹ 31,790

(v) A company manufactures and sells packaging machines. It recently introduced activity-based costing to refine its existing system. Each packaging machine requires direct materials costs of ₹ 50,000; 50 equipment parts; 12 machine hours; 15 assembly line hours and 4 inspection hours. The details about the cost pools, allocation bases and allocation rates are given below:

Indirect cost pool	*Cost allocation base*	*Budgeted allocation rate*
Material handling	No. of component parts	₹ 8 per part
Machining	Machine hours	₹ 68 per machine hour
Assembly	Assembly line hours	₹ 75 per assembly hour
Inspection	Inspection hours	₹ 104 per inspection hour

The company has received an order for 40 can-packaging machines from a customer. Using activity-based costing, indirect costs allocated to the order of the customer would be:

(A) ₹ 1,30,850
(B) ₹ 1,25,280
(C) ₹ 1,15,050
(D) ₹ 1,10,280

(vi) AB Ltd. uses standard cost system. The following information pertains to direct labour for Product X for the month of March, 2019:

Standard rate per hour	₹ 8
Actual rate per hour	₹ 8·40
Standard hours allowed for actual production	2000 hours
Labour Efficiency variance	₹ 1,600 (Adverse)

What were the actual hours worked?

(A) 1,800
(B) 1,810
(C) 2,200
(D) 2,190

(vii) X Ltd. has 1000 units of an obsolete item which are carried in inventory at the original price of ₹ 50,000. If these items are reworked for ₹ 20,000, they can be sold for ₹ 36,000. Alternatively, they can be sold as a scrap for ₹ 6,000 in the market. In a decision model used to analyse the reworking proposal, the opportunity cost should be taken as

(A) ₹ 16,000
(B) ₹ 6,000
(C) ₹ 30,000
(D) ₹ 20,000

(viii) Uniform Costing may *not* be successfully applied in the following case:

(A) In a single enterprise having a number of branches, each of which manufactures the same set of products with the same facilities.

(B) In a number of entities in the same industry bound by a trade association.

(C) In a number of units across different geographical locations manufacturing one or more of a given set of products.

(D) In different branches of the same company, each branch making a different product using a unique process.

(ix) Which of the following is a valid constraint for a linear programming problem?

(A) $3x^2 + 4x + 1 = 0$

(B) $5x_1 + 2x_2 \leq 10$

(C) $4x_1 + 3x_2 > 7$

(D) $(12x_1 + 4x_2)/3x_2 \leq 8x_1$

(x) The shadow price of skilled labour for SD Ltd. is currently ₹ 10 per hour. What does this mean?

(A) The cost of obtaining additional skilled labour is ₹ 10 per hour.

(B) There is a hidden cost of ₹ 10 for each hour of skilled labour actively worked.

(C) Contribution will be increased by ₹ 10 per hour for each extra hour of skilled labour that can be obtained.

(D) The total costs will be reduced by ₹ 10 for each additional hour of skilled labour that can be obtained.

Section-B

Answer *any five* questions. 16×5=80

Each Question carries 16 marks.

2. (a) A toy manufacturing company produces different models of toy. The budget in respect of a model for the month of March, 2019 is as under:

(₹ lakhs)

Budgeted output	40000 units		
Variable costs:			
	Materials	528	
	Labour	104	
	Direct expenses	248	880
Fixed costs:			
	Specific fixed costs	180	
	Allocated fixed costs	225	405
Total costs			1285
Add: Profit			115
Sales			1400

Required:

(i) Calculate profit with 10% increase in selling price with a 10% reduction in sales volume.

(ii) Determine volume to be achieved to maintain the original profit after a 10% rise in material costs, at the originally budgeted selling price per unit.

(b) SRM Ltd. manufactures and sells a single product X whose selling price is ₹ 80 per unit and the variable cost is ₹ 32 per unit.

(i) Assume that for first year fixed costs are ₹ 9,60,000 and the annual sales are at 60% margin of safety.

(ii) For second year, it is proposed to add another product line Y whose selling price would be ₹ 100 per unit and the variable cost ₹ 20 per unit. The total fixed costs are estimated at ₹ 13,33,200. The sales mix of X : Y would be 7 : 3 based on value.

Required:

(I) For the first year, calculate the rate of net return on sales, assuming an income tax level of 30%.

