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MCQ

CMA FINAL

STRATEGIC COST MANAGEMENT

CA Satish Jalan

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Yashika Tibrewal	18	July-21	Vignesh Gupta	43	Nov-18
Anwesha Das	20	May-19	Sirish Gururaj Rao	44	Nov-19
Anoop Kumar Gupta	20	Jan-21	Deepak Sharma	44	Jan-21
Kishan Agarwal	21	Jan 21	Neha Agarwal	44	Jan-21
Charu Goyal	22	July-21	Shubham Kedia	46	Nov-18
Shivangi Gupta	23	May-19	Gaurav Jain	47	Nov-18
Sancheet Pasari	23	Jan-21	Akshay Goel	47	Nov-19
Ayushi Jain	26	Nov-19	Shivani Singh	47	May-22
Payel Rajpal	27	May-19	Manthan Jalan	48	Jan-21
Sourav Bhagat	28	Nov-19	Prachi Budawanwala	49	May-19
Himalay Bothra	28	Jan-21	Sweta Gupta	49	Nov-19
Rohan Patidar	28	July-21	Shubham Jain	50	Dec-21

STRATEGIC COST AND MANAGEMENT - DECISION MAKING

MCQ Booklet

CMA Final

Group - 3 Paper -15

For a strong grip over the subject

SJC Institute

Preface

Dear Students,

I am delighted to introduce you this latest compilation of Objective Questions of Strategic Cost Management - Decision Making for CMA Final. This book covers short questions of Multiple Choice, Fill in the blanks and True/False Type.

The hardest of efforts have been put forth to handpick all the possible varieties of theory as well as practical questions of a chapter, which would be building up your concepts of theory and check your practical sum solving skills.

What is now required from your side is that once you are prepared with your course, you should try to solve all the questions, and check with the answers given at the end of the respective topics. One thing I must mention here that the students who have studied Strategic Cost Management - Decision Making subject with me, would be able to solve almost 100 percent of the questions here swiftly.

Have a fun filled learning!

Regards,

CA Satish Jalan

Contents as per ICMAI Mat

Chapter 1

Cost Management

Unit 1

Life Cycle Costing

I. Multiple Choice Questions

1. The following details relate to two competing companies, Alps and Himalayas, for identical projects:

   I. The net present value (NPV) of Alps is ₹ 20,000 and its internal rate of return (IRR) is 18%.

   II. For the same life period, Himalayas estimated cash flows are:

Year	₹'000
0	(450)
1	300
2	200
3	100

   And its cost of capital is 15%.

   Which one of the following combinations is correct concerning the NPV and the IRR of the two projects?

Projects	
Alps	**Himalayas**
A) Higher NPV	Higher IRR
B) Higher NPV	Lower IRR
C) Lower NPV	Higher IRR
D) Lower NPV	Lower IRR

2. In calculating the life cycle costs of a product, which of the following items would be included?

   A. Planning and concept design costs B. Preliminary and detailed design costs

   C. Testing costs D. Production costs E. Distribution costs

   (A) D

   (B) D and E

   (C) B, D and E

   (D) All of the above

3. If project A has a net present value (NPV) of ₹ 30,00,000 and project B has an NPV of ₹ 50,00,000, what is the opportunity cost if project B is selected?

   (A) ₹ 23,00,000

   (B) ₹ 30,00,000

   (C) ₹ 20,00,000

   (D) ₹ 50,00,000

4. Life Cycle Cost considers

   (A) Cradle to grave cost

   (B) Only Future Cost

   (C) Only present cost

   (D) None of the above

5. _____ aims at cost ascertainment of a product, project etc. over its projected life. Choose the word(s) most appropriate for the blank.

   (A) Product life cycle

   (B) Target Costing

   (C) Kaizen Costing

   (D) Life Cycle Costing

6. The Life Cycle Costing is a period of time when sales increase at a decreasing rate.

   (A) maturity stage

   (B) growth stage

   (C) introduction stage

   (D) decline stage

Answer

1. (C) Lower NPV; Higher IRR

   Working for Himalayas

Year	CF ₹	DF at 15%	PV Rs	DF at 20%	PV Rs
0	(450)	1.000	(450)	1.000	(450)
1	300	0.870	261	0.833	250
2	200	0.756	151	0.694	139
3	100	0.658	66	0.57	58
		NPV	28		(3)

   Hence IRR = 20% (approx.)

Projects	
Alpas	**Himalayas**
Lower NPV	Higher IRR

2. (B) All of the above

   All the costs mentioned in the question are parts of the total life cycle costs.

3. (B) ₹ 30,00,000

   Opportunity cost represents the next best alternative foregone.

   If B is chosen, only A is being foregone and hence the NPV of 30,00,000 is the present value of the opportunity lost.

4. (A) Cradle to grave cost

5. (D) Life Cycle Costing

6. (A) maturity stage

II. One word Answer

1. Alpha uses decision tree analysis to evaluate potential projects. The company has been looking at the launch of a new product which it believes has a 70% probability of success. The company is however considering undertaking an advertising campaign costing ₹ 50,000, which would increase the probability of success to 95%. If successful, the product would generate income of ₹ 2,00,000 otherwise ₹ 70,000 would be received. What is the maximum that the company would be prepared to pay for the advertising?

Answer

1. ₹ 32,500

   Expected income with advertising = (2,00,000 x 0.95) + (70,000 x 0.05) = ₹ 1,93,500

   Expected income without advertising = (2,00,000 x 0.7) + (70,000 x 0.3) = ₹ 1,61,000

   The maximum amount the company should pay for advertising is the increase in expected value of ₹ 32,500 (1,93,500 – 1,61,000).

Unit 2

Target Costing

I. Multiple Choice Questions

1. A company has the capacity of production of 80000 units and presently it sells 20000 units at ₹ 100 each. The demand is sensitive to selling price and it has been observed that every reduction of ₹ 10 in selling price the demand is doubled. What should be the target cost at full capacity if profit margin on sales is taken at 25%?

   (A) ₹ 58 lakhs

   (B) ₹ 52 lakhs

   (C) ₹ 48 lakhs

   (D) ₹ 50 lakhs

2. Marketing department of an organisation estimates that 40,000 of new mixers could be sold annually at a price of ₹ 60 each. To design, develop and produce these new mixers an investment of ₹ 40,00,000 would be required. The company desires a 15% return on investment (ROI). Given these data, the target cost to manufacture, sell, distribute and service one mixer will be

   (A) ₹ 37.50

   (B) ₹ 40.00

   (C) ₹ 45.00

   (D) ₹ 48.60

3. A company has a capacity to make 4,00,000 units of a product. It has noted from market conditions that at a price of ₹ 50 per unit, it can sell 1,00,000 units but the demand would double for each ₹ 5 fall in the selling price. A minimum margin of 25% is required. The target cost for the company should be:

   (A) ₹ 50

   (B) ₹ 40

   (C) ₹ 30

   (D) ₹ 20

4. 'B' manufacturing Company sells its product at ₹ 1,000 per unit. Due to competition, its competitors are likely to reduce the price by 15%. B wants to respond aggressively by cutting down its price by 20% and expects that the present volume of 1,50,000 units p.a. will increase to 2,00,000. B wants to earn a 10% target profit on sales. Per unit Target cost for the product will work out to:

(A) ₹ 1000

(B) ₹ 800

(C) ₹ 720

(D) None of the above

5. Desktop Co. manufactures and sells 7,500 units of a product. The full cost per unit is ₹100. The Company has fixed Its price so as to earn a 20% return on an Investment of ₹ 9,00,000. Target selling price will be

(A) ₹ 100

(B) ₹ 124

(C) ₹ 200

(D) None of the above

6. Target costing is the answer to

(A) Market driven prices

(B) Sellers' market

(C) No Profit situation

(D) None of the above

7. A company that is a price-taker would most likely use which of the following methods?

(A) Target costing

(B) Cost plus pricing, contribution approach

(C) Cost plus pricing, absorption approach

(D) Time-and-material pricing

8. _____ is the difference between the sales price needed to capture a predetermined market share and the desired profit per unit.

(A) Gross profit

(B) Target cost

(C) Target price

(D) None of these

Answer

1. (C) ₹ 48 lakhs

Maximum Capacity	80,000 Units
Present Sale	20,000 Units @ ₹ 100/-per Unit
Selling Price/Unit	Demand
100	20,000
90	40,000
80	80,000

Target Price	₹ 80
Target Cost/Unit	80 – 25% of Sales = 80 – 20 = ₹ 60/- per unit
Total Target Cost	80,000 Units × ₹ 60/- per unit = ₹ 48 lakhs.