(II) For second year, at what level of sales would SRM Ltd. break even? Give separately for both X and Y the break even sales in rupees and quantities.

(4+2)+(5+5)=16

3. (a) Vikas Associates a firm of Chartered Accountants offers three different types of services, namely, accounting and auditing, taxation and management consultancy. Each service is charged on the basis of number of billable hours. The average charge per billable hours is ₹ 500. For the year ending 31.03.2019 the firm projects the following estimate of direct and indirect costs:

		₹ (Lakhs)	
Direct Costs:	Accounting and Auditing	100·00	
	Taxation	100·00	
	Management consultancy	50·00	250·00
Indirect Costs:	Planning and review	7·50	
	Computer processing	7·20	
	Professional salaries	5·60	
	Books, Seminars, periodicals	1·80	
	Programming costs	8·00	
	Building costs	4·90	
	General administration costs	15·00	50·00
	TOTAL		300·00

Until 31.03.2018 the firm has been allocating the indirect costs on the basis of billable hours. For the year ending 31.03.2019 it was decided to introduce a system of activity based costing to capture the indirect cost more accurately. The following data were gathered accordingly:

Particulars	*Accounting and Auditing*	*Taxation*	*Management Consultancy*
Billable hours	55000	35000	10000
EDP hours	5000	2500	500
Professionals (No)	30	16	10
Books, Seminars and periodicals (₹)	57,500	62,500	60,000
Programming hours	1250	500	2250
Building (Sq ft) space occupied	8000	4000	2000
Administration (No. of clients)	150	250	100

Required:

(i) Prepare a comparative profitability statement on the basis of (A) conventional costing and (B) activity– based costing (ABC)

(ii) Any suggestion for improving the billable charge on the basis of ABC?

(b) AB Ltd. produces a variety of products, each having a number of component parts. Product X takes 5 hours to produce on machine no. 55 which is working at full capacity. X has a selling price of ₹ 50 and a marginal cost of ₹ 30 per unit. Y-5, a component part, could be made on the same machine in 2 hours for a marginal cost of ₹ 5 per unit. The supplier's price is ₹ 13·50 per unit.

Required:

Should AB Ltd., make or buy Y-5? (4+4)+(3+1)+4=16

4. (a) A company produces three products A, B and C, from a joint process. Costs and other details are given below:

	Joint Costs (₹)	*Post-separation Costs*		
Costs:		A (₹)	B (₹)	C (₹)
Materials	20,000	1,500	3,500	2,000
Labour	8,000	1,000	1,000	1,500
Overhead	4,000	500	1,000	500
	32,000	3,000	5,500	4,000

Others:			
Sales value (₹)	10,000	25,000	15,000
S & D Exp. (as % of sales)	20%	20%	20%
Estimated Net Profit (as % of sales)	20%	10%	20%

Required:

Prepare a statement showing the apportionment of joint costs over three products using Net Value Method.

(b) Fifteen workers (10 Type I workers and 5 Type II workers) work in a production process during a month of 25 working days. Each Type I worker is expected to produce 8 units per day and Type II worker is expected to produce 12 units per day. They work on the regular shift from 9:00 a.m. to 5 p.m. and have a tea break between 10:30 to 10:45 a.m. and 3:00 to 3:15 p.m. and also have a lunch break from 1:00 to 1:30 p.m. The actual production was 1800 units by Type I workers and 1200 units by Type II workers. The standard wage rate per hour were ₹ 50 and ₹ 60 for Type I and Type II workers, respectively and corresponding actuals were 60 and 70, respectively. During the month, 16 hours were lost actually for both types of workers, which is also as per expectation for waiting for materials and inspection.

Required:

Calculate the following:

(i) Standard labour cost for the month

(ii) Labour cost variance

(iii) Labour efficiency variance

(iv) Idle time variance

Indicate (A) or (F) to denote whether the variances are adverse or favourable.

8+(3+3+1+1)=16

5. (a) X Ltd. manufactures and sells a special component. It follows a Standard Marginal Costing system. For the year ended 31.03.2019, it produced 1500 components against a budgeted capacity of 2000 components. Out of the production 100 components were scrapped. Due to a computer virus most of the financials could not be retrieved. However, the Chief Cost Accountant gave the following information:

Particulars	(₹)
Selling Price per component	213
Direct materials total cost	84,000
Direct labour cost per component (Actual efficiency 80%)	?
Variable Manufacturing overhead per component	15
Variable Selling overhead per component	8
Fixed Selling and Administration overheads	48,000
Fixed overhead manufacturing absorption rate per component (on the basis of budgeted capacity)	30
Closing stock (200 units) (Valued at prime cost for financial purpose)	18,000

Required:

(i) Prepare the Profitability statements as per Marginal Costing, Absorption Costing and the actual Profit & Loss Account.

(ii) Reconcile the actual profit with that of the Break-even profit under Marginal Costing.

(b) What do you understand by Learning Curve? What are its different phases? State the possible areas of application of Learning Curve. (6+2)+(2+2+4)=16

6. (a) AB Ltd. has two manufacturing divisions, A and B, operating as profit centres. A has a production capacity of 3500 units of product A per month, but presently, it produces 2000 units for a special customer S, @ a selling price of ₹ 400 per unit (which will not accept partial supply) and 1000 units for B. S has an agreement with AB that A shall not supply to the external market at any price lower than that to S, or it can supply to the market at any price after discontinuing supplies to S. Division B does

some further work on A, incurs a variable processing cost of ₹ 220 per unit to produce its product B. The monthly fixed costs of Division A are ₹ 2,00,000. The monthly fixed costs of B are ₹ 1,50,000. Division A's raw material cost is ₹ 150 per unit and its variable manufacturing costs are ₹ 100 per unit. Variable selling overhead of ₹ 50 per unit of A and ₹ 70 per unit of B are incurred for sales other than transfers. A had been selling to the outside market at a price of ₹ 460 per unit. Due to competition, it has to reduce its price to ₹ 380 per unit on the entire supplies if it has to sell any quantity above 2000 units. At ₹ 380/unit, its entire output can be sold. B has an outside market price of ₹ 800 per unit and can sell up to 2500 units. If A does not supply to B, a close substitute is available in the market for purchase by B at ₹ 380, on which some additional work costing ₹ 40 per unit has to be done to make it comparable to A. Assume that B will accept partial supply from A and that both divisions have complete autonomy in deciding their strategy and they have the knowledge of costs/revenues/supply conditions in each other's divisions.

Required:

Using figures relevant for the following questions and calculations for the monthly period:

(i) Find out the optimal strategy for A – how much to produce each month, how much to supply to external market and how much to supply to B and at what minimum cost to maximize its Divisional profits.

(ii) What would be the range of transfer price per unit and the quantity that Manager of A will try to successfully negotiate with the Manager of B?

(iii) What would be the range of transfer price that the Manager of B would consider to negotiate with A?

(iv) As the top management person, what would you quote as the appropriate transfer price to be fair to A and B in their performance evaluation?

(b) Briefly state the significance of Margin of Safety in management decisions.

(4+4+2+2)+4=16

7. (a) In the manufacturing plant of Delite Industries Ltd., four jobs can be processed on four different machines, one job on one machine. Resulting profits vary with assignments. They are given below:

	Machines				
Jobs	I	42	35	28	21
	II	30	25	20	15
	III	30	25	20	15
	IV	24	20	16	12

Required:

Find the optimum assignment of jobs to machines and the corresponding profit.

(b) The following information are given:

Arrival of patients		Services	
Inter-arrival time (minutes)	Probability	Inter-Service time (minutes)	Probability
2	0·20	4	0·25
4	0·24	6	0·34
6	0·28	8	0·26
8	0·18	10	Balance
10	Balance		

The following random number are to be used for the simulation of arrival and service patterns:

Arrival	740	225	906	048	421
Service	402	183	706	923	638

Required:

(i) Find out the average time spent by the patient in the queue by simulation. Assume that the time starts at 6:00 a.m. and that there is only one counter and there is no time gap between finishing with one patient and starting the next patient if the next patient is already in the queue.

(ii) A second counter is to be set up if the probability of waiting beyond 3 minutes exceeds 40% or if the average waiting time of a patient exceeds 5 minutes if there is a wait. Should the second counter be set up? Substantiate based on the simulation results. 8+(6+2)=16

8. Write short notes on *any four* of the following: 4×4=16

(a) Principal Budget Factor

(b) Lean Accounting

(c) Differential Costs

(d) Product Life Cycle Costing

(e) Activity Ratio