2. (C) ₹ 45.00

Projected sales (40,000 mixers × ₹ 60 per mixer) (A)	= ₹ 24,00,000
Less desired profit (15% of ₹ 40,00,000) (B)	= ₹ 6,00,000
Target Cost for 40,000 mixers (A – B)	= ₹ 18,00,000
Target cost per mixer (₹ 18,00,000 / 40,000 mixer)	= ₹ 45.00 per unit

3. (C) ₹ 30

4. (C) ₹ 720

Target selling price (₹ 1,000 less 20%)	₹ 800
Less: Target profit margin (10%)	₹ 80
Target costs per unit	₹ 720

5. (B) Target Sale Price per unit = Full Cost + Target Profit
   = ₹ 100 + {(9,00,000X 20%)}/7500 = 100 + 24 = ₹ 124

6. (A) Market driven prices

7. (A) Target costing

8. (B) Target cost

Unit 3

Value Analysis & Value Engineering

II. Multiple Choice Questions

1. Which of the following is not a term normally used in value analysis?
   (A) Resale value
   (B) Use value
   (C) Esteem value
   (D) Cost value
2. Activities required to design, develop, produce, market, distribute, and service a product are known as
   (A) target activities.
   (B) value-chain activities.
   (C) whole life activities.
   (D) overhead.

Answer

1. (A) Resale Value
   The resale value is normally referred to as the 'exchange value'
2. (B) value-chain activities.

Unit 4

Throughput Accounting

I. Multiple Choice Questions

1. A manufacturing company recorded the following costs in October for Product X:

	₹
Direct Materials	20,000
Direct Labour	6,300
Variable Production Overhead	4,700
Fixed Production Overhead	19,750
Variable Selling Costs	4,500
Fixed Distribution Costs	16,800
Total costs incurred for Product X	72,050

During October 4,000 units of Product X were produced but only 3,600 units were sold.

At the beginning of October there was no inventory. The value of the inventory of Product X at the end of October using throughput accounting was:

(A) ₹ 630
(B) ₹ 1,080
(C) ₹ 1,100
(D) ₹ 2,000

2. ANKIT LTD. operates Throughput Accounting System. The details of product A per unit are as under:

	₹
Selling Price	75
Material Cost	30
Conversion Cost	20
Time to Bottleneck Resources	10 minutes

The return per hour for product A is

(A) ₹ 270
(B) ₹ 150
(C) ₹ 120
(D) ₹ 90

3. A factory has a key resource (bottleneck) of Facility A which is available for 31,300 minutes per week. The time taken by per unit of Product X and Y in Facility A are 5 minutes and 10 minutes respectively. Last week's actual output was 4750 units of product X and 650 units of Product Y. Actual factory cost was ₹ 78,250. The throughput cost for the week would be:
   (A) ₹ 75,625
   (B) ₹ 76,225
   (C) ₹ 77,875
   (D) ₹ 79,375

4. Which of the following is TRUE about the theory of constraints?
   (A) TOC recognizes that lower inventories means slower response to customers.
   (B) TOC recognizes that lowering inventory decreases carrying costs and thus decreases operating expenses and improves net income.
   (C) TOC recognizes that lower inventories means more defects.
   (D) TOC recognizes that EOQ is important.

Answer

1. (D) ₹ 2,000
   Using throughput accounting inventory is valued at material cost Inventory value
   = 20,000/4,000 × 400 units = 2,000

2. (A) ₹ 270
   (Selling Price – Material Cost) / Time on bottleneck resources.
   = [(₹ 75 – ₹ 30)/ 10 minutes] × 60 = ₹ 270

3. (A) ₹ 75,625
   Cost per Factory Minute = Total Factory Cost / Minutes Available
   = ₹ 78,250/31,300
   = ₹ 2.50
   Standard Minutes of throughput for the week = (4750 × 5) + (650 × 10)
   = 30,250 minutes.
   Therefore, throughput Cost for the week = 30,250 × ₹ 2.50
   = ₹ 75,625

4. (B) TOC recognizes that lowering inventory decreases carrying costs and thus decreases operating expenses and improves net income.

Unit 5

Business Process Re-engineering

I. Multiple Choice Questions

1. Backflush costing is most likely to be used when:
   (A) Management desires sequential tracking of costs
   (B) A Just-in-Time inventory philosophy has been adopted
   (C) The company carries significant amount of inventory
   (D) Actual production costs are debited to work-in-progress
2. When you wait until the manufacture of a product has been completed and then record all of the related issuances of inventory from stock that were required to create the product, it is called
   (A) Forensic Accounting
   (B) Back-flush Accounting
   (C) Tax Accounting
   (D) Lean Accounting
3. Companies that would benefit from back-flush costing include companies
   (A) None of these.
   (B) whose inventories vary from period to period.
   (C) which have fast manufacturing lead times.
   (D) companies that require audit trails.

Answer

1. (B) A Just-in-Time inventory philosophy has been adopted

   A Just-in-Time inventory philosophy has been adopted. The reason for this is that JIT assumes zero inventory for raw materials, work-in-progress and finished goods and the system of back flush accounting records the transaction only at the termination of the production and sales cycle.
2. (B) Back-flush Accounting
3. (C) which have fast manufacturing lead times.

Chapter 2

Decision Making Techniques

Unit 1 Marginal Costing

Unit 2 Transfer Pricing

Unit 1

Marginal Costing

I. Multiple Choice Questions

1. When is market skimming pricing appropriate?

   (A) If demand is very elastic

   (B) If the product is new and different

   (C) If there is little chance of achieving economies of scale

   (D) If demand is inelastic

   (E) If there is little competition and high barriers to entry

2. Which of the following is a recognised method of arriving at the selling price for the products of a business?

   (A) Life cycle pricing (B) Price skimming (C) Penetration pricing (D) Target costing

   (A) (A) and (B) only

   (B) (A), (B) and (C) only

   (C) (B) and (C) only

   (D) (A), (C) and (D) only

   (E) (A), (B), (C) and (D)

3. A company has estimated the selling prices and variable costs of one of its products as follows:

Selling Price Per Unit		Variable Cost Per Unit	
₹	Probability	₹	Probability
40	0.30	20	0.55
50	0.45	30	0.25
60	0.25	40	0.20

The company will be able to supply 1,000 units of its product each week irrespective of the selling price. Selling price and variable cost per unit are independent of each other. The probability that the weekly contribution will exceed ₹ 20,000 is _____% (round to the nearest whole %)

(A) 40%

(B) 42%

(C) 45%

(D) 55%

4. An organisation is considering the costs to be incurred in respect of a special order opportunity.

The order would require 1,250 kgs of material D. This is a material that is readily available and regularly used by the organisation on its normal products. There are 265 kgs of material D in stock which cost ₹ 795 last week. The current market price is ₹ 3.24 per kg.

Material D is normally used to make product X. Each unit of X requires 3 kgs of material D, and if material D is casted at ₹ 3 per kg, each unit of X yields a contribution of ₹ 15.

The relevant cost of material D to be included in the costing of the special order is nearest to:

(A) ₹ 3,990

(B) ₹ 4,050

(C) ₹ 10,000

(D) ₹ 10,300

5. Which of the following would take place if a company is able to reduce its variable cost?

Contribution Margin	Break-Even Point
(A) Increase	Increase
(B) Decrease	Decrease
(C) Increase	Decrease
(D) Decrease	Increase

6. A company makes a single product which it sells at ₹ 10 per unit. Fixed costs are ₹ 48,000 per month and the product has a contribution to sales ratio of 40%. In a period when actual sales were ₹ 1,40,000, the company's margin of safety in units was:

(A) 2000

(B) 3000

(C) 3500

(D) 4000

7. The following are cost data for two alternative ways of processing the clerical work for legal cases brought before the district court:

	Semi-Automatic	Fully Automatic
Monthly Fixed Costs (₹)		
Occupancy	15,000	15,000
Maintenance Contract	5,000	10,000
Equipment Lease	25,000	1,00,000

Unit Variable Cost (per Report) (₹)		
Supplies	80	20
Labour	60	20

The cost indifference point will be:

(A) 800 cases

(B) 850 cases

(C) 750 cases

(D) 700 cases

8. A company produces a product which is sold at a price of ₹ 80. Its Variable cost is ₹ 32. The company's Fixed cost is ₹ 11,52,000 p.a. The company operates at a margin of safety of 40%. The total sales of the company is:

(A) 4,000 units

(B) 40,000 units

(C) 30,000 units

(D) 20,000 units

9. The P/V ratio of a firm dealing in Electrical equipment is 50% and the margin of safety is 40%. BEP of the firm at a sales volume of ₹ 50,00,000 will be

(A) ₹ 25,00,000

(B) ₹ 35,00,000

(C) ₹ 30,00,000

(D) ₹ 36,00,000

10. A company determines its selling price by marking up variable costs 60%. In addition, the company uses frequent selling price mark down to stimulate sales. If the mark down average 10%, what is the company's contribution margin ratio?

(A) 30.6%

(B) 44%

(C) 86.4%

(D) None of these

11. B Ltd. Has earned net profit of ₹ 1 lakh, and its overall P/V ratio and margin of safety are 25% and 50% respectively. What is the total fixed cost of the company?

(A) ₹ 2,50,000

(B) ₹ 2,00,000

(C) ₹ 3,00,000

(D) ₹ 1,00,000

12. The total cost of manufacturing a component is as under at a capacity of 50,000 units of production:

	₹
Prime Cost	10.00
Variable Overheads	2.40
Fixed Overheads	4.00
	16.40

The selling price is ₹ 21 per unit. The variable selling and administrative expenses is 60 paise per component extra. During the next quarter only 10,000 units can be produced and sold. Management plans to shut down the plant estimating that the fixed manufacturing cost can be reduced to ₹ 74,000 per quarter. When the plant is operating, the fixed overheads are incurred at a uniform rate throughout the year. Additional costs of plant shutdown for the quarter are estimated at ₹ 14,000. The shut down pint for the quarter in units of product will be:

(A) ₹ 25,000

(B) ₹ 14,000

(C) ₹ 11,000

(D) ₹ 20,000

13. A company has forecast sales and cost of sales for the coming year as ₹ 25 lakhs and ₹ 18 lakhs respectively. The inventory turnover has been taken as 9 times per year. In case the inventory turnover increases to 12 times and the short term interest rate on working capital is taken as 10%, what will be saving in cost?

(A) ₹ 10,000

(B) ₹ 20,000

(C) ₹ 15,000

(D) ₹ 5,000

14. Which of the following would decrease unit contribution margin the most?

(A) 15% decrease in selling price

(B) 15% increase in variable costs

(C) 15% decrease in variable costs

(D) 15% decrease in fixed costs

15. A company produces two joint products, P and V. In a year, further processing costs beyond split-off point spent were ₹ 8,000 and ₹ 12,000 for 800 units of P and 400 units of V respectively. P sells at ₹ 25 and V sells at ₹ 50 per unit. A sum of ₹ 9,000 of joint cost were allocated to product P based on the net realization method. What were the total joint cost in the year?

(A) ₹ 20,000

(B) ₹ 10,000

(C) ₹ 15,000

(D) None of these

16. A company is to market a new product. It can produce up to 1,50,000 units of this product. The following are the estimated cost data:

	Fixed Cost	Variable Cost
For Production upto 75,000 units	₹ 8,00,000	60%
Exceeding 75,000 units	₹ 12,00,000	50%

Sale price is expected to be ₹ 25 per unit.

How many units must the company sell to break even?

(A) 1,00,000 units

(B) 1,11,000 units

(C) 1,27,000 units

(D) 75,000 units

17. A company has estimated the selling prices and the variable costs of one of its products as under:

Probability	Selling Price (Per unit)	Probability Variable	Cost (Per unit)
0.25	60	0.25	30
0.45	75	0.40	45
0.30	90	0.35	60

The company will be able to produce and sell 4,000 units in a month irrespective of the selling price. The selling price and variable cost per unit are independent of each other.

The specific fixed cost relating to this product is ₹ 20,000. The probability that the monthly net profit of the product will be ≥ ₹ 1,20,000 is

(A) 0.2525

(B) 0.4512

(C) 0.3825

(D) 0.3075

18. A particular job required 800 kgs of material – P. 500 kgs. of the particular material is currently in stock. The original price of the material – P was ₹ 300 but current resale value of the same has been determined as ₹ 200. If the current replacement price of the material – P is ₹ 0.80 per kg., the relevant cost of the material – P required for the job would be:

(A) ₹ 640

(B) ₹ 440

(C) ₹ 300

(D) None of these

19. A company has 2000 units of an obsolete item which are carried in inventory at the original purchase price of ₹ 30,000. If these items are reworked for ₹ 10,000, they can be sold for ₹ 18,000. Alternatively, they can be sold as scrap for ₹ 3,000 in the market. In a decision model used to analyze the reworking proposal, the opportunity cost should be taken as:

    (A) ₹ 8,000

    (B) ₹ 12,000

    (C) ₹ 3,000

    (D) ₹ 10,000

20. A company makes and sells a single product. The selling price and marginal revenue equations are:

    Selling Price = ₹ 50 – ₹ 0.001X

    Marginal Revenue = ₹ 50 – ₹ 0.002X

    Where X is the product the company makes. The variable cost amount to 20 per unit and the fixed costs are ₹ 1,00,000. In order to maximize the profit, the selling price should be

    (A) ₹ 25

    (B) ₹ 30

    (C) ₹ 35

    (D) ₹ 40

21. A Company requires ₹ 85,00,000 in sales to meet its target net profit. Its contribution margin is 30% and the fixed costs are ₹ 15,00,000. What is the target net profit?

    (A) ₹ 10,50,000

    (B) ₹ 19,50,000

    (C) ₹ 25,50,000

    (D) ₹ 35,00,000

22. The following information relate to ABC

Activity level	60%	80%
Variable costs (₹)	12,000	16,000
Fixed costs (₹)	20,000	22,000

    The differential cost for 20% capacity is

    (A) ₹ 4,000

    (B) ₹ 2,000

    (C) ₹ 6,000

    (D) ₹ 5,000

23. By making and selling 9,000 units of a product, a company makes a profit of ₹ 10,000, whereas in the case of 7,000 units, it would lose ₹ 10,000 instead. The number of units to break-even is

    (A) 7,500 units

    (B) 8,000 units

    (C) 7,750 units

    (D) 8,200 units

24. 1200 units of microchips are required to be sold to earn a profit of ₹ 1,06,000 in a monopoly market. The fixed cost for the period is ₹ 74,000. The contribution in the monopoly market is as high as 3/4th of its variable cost. Determine the target selling price per unit.

    (A) 450

    (B) 325

    (C) 400

    (D) 350

25. Empire Hotel has a capacity of 100 single rooms and 20 double rooms. Average occupancy is 70% for 365 days of the year. The rent for a double room is kept at 130% of a single room. The total room occupancy days in a year in terms of single room is

    (A) 32193

    (B) 30660

    (C) 31660

    (D) 30993

26. A company has a break even point when sales are ₹ 3,20,000 and variable cost at that level of sales are ₹ 2,00,000. How much would contribution margin increase or decrease if variable expenses are dropped by ₹ 30,000?

    (A) Increase by 27.5%

    (B) Increase by 9.375%

    (C) Decrease by 9.375%

    (D) Increase by 37.5%

27. A factory can make only one of the three products X, Y or Z in a given production period. The following information are given:

Per unit ₹	X	Y	Z
Selling Price	1500	1800	2000
Variable Cost	700	950	1000

Assume that there is no constraint on resource utilization or demand and similar resources are consumed by X, Y and Z. The opportunity cost of making one unit of Z is

(A) 850

(B) 800

(C) 1800

(D) 1500

28. 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

29. 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

30. 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

31. The break-even point of a manufacturing company is ₹ 1,60,000. Fixed cost is ₹ 48,000. Variable cost is ₹ 12 per unit. The PV ratio will be:

    (A) 20%

    (B) 40%

    (C) 30%

    (D) 25%

32. What is the opportunity cost of making a component part in a factory given no alternative use of the capacity?

    (A) The variable manufacturing cost of the component

    (B) The total manufacturing cost of the component

    (C) The total variable cost of the component

    (D) Zero

33. A Ltd. manufactures 4 products A,B,C & D with sales value mix of 33 1/3%, 41 2/3%, 16 2/3% & 8 1/3% and variable cost of 60%, 68%, 80% & 40% of selling price respectively. Budgeted sale value is ₹60000. Overall P/V ratio is

    (A) 40%,

    (B) 35%,

    (C) 28%

    (D) 32%

34. Four products viz. A, B, C & D are sold in the ratio of 25:40:30:5 and their P/V Ratio is 40%, 32%, 20% & 60% respectively. Budgeted sale is ₹60,000/-& fixed cost ₹15000/-.Break even sales will be:

    (A) 48000

    (B) 45555

    (C) 28800

    (D) 47170

35. ANC Co. manufactures and sells 7,500 units of a product. The full cost per unit is ₹ 100. The Company has fixed Its price so as to earn a 30% return on an Investment of ₹ 7,00,000. Target selling price will be

    (A) ₹ 120

    (B) ₹ 130

    (C) ₹ 128

    (D) ₹ 210

36. Ink Ltd. makes leather purses. It has drawn up the following budget for its next financial period:

Selling price per unit ₹ 11.60; Variable production cost per unit ₹ 3.40; Sales commission 5% of selling price; Fixed production costs ₹ 4,30,500; Fixed selling and administration costs ₹ 1,98,150; Sales 90,000 units. The margin of safety represents:

(A) 5.6% of budgeted sales

(B) 8.3% of budgeted sales

(C) 11.6% of budgeted sales

(D) 14.8% of budgeted sales

37. A company buys a machine for ₹ 40,000 and also issues a purchase order to pay for a maintenance contract for ₹ 2,000 in each of the next three years. How much is the committed cost?

(A) ₹ 40,000

(B) ₹ 46,000

(C) ₹ 6,000

(D) None

38. Only direct materials, direct labor, and variable manufacturing overhead costs are considered product costs when using

(A) absorption costing.

(B) full costing.

(C) variable costing.

(D) product costing.

39. When there is excess capacity, it makes sense to accept a one-time-only special order for less than the current selling price when

(A) incremental revenues exceed incremental costs.

(B) additional fixed costs need not be incurred to accommodate the order.

(C) there is a positive contribution per unit of the product under normal capacity and spare capacity

(D) the special order is from a normal customer.

40. If the unit level of inventory increases during an accounting period, then

(A) operating income will be the same under absorption costing and variable costing.

(B) the exact effect on operating income cannot be determined.

(C) more operating income will be reported under absorption costing than variable costing.

(D) less operating income will be reported under absorption costing than variable costing.

41. NM paid ₹ 5,30,000 for a machine used to powder wheat. The machine can be sold for ₹ 1,30,000. The sale value of wheat is Rs 8,00,000 and its variable cost is ₹ 4,50,000. The

opportunity cost of producing wheat flour is

(A) ₹ 5,30,000

(B) ₹ 3,50,000

(C) ₹ 8,00,000

(D) ₹ 1,30,000

42. Which of the following will always be a relevant cost?

(A) Fixed cost

(B) Opportunity cost

(C) Variable cost

(D) Sunk cost

Answer

1. (B) If the product is new and different

Here market skimming would be more appropriate. A high price could be changed to the 'opinion leaders' who want to be seen to have the new product and are prepared to pay a high price.

2. (B) (A), (B) and (C) only

At first inspection all four appear to be methods of arriving at selling price. However, target costing is a method to arrive at the cost at which a product should be produced for having worked backwards from the price already set for the product.

3. (C) 45%

To generate a contribution greater than $20,000 it is necessary to earn a unit contribution greater than ₹ 20. Consider each of the feasible combinations:

Selling Price	Variable Cost	Contribution	Probability
50	20	30	0.45 x 0.55 = 0.2475
60	20	40	0.25 x 0.55 = 0.1375
60	30	30	0.25 x 0.25 = 0.0625

Answer = 44.75% = 45% to nearest full %

4. (B) ₹ 4,050

The material is in regular use by the organization and so would be replaced if it is used on the special order. The material is readily available at a price of 3.24 per kg.

Therefore the relevant cost of the material is 1,250 kgs × 3.24 = 4,050

5. (C) Increase, Decrease

Contribution margin = Sales Less Variable Cost

So, reduction in variable cost will increase contribution.

BEP = FC/Contribution Margin

Hence, increase in contribution will reduce BEP.

6. (A) 2000

BEP = Fixed Cost ÷ C/S Ratio = ₹ 48,000 / 0.4 = ₹ 1,20,000 or 12,000 units.

When sells are ₹ 1,40,000, the volume is ₹ 1,40,000 ÷ 10 = 14,000 units

Therefore, Margin of Safety is 14,000 – 12,000 = 2,000 units.

7. (A) 800 cases

Cost Indifference Point is calculated as follows:

Difference in monthly FC ÷ Difference in unit VC

$$= \frac{1,25,000 - 45,000}{140 - 40} = \frac{80,000}{100} = 800 \text{ Cases}$$

8. (B) 40,000 units

SP 80 – VC 32	= Contribution 48
F.C.	= 11,52,000
B.E.P.	= 11,52,000/48 – 24,000 units
MOS	= 40%; B.E.P. = 60%

∴ Total sales = 24,000 x 100 ÷ 60 = 40,000 units.

9. (C) ₹ 30,00,000

Actual Sales - M.O.S. = BEP Sales

Sales = ₹ 50,00,000

Less: Margin of safety 40% on sales = ₹ 20,00,000

Break even sales = ₹ 30,00,00

10. (A) 30.6%

When V (Var. cost) = 100, SP = 160, M.Cost/SP = 60/100

SP after 10% mark down of SP = 144, Cost = 60-16=44

Contribution Margin Ratio = 44/144=0.3056=30.6%

11. (D) ₹ 1,00,000

MS = Profit/PV Ratio = ₹ 4 Lakh: MS=50%; BE Sales = (1 - 0.50) = 0.50 Hence BES = ₹ 4 lakh

Fixed Cost 25% of ₹ 4,00,000 = ₹ 1,00,000

12. (B) ₹ 14,000

Contribution per unit of component	₹	₹
Variable Prime Cost	10.00	
Variable Overhead	2.40	

Selling / Administrative Expenses	0.60	13.00
Contribution		8.00

Avoidable fixed cost per quarter

= total fixed cost – (unavoidable fixed cost + additional shut down cost)

= (50,000 x ₹ 4) (₹ 74,000 + ₹ 14,000) = ₹ 1,12,000.

The required shut down point for the quarter = ₹ 1,12,000 / ₹ 8 = 14,000 units.

13. (D) ₹ 5,000

$$\text{Saving Cost} = \frac{18,00,000}{9} \times \frac{10}{100} - \frac{18,00,000}{12} \times \frac{10}{100}$$

14. (A) 15% decrease in selling price

A given percentage change in unit sale price must have greater effect on contribution margin than any other factor affected by the same percentage change.

15. (C) ₹ 15,000

Products	P	V	Total
Units	800	400	
S.P. (₹)	25	50	
Sales (₹)	20,000	20,000	
Further costs (₹)	8,000	12,000	
NRV (₹)	12,000	8,000	20,000

Joint cost appropriated ₹ 9,000

Total Joint Cost = (9,000/12,000) x 20,000 = ₹ 15,000

16. (B) 1,11,000 units

At a production of 75,000 units or less the fixed costs amount to ₹ 8 lakh

Contribution is ₹ 10 per unit (₹ 25 – 60% of ₹ 25).

Production will however, be more than this level. Total fixed cost is then ₹ 12 lakh.

Contribution for first 75,000 units = ₹ 7,50,000

Hence, to meet ₹ 12 lakh fixed cost, further ₹ 4,50,000 contribution is required.

Contribution beyond 75,000 units is ₹ 12.5 (₹ 25 – 50% of ₹ 25).

Additional units to be sold = ₹ 4,50,000 / ₹ 12.50 = 36,000) units = 1,11,000 units

17. (D) 0.3075

The sales demand is 4,000 units per month. The monthly contribution must absorb the fixed costs of ₹ 20,000 and leave at least a surplus of ₹ 1,20,000 profit. So, the contribution per unit must be ₹ 1,40,000/4,000 units = ₹ 35 in the minimum.

The following selling price and variable cost pairs will produce a contribution of more than ₹ 35.

Selling Price	Variable Cost	Contribution	Joint Probability of SP & VC
75	30	45	0.45 x 0.25 = 0.1125
90	30	60	0.30 x 0.25 = 0.0750
90	45	45	0.30 x 0.40 = 0.1200
			0.3075

18. (B) ₹ 440

Particulars	₹
500 kgs of material in stock at resale value	200
Balance 300 kgs of material at current price of ₹ 0.80	240
Relevant Cost of the Material	440

19. (C) ₹ 3,000

Original price is not relevant

Rework Income 18,000

Deduct cost of rework 10,000

Net Inflow 8,000 It is relevant

The other alternative relevant cash flow is from sale as scrap = ₹ 3,000 Hence, the opportunity cost is ₹ 3,000.

20. (C) ₹ 35

Selling price = ₹ 50 – ₹ 0.001x

Marginal Revenue = ₹ 50 – ₹ 0.002x

Variable cost per unit = Marginal Cost per unit = ₹ 20

Optimal output for maximum profit: 20 = 50 – 0.002x,

Hence, x = 30/0.002 = 15,000 units

SP = 50 – 0.001x = 50 – 0.001 (15000) = 50 – 15 = ₹ 35.

21. (A) ₹ 10,50,000

= (85,00,000 × 30%) – 15,00,000 = 10,50,000

Or

Sales × Contribution margin ratio or P.V. Ratio – Fixed Cost

22. (C) ₹ 6,000

Differential Costs = Differences in Fixed and Variable Cost

= 4000 + 2,000 = 6,000.

23 (B). 8,000 units

Contribution for 2000 units = 20,000 (Difference in profits for two output levels)

Hence, contribution per unit = 10.

Substituting in equation 1,00,000 = F + 10,000. Or F = 80,000.

BEP = 80000 / 10 = 8000.

24. (D) 350

Contribution = 1,06,000 + 74,000 = 1,80,000

Contribution/Unit = 180000/1200 = 150

Variable cost/unit = 150 ÷ ¾ = ₹ 200

Selling price = 350

25. (A) 32,193

1 double room = 1.3 single in terms of revenue.

Capacity = 100 + 1.3 × 20 = 100 + 26 = 126 equivalent single rooms.

Total Room Occupancy p.a. = 126 × 365 × 70% = 32193 days.

Note: This can be arrived at by other ways also, taking for example 70% of only single rooms and then double rooms, etc.

26. (B) Increase by 9.375%

S – V = C = 3,20,000 – 2,00,000 = 1,20,000

$$\text{c/s ratio} = \frac{1,20,000}{3,20,000} \times 100 = 37.5\%$$

New VC = 1,70,000,

C = 1,50,000

$$\text{c/s ratio} = \frac{1,50,000}{3,20,000} \times 100 = 46.875\%$$

% increase in c = 46.875 – 37.5% = 9.375%

27. (A) ₹ 850

Opportunity cost is the cost of next best alternative foregone. Between X and Y, y has a better contribution i.e. ₹ 850 as against X (₹ 1500 – 700) = ₹ 800.

28. (A) ₹ 4,20,000

$$\text{Required Sales} = \frac{FC + \frac{\text{Desired Profit}}{1 - \text{tax rate}}}{\frac{\text{Contribution}}{\text{Sales}}}$$

$$= \frac{50,000 + 90,000}{\frac{1}{3}} = ₹\ 4,20,000$$

29. (B) E, F, H & G

Ranking of products would in order of contribution per limiting factor, in relative value.

	E	F	G	H
SP (₹)	100	150	200	300
VC (₹)	50	70	100	125
Contribution per unit	50	80	100	175
RM/unit (kg)	1	2	5	7
Contribution per kg of RM (₹)	50	40	20	25
Rank	1	2	4	3

Correct Order of ranking : E, F, H & G

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

A shadow price for a scarce resource is its opportunity cost.It is the amount of contribution that would be lost if one unit less of that resource were available.It is similarly the amount of additional contribution that would be earned if one unit more of that resource were available. (This is on the assumption that that the scarce resource is available at its normal variable cost)

31. (C) 30%

$$BEP = \frac{FC}{\frac{P}{V}Ratio} = \frac{P}{V}Ratio = \frac{FC}{BEP} = \frac{c\ 48,000}{1,60,000} = 30\%$$

32. (D) Zero

Opportunity cost is not an out of pocket cost. It is the benefit given up by not selecting the next best alternative. Therefore, answers A, B and C are incorrect and D is correct.

33. (B)

Product	A	B	C	D	Total
Sale value	20,000	25,000	10,000	5,000	60,000
Variable cost	12,000	17,000	8,000	2,000	39,000
Contribution					21,000

P/V ratio = 21000/60000 X 100 = 35%

34. (D) ₹ 47,710

		A	B	C	D	Total
Sales	₹	15,000	24,000	18,000	3,000	60,000
P/V ratio	%	40%	32%	20%	60%	
Contribution	₹	6,000	7,680	3,600	1,800	19,080
Variable cost	₹	9,000	16,320	14,400	1,200	40,920
Fixed cost	₹					15,000
P/V ratio	%					(19,,080/60,000) x 100 = 31.8%
Break even sales	₹					15,000 / 31.8% = 47,170

35. (C) Target Sale Price per unit = Full Cost + Target Profit = ₹ 100 + {(7,00,000 X 30%)}/7500 = 100 + 28 = ₹ 128
36. (B) 8.3% of budgeted sales
37. (B) ₹ 46,000
38. (C) variable costing.
39. (A) incremental revenues exceed incremental costs.
40. (C) more operating income will be reported under absorption costing than variable costing
41. (D) ₹ 1,30,000
42. (B) Opportunity cost

II. One word Answer

1. What effect will be on Contribution margin and BEP if a company is able to reduce its variable cost?
2. X plc intends to use relevant costs as the basis of the selling price for a special order: the printing of a brochure which requires a particular type of paper that is not regularly used by X plc although a limited amount is in X plc's inventory which was left over from a previous job. The cost when X plc bought this paper last year was ₹ 15 per ream and there are 100 reams in inventory. The brochure requires 250 reams. The current market price is ₹ 26 per ream and resale value is ₹ 10 per ream.

   What is the relevant cost of the paper to be used in printing the brochure?

Answer

1. Increase in Contribution and decrease in BEP.
2. ₹ 4,900

   The original purchase price is a sunk cost and therefore not a relevant cost. The relevant cost of the materials in stock is ₹1,000 (100 reams @₹10 net realizable value). An additional 150 reams must be purchased for ₹3,900 (150 x ₹26) resulting in a relevant cost of ₹4,900.

Unit 2

Transfer Pricing

I. Multiple Choice Questions

1. Which of the following is NOT a method of transfer pricing?

   (A) Cost plus transfer price

   (B) Internal price transfer price

   (C) Market-based transfer price

   (D) Two part transfer price

2. ABC Limited has current PBIT of ₹ 19.20 lakhs on total assets of ₹ 96 lakhs. The company has decided to increase assets by ₹ 24 lakhs, which is expected to increase the operating profit before depreciation by ₹ 8.40 lakhs. There will be a net increase in depreciation by ₹ 4.80 lakhs. This will result in ROI

   (A) to increase by 1%

   (B) to decrease by 1%

   (C) to decrease by 1.5%

   (D) to remain the same

3. Division A of a company manufactures a single product and the following data are provided:

   Sales = 25,000 units Fixed Cost = ₹ 4,00,000

   Depreciation = ₹ 2,00,000 Residual Income = ₹ 30,000

   Net Assets = ₹ 10,00,000

   Head Office assesses divisional performance by the method of Residual Income and uses cost of capital of 12%. Calculate Transfer Price.

   (A) ₹ 25

   (B) ₹ 30

   (C) ₹ 35

   (D) None of these

4. A company makes components and sells internally to its subsidiary and also to external market. The external market price is ₹ 24 per component, which gives a contribution of 40% of sales. For external sales, variable costs include ₹ 1.50 per unit for distribution

costs. This is, however not incurred in internal sales. There are no capacity constraints.

To maximize company profit, the transfer price to subsidiary should be:

(A) ₹ 9.60

(B) ₹ 12.90

(C) ₹ 14.40

(D) None of these

5. H Group has two divisions, Division P and Division Q. Division P manufactures an item that is transferred to Division Q. The item has no external market and 6000 units produced are transferred internally each year. The costs of each division are as follows?

	Division P	**Division Q**
Variable Cost	100 per unit	120 per unit
Fixed cost each year	1,20,000	90,000

Head Office management decided that a transfer price should be set that provides a profit of 30,000 to Division P. What should be the transfer price per unit?

(A) 145

(B) 125

(C) 120

(D) 135

6. Max Ltd. fixes the inter divisional transfer prices for its products on the basis of cost plus a return on investment in the division. The budget for division X for 2019 – 20 appears as under -

	₹
Fixed assets	5,00,000
Current assets	3,00,000
Debtors	2,00,000
Annual fixed cost of the division	8,00,000
Variable cost per unit of the product	10
Budgeted volume	4,00,000 units per year
Desired ROI	28%

Transfer price for division X is

(A) ₹ 12.70

(B) ₹ 10.70

(C) ₹ 8.70

(D) ₹ 14.70

7. The selling price of the single product manufactured by a company is fixed at ₹ 1500 per unit. In the coming year, 500 units of the product are likely to be sold. If the total value of investments of the company is ₹ 15 lakhs and it has a target ROI of 15%, the target cost would be:

   (A) ₹ 9.30

   (B) ₹ 9.50

   (C) ₹ 1050

   (D) None of these

8. A Company fixes the inter-divisional transfer prices for its products on the basis of cost, plus a return on investment to the division. The Budgeted Capital Investment is ₹10.00 lakhs, fixed cost is ₹ 8.00 lakhs and expected sales volume is 4.00 lakh units per annum. Selling price is ₹12.70 per unit and variable cost ₹10 per unit. ROI would be

   (A) 24%

   (B) 20%

   (C) 28%

   (D) 32%

9. In cost-plus pricing, the markup consists of

   (A) total cost and desired ROI.

   (B) selling and administrative costs.

   (C) manufacturing costs.

   (D) desired ROI

Answer

1. (B) Internal price transfer price

   The internal price is just another name for the TP. So, it is not a method of transfer pricing.

2. (B) to decrease by 1%

   Before installing new assets After installing new assets

   PBIT ₹ 19.20 lakhs = ₹ 19.20 lakhs +(₹ 8.40 lakhs – ₹ 4.80 lakhs) = ₹ 22.80 lakhs

   Value of Assets ₹ 96.00 lakhs =₹ 96.00 lakhs + ₹ 24.00 lakhs = ₹ 120.00 lakhs

   ROT = 20% = 19%

   Conclusion: There will be a decrease of 1% in ROI under the proposed dispensation.

3. (B) ₹ 30

   Total contribution required: 12% of ₹ 10 lakhs

   = ₹ 1,20,000 + 30,000 (RI)+ 2,00,000 (Depr.) + 4,00,000 (FC)

   = ₹ 7,50,000 ÷ 25,000 = ₹ 30

4. (B) ₹ 12.90

Transfer Price = Marginal Cost – Opportunity Cost = ₹ 24 × 60% – ₹ 1.50 = ₹ 12.90

5. (B) 125

Variable cost + (Fixed cost + Profit Desired) ÷ Volume = ₹ 100 + (1,20,000 + 30,000) ÷ 6000 = ₹ 125/-

6. (A) ₹ 12.70

	Per unit (₹)
VC	10.00
FC (₹ 8, 00,000 ÷ 4,00,000)	2.00
Investment: (FA + CA + Debtors) = ₹ 10,00,000	
Return = $\frac{10,00,000 \times 0.28}{4,00,000}$	₹ 0.70
TP for Div. X	12.70

7. (c) ₹ 1,050

Particulars	₹
Sales Revenue = 500 × ₹ 1,500	7,50,000
Less: ROI 15% on ₹ 15 Lakhs =	2,25,000
Target Cost	5,25,000

Target Cost per unit = Target cost / 500 = 5,25,000 / 500 = ₹ 1,050.

8. (C) 28%

Variable cost		10.00
Fixed cost per unit	8,00,000 ÷ 4,00,000	2.00
Total cost per unit		12.00
Transfer price		12.70
Balance towards cost of capital		0.70
Total amount available towards	Return on Investment = 0.70 × 400000 = 280000	
Return on investment = 280000/10,00,000 ×100 = 28%		

9. (D) Desired ROI

Chapter 3

Standard Costing in Profit Planning

Unit 1

Variance Analysis

I. Multiple Choice Questions

1. Aderholt uses activity based costing to allocate its overheads. The budgeted cost/ expected for the Supervisor cost pool was:

Budgeted units	5,000
Number of employees	75
Budgeted Cost	₹ 7,500
The actual costs incurred were:	
Actual Units	5,500
Actual Employees	77
Actual cost	₹ 8,085

What was the total variance for the setups?

(A) ₹ 585 Adverse

(B) ₹ 165 Favourable

(C) ₹ 5550 Favourable

(D) ₹ 385 Adverse

2. The information relating to the direct material cost of a company is as follows:

Standard price per unit	₹ 7.20
Actual quantity purchased in units	1600
Standard quantity allowed for actual production in units	1450
Material price variance on purchase (Favourable)	₹ 480

What is the actual purchase price per unit?

(A) ₹ 7.50

(B) ₹ 6.40

(C) ₹ 6.50

(D) ₹ 6.90

3. The preparation and use of standard cost, their comparison with actual costs and the measurement and analysis of variances to originating causes is defined as:
   (A) Marginal Costing
   (B) Standard Costing
   (C) Throughput Costing
   (D) Kaizen Costing

4. The following figures are extracted from the books of a company:
   Budgeted O/H ₹ 10,000 (Fixed ₹ 6,000, Variable ₹ 4,000)
   Budgeted Hours 2000
   Actual O/H ₹ 10,400 (Fixed ₹ 6,100, Variable ₹ 4,300)
   Actual Hours 2100
   Variable O/H cost variance and Fixed O/H cost variance will be:
   (A) 100 (A) and 200 (A)
   (B) 100 (F) and 200 (F)
   (C) 100 (A) and 200 (F)
   (D) 200 (A) and 100 (F)

5. In a factory where standard costing system is followed, the production department consumed 1100 kgs of a material @ ₹ 8 per kg for product X resulting in material price variance of ₹ 2200 (Fav) and material usage variance of ₹ 1000 (Adv). What is the standard material cost of actual production of product X?
   (A) 11,000
   (B) 20,000
   (C) 14,000
   (D) 10,000

6. A company operates a standard absorption costing system. The budgeted fixed production overheads for the company for last year were 3,30,000 and budgeted output was 2,20,000 units. At the end of the company's financial year, the total of the fixed production overheads debited to the Fixed Production Overhead Control Account was 2,60,000 and the actual output achieved was 2,00,000 units. The under/over absorption of overhead was
   (A) 40,000 over absorbed
   (B) 40,000 under absorbed
   (C) 50,000 over absorbed
   (D) 50,000 under absorbed

7. 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

8. The higher the actual hours worked.

(A) The lower the capacity usage ratio

(B) The higher the capacity usage ratio

(C) The lower the capacity utilization ratio

(D) The higher the capacity utilization ratio

9. A manufacturing company uses two types of materials. X and Y, for manufacture of a standard product. The following information is given:

	Standard Mix			Actual mix	
Materials X	120 Kg	@ ₹ 5 = 600		112 Kg	@ ₹ 5 = 560
Y	80 Kg	@ ₹ 10 = 800		88 Kg	@ ₹ 10 = 880
	200	1400		200	1440
30% loss	60		25% loss	50	
	140	1400		150	1440

Direct Materials Mix Variance is:

(A) ₹ 40 (fav.)

(B) ₹ 40 (unfav.)

(C) ₹ 80 (fav.)

(D) ₹ 80 (unfav.)

10. Standard cost and budgeted cost are

(A) Interrelated but not interdependent.

(B) Interdependent but not interrelated.

(C) Interrelated and interdependent.

(D) None of the above.

11. Which of the following statements is true?

(A) If the actual cost is more than the standard, we call it adverse variance and if the difference is less than the standard, we call it favorable variance.

(B) In case of sales and profit, if the standard is more than actual, it is adverse variance and if the standard is less than the actual, it is favorable variance.

(C) Both (i) and (ii).

(D) None of the above.

12. A standard costing system consists of the following key elements

(A) Setting standards for each of the operations.

(B) Comparing the actual performance with the standard performance.

(C) Analyzing and reporting variances arising from the difference between actual and standard performance.

(D) All of the Above.

13. Variance analysis involves breaking down and analyzing the total variance to explain

(A) How much of the variance is caused by using the resources that are different from the standards, i.e. the quantity variance.

(B) How much of the variance is caused by using the cost of the resources being different from the standards, i.e. the rate variance.

(C) All of the Above.

(D) None of the above

14. A factory operates at standard cost system, where 2,000 kgs of raw materials @ 12 per kg were used for a product, resulting in price variance of 6,000(F) and usage variance of 3,000(A). Then what will be the standard material cost of actual production?

(A) ₹ 3,000

(B) ₹ 21,000

(C) ₹ 30,000

(D) ₹ 27,000

15. XYZ Ltd is a manufacturing company involved in the production of automobiles. Information from its last budget period is as follows:

Actual production	2,75,000 Units
Budgeted Production	2,50,000 Units
Actual fixed production Overheads	₹ 52,60,00,000
Budgeted fixed production Overheads	₹ 50,00,00,000

Then fixed overhead volume variance and expenditure variance will be:

(A) ₹ 5,00,00,000 (A), ₹ 2,60,00,000 (F)

(B) ₹ 5,00,00,000 (F), ₹ 2,60,00,000 (F)

(C) ₹ 5,00,00,000 (F), ₹ 2,60,00,000 (A)

(D) ₹ 5,00,00,000 (A), ₹ 2,60,00,000 (A)

16. DM is a denim brand specializing in the manufacture and sale of hand-stitched jeans trousers. DM manufactured and sold 10,000 pairs of jeans during a period. Information relating to the direct labour cost and production time per unit is as follows:

	Actual Hours Per Unit	Standard Hours Per Unit	Actual Rate Per Hour	Standard Rate Per Hour
Direct Labour	0.65	0.60	₹ 120	₹ 100

During the period, 800 hours of idle time was incurred. In order to motivate and retain experienced workers, DM has devised a policy of paying workers the full hourly rate in case of any idle time.

Note: 0.65 hours per unit of actual time includes the idle time.

The idle time variance and labour efficiency variance will be:

(A) ₹ 80,000 (A), ₹ 30,000 (A)

(B) ₹ 80,000 (A), ₹ 30,000 (F)

(C) ₹ 80,000 (F), ₹ 30,000 (F)

(D) ₹ 80,000 (F), ₹ 30,000 (A)

17. Direct Labour Efficiency Variance is calculated by the formula:

(A) (SH-AH) SR

(B) (SH –AH) AR

(C) (SR-AR) SH

(D) (SQ-AQ) SR

18. Efficiency Ratio is

(A) Available working days/ Budgeted working days x 100

(B) Budgeted hours / Maximum hours in budgeted period x 100

(C) Standard hours / Actual hours x 100

(D) None of the above

19. Which of the following statements is correct?

(A) Standard costing facilitates the integration of accounts so that reconciliation between cost accounts and financial accounts may be eliminated.

(B) Standard costs are planned costs determined on a scientific basis and they are based upon certain assumed conditions of efficiency and other factors.

(C) Standard costing is defined as the preparation and use of standard costs, their comparison with actual cost and the measurement and analysis of variances to their cause and points of incidence.

(D) All of the above.

20. XYZ Ltd is a manufacturing company involved in the production of automobiles.

Information from its last budget period is as follows:

Actual production	2,75,000 Units
Budgeted Production	2,50,000 Units
Actual fixed production Overheads	₹ 52,60,00,000
Budgeted fixed production Overheads	₹ 50,00,00,000

Then fixed overhead volume variance and expenditure variance will be:

(A) ₹ 5,00,00,000 (A), ₹ 2,60,00,000 (F)

(B) ₹ 5,00,00,000 (F), ₹ 2,60,00,000 (F)

(C) ₹ 5,00,00,000 (F), ₹ 2,60,00,000 (A)

(D) ₹ 5,00,00,000 (A), ₹ 2,60,00,000 (A)

21. Which of the following may be the cause of Material Price Variance?

(A) Change in quantity of purchase or uneconomical size of purchase order.

(B) Failure to take advantage of off-season price or failure to purchase when price is cheaper.

(C) Change in basic purchase price of material

(D) All

22. A manufacturing company has the following information pertaining to a normal monthly production of 10,000 units of a product.

Standard factory overhead rates are based on a normal monthly volume of one standard direct hour per unit.

Standard factory overhead rates per direct labor hour are:

Fixed	₹ 6.00
Variable	₹ 10.00
	₹ 16.00
Units actually produced in current month	9,000 units
Actual factory overhead costs incurred	
(Includes ₹ 70,000 fixed)	₹ 156,000
Actual direct labor hours	9,000 hours

The variable overhead spending variance is

(A) ₹ 0

(B) ₹ 10,000 (F)

(C) ₹ 4,000 (F)

(D) ₹ 86,000 (A)

Answer

1. (B) ₹ 585 Adverse

   Standard quantity (SQ) = 75 employees/5,000 units × 5,500 units = 82.5 employees

   Standard price (SP) = 7500/75 employees = 100

   Standard cost (SQ × SP) = 82.5 × 100 = 8,250

   Actual cost = 8,085 Total Variance = 8250 – 8085 = 165 F

2. (D) ₹ 6.90

   Material Price Variance (MPV) = Standard cost of Actual Quantity – Actual Cost

   480 = 7.20 × 1,600 – Actual Cost

   or, Actual Cost = 11,520 – 480 = 11,040

   Actual Price / Unit = 11,040 ÷ 1,600 = ₹ 6.90.

3. (B) Standard Costing

   Because standard costing only involves the process described.

4. (C) 100 (A) and 200 (F)

   Variable O/H Cost variance = Recovered O/H – Actual O/H = 4200 – 4300 = 100(A)

   Fixed O/H Cost variance = 6300 – 6100 = 200 (F).

5. (D) 10,000

   Actual Cost + Favourable Cost Variance = Standard Cost

   1100 × 8 + 2200 – 1000 = 8800 + 1200 = 10,000

6. (A) ₹ 40,000 over absorbed

Overhead Absorption Rate = ₹ 3,30,000 / 2,20,000 units	= ₹ 1.50/unit
Overhead Absorbed : 2,00,000 @ 1.50	= ₹ 3,00,000
Actual overhead	= ₹ 2,60,000
Over absorbed overhead	= ₹ 40,000

7. (C) 2,200

   Labour Efficiency Variance = (ST – AT) × SR

   or, (2,000 – AT) × ₹ 8 = (–) ₹ 1,600

   or, AT = 7,600 ÷ 8 = 2,200 hours

8. (D) The higher the capacity utilization ratio

   $$\text{Capacity Utilization Ratio} = \frac{\text{Actual Hours}}{\text{Budgeted Hours}}$$

   So, the capacity utilization ratio would be higher.

9. (B) ₹ 40 (unfav.)

Direct Materials Mix Variance is: ₹ 40 (unfav.)

	SP (SQ – AQ)	
X	₹ 5 (120 – 112)	= ₹ 40 (fav.)
Y	₹ 10 (80 – 88)	= ₹ 80 (unfav)
		= ₹ 40 (unfav)

10. (A) Interrelated but not interdependent.

11. (C) Both (i) and (ii).

12. (D) All of the above.

13. (C) All of the above.

14. (D) ₹ 27000.

Total material cost variance = Material price variance + Material usage variance

= 6,000(F) + 3,000(A)

= 3,000(F)

Actual material cost = 2,000 x 12 = ₹24,000

Hence, the standard material cost of actual production = 24,000 + 3,000(F) = ₹27,000

15. (C) ₹ 5,00,00,000 (F), ₹ 2,60,00,000 (A)

$$\text{Fixed Overhead Absorption Rate} = \frac{\text{budgeted fixed overheads}}{\text{budgeted output}}$$

$$= \frac{50,00,00,000}{2,50,000 \text{ units}} = ₹\ 2,000 \text{ per unit}$$

Fixed Overhead Volume Variance:

Budgeted Fixed Overheads	₹ 50,00,00,000
Less: Absorbed Fixed Overheads (275000x2000)	₹ 55,00,00,000
Variance	₹ 5,00,00,000 (F)

The variance is favourable because XYZ Ltd. yielded a higher output than anticipated in the budget.

Fixed Overhead Expenditure Variance:

Actual fixed production overheads	₹ 52,60,00,000
Less: Budgeted fixed production overheads	₹ 50,00,00,000
Variance	₹ 2,60,00,000 (A)

The variance is adverse because XYZ Ltd. incurred greater expense than provided for in the budget.

16. (B) ₹ 80,000 (A), ₹ 30,000 (F)

(a) **Idle Time Variance:**

Idle time variance = number of idle hours x standard rate

= 800 hours x ₹ 100

= ₹ 80,000 (A)

(b) **Labour Efficiency Variance:**

Total Hours = 10,000 units x 0.65 hours per unit

= 6,500 hours.

Active Hours = 6,500 hours – 800 idle hours

= 5,700 hours.

Standard Cost of Active Hours	= Active Hours x Standard Rate
	= 5,700 hours x ₹ 100 per hour
	= ₹ 5, 70,000
Standard Hours	= 10,000 units x 0.60 hours per unit
	= 6,000 hours.
Standard Cost	= Standard Hours x Standard Rate
	= 6,000 hours x ₹ 100 per hour
	= ₹ 6, 00,000
Labour Efficiency Variance	= Standard Cost of Active Hours – Standard Cost
	= ₹ 5, 70,000 – ₹ 6, 00,000
	= ₹ 30,000 (F)

17. (A) (SH-AH) SR

18. (C) Standard hours / Actual hours x 100

19. (D) All of the above.

20. (C) ₹ 5,00,00,000 (F), ₹ 2,60,00,000 (A)

Fixed Overhead Absorption Rate = budgeted fixed overheads/budgeted output

= 50,00,00,000/2,50,000 units

= ₹ 2,000 per unit

Fixed Overhead Volume Variance:

Budgeted Fixed Overheads	₹ 50,00,00,000
Less: Absorbed Fixed Overheads (275000x2000)	₹ 55,00,00,000
Variance	₹ 5,00,00,000 (F)

The variance is favourable because XYZ Ltd. yielded a higher output than anticipated in the budget.

Fixed Overhead Expenditure Variance:

Actual fixed production overheads	₹ 52,60,00,000
Less: Budgeted fixed production overheads	₹ 50,00,00,000
Variance	₹ 2,60,00,000 (A)

The variance is adverse because XYZ Ltd. incurred greater expense than provided for in the budget.

21. (D) All

22. (C) ₹ 4,000 (F)

II. One word Answer

1. Net operator hours worked 1,920 hours, Standard hours produced 2,112, The budget provides the following information - No. of working days is 25 days, working hours per day 8 hours, No. of direct workers 16 hours, Down time 20%. Calculate the activity ratio.
2. The higher the actual hours worked, the capacity utilization ratio
3. What method includes the preparation and use of standard cost, their comparison with actual costs and the measurement and analysis of variances to originating causes?

Answer

1. Activity ratio = (SH/BH) x 100 = (2112/2560) x 100 = 82.5%
2. Higher
3. Standard Costing

Unit 2
Uniform Costing

I. Multiple Choice Questions

1. 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
2. Uniform costing is
   (A) a separate method of costing
   (B) a type of costing
   (C) a technique of costing
   (D) None of the above

Answer

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

   Though the entity is the same, different products using different (unique) process cannot follow uniform costing.
2. (C) a technique of costing

Chapter 4

Activity Based Cost Management -JIT and ERP

Unit 1

Activity Based Cost Management

I. Multiple Choice Questions

1. P operates an activity based costing (ABC) system to attribute its overhead costs to cost objects.

   In its budget for the year ending 31August 2017, the company expected to place a total of 2,895 purchase orders at a total cost of ₹ 1,10,010. This activity and its related costs were budgeted to occur at a constant rate throughout the budget year, which is divided into 13 four-week periods. During the four-week period ended 30 June 2016, a total of 210 purchase orders were placed at a cost of ₹ 7,650.

   The over-recovery of these costs for the four-week period was:

   (A) ₹ 330

   (B) ₹ 350

   (C) ₹ 370

   (D) ₹ 390

2. The following tasks are associated with ABC system:

   I. Allocation of costs to products II. Identification of cost pools

   III. Identification of cost drivers IV. Calculation of pool rates

   The proper order of the preceding tasks is:

   (A) III, II, IV, I

   (B) I, II, III, IV

   (C) III, IV, II, I

   (D) IV, III, II, I

3. A company uses traditional standard costing system. The inspection and set-up costs are actually ₹ 1,760 against a budget of ₹ 2,000. ABC system is being implemented and accordingly the number of batches is identified as the cost driver for inspection and set up. The budgeted production is 10,000 units in batches of 1,000 units whereas actually 9,000 units were produced in 11 batches. The cost per batch under ABC system will be

   (A) ₹ 160

   (B) ₹ 200

   (C) ₹ 180

(D) ₹ 220

4. A company manufactures two products using common material handling facility. The total budgeted material handling cost is ₹ 60,000. The other details are:

	Product X	Product Y
Number of Units Produced	30	30
Material moves per product line	5	15
Direct Labour hour per unit	200	200

Under activity based costing system the material handling cost to be allocated to product X (per unit) would be:

(A) ₹ 1,000

(B) ₹ 500

(C) ₹ 1,500

(D) ₹ 2,500

5. When allocation service department cost to production departments, the method that does not consider different cost behavior patterns is the

(A) Step method

(B) Reciprocal method

(C) Single rate-method

(D) Dual rate-method

6. A company operates an activity based costing (ABC) system to attribute its overhead costs to cost objects. In its budget for the year - ending 31st August, 2018. The company expected to place a total of 2000 purchase orders at a total cost of ₹ 1,00,000. This activity and its related costs were budgeted to occur at a constant rate throughout the budget year which is divided into 13 four week periods.

During the four week period ended 30th June 2017, a total of 200 purchase orders were placed at a cost of ₹ 9,000. The over recovery of these costs for the four week period was

(A) ₹ 2,000

(B) ₹ 3,000

(C) ₹ 1,500

(D) ₹ 1,000

7. AB company is a supermarket group that incurs the following costs:

(a) The bought-in price of the goods

(b) Inventory finance costs

(c) Self refilling costs

(d) Costs of repacking or 'pack out' prior to storage before sale

AB company's calculating of direct product profit (DPP) would include

(A) Costs (a) and (c) only

(B) All of the above cost except (b)

(C) All of the above costs except (d)

(D) All of the above costs

8. 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

9. Which of the following is not a correct match?

Activity	Cost Drivers
(A) Production scheduling	Number of production runs
(B) Dispatching	No. of Dispatch orders
(C) Goods receiving	Goods received order
(D) Inspection	Machine hours

10. Match the following:

1	Telephone Bill	a	Activities
2	Customer Service	b	Cost Driver
3	Telephone	c	Cost Pool
4	Number of Calls	d	Resources

The correct order is -

(A) A-3, B-2, C-1, D-4

(B) A-2, B-3, C-4, D-1

(C) A-2, B-3, C-1, D-4

(D) A-4, B-3, C-1, D-2

11. A company manufactures 500 units of product AX. Tthe material cost to manufacture is ₹ 150000, Labour cost ₹ 265000. Material reordering cost is ₹ 4500, Material handling cost is ₹2500

Material order – 35, Material movement – 20

Total Material cost under Activity based costing is.

(A) ₹ 554

(B) ₹ 4,22,000

(C) ₹ 1,57,000

(D) ₹ 1,084

12. Production overheads of XYZ Manufactures Pvt. Ltd. for 500 units of product X are Machine oriented activity cost: ₹ 135400

Material ordering overheads: ₹ 69570

Machine hours 1.50 hrs. per unit, No. of material orders are 6

Production of X requires raw material cost ₹ 300 per unit and labour cost ₹ 150 per unit. Total cost of X is

(A) ₹ 588

(B) ₹ 744.50

(C) ₹ 625

(D) ₹ 450

13. Process of Cost allocation under Activity Based Costing is

(A) Cost of Activities—Activities—Cost Driver – Cost allocated to cost objects

(B) Cost Driver — Cost of Activities— Cost allocated to cost objects -- Activities

(C) Activities— Cost of Activities—Cost Driver – Cost allocated to cost objects

(D) Activities—Cost Driver – Cost allocated to cost objects — Cost of Activities

14. Cost Driver is

(A) Grouping of costs on a particular activity which drives them

(B) Item for which cost measurement is required.

(C) Elements that would cause a change in the cost activity.

(D) All of the above

15. ABC Management

(A) Accurately identifies sources of profit and loss

(B) Assigns costs using measure of service consumed

(C) Recognizes the casual relationship of cost drivers to activities

(D) All of the above

16. When allocating service department costs to production departments, the method that does not consider different cost behaviour patterns is the

(A) Step method

(B) Reciprocal method

(C) Single-rate method

(D) Dual-rate method.

Answer

1. (A) ₹ 330

   Cost driver rate = Budgeted cost of orders/Budgeted number of orders = 1,10,000/2895 = 38 for each order

   Cost recovered : 210 orders × 38 = 7,980 Actual costs incurred =7650

   Over-recovery of costs for four-week period = 7980 - 7650 = 330.

2. (A) III, II, IV, I

   Because cost is allocated based on the cost pool rates. So, whole process starts with identification of cost drivers followed by identification of cost pools, determination of rates and then allocation.

3. (B) ₹ 200

   Number of batches under ABC = 9000 ÷ 1000 = 9

   Std. Cost under ABC = Budget Cost / Batch × ABC number of batches

   = ₹ 200 × 9 = ₹ 1800

Production	9000 Units
Number of batches	9
Cost /Batch	₹ 200

4. (B) ₹ 500

   Total moves in material handling = 5+15 = 20

   Percentage move for Product A = 5/20 = 25%

   Material handling cost to be allocated to Product A = ₹ 60,000/25% = ₹ 15,000

   i.e., ₹ 15,000/30 = ₹ 500 per unit.

5. (C) Single rate-method

   The single rate method combines fixed and variable costs without regard to cost behavior patterns. A and B do not exactly fit in with the given question as they can be used on a single or dual rare; and answer D allows variable costs to be allocated on different basis from fixed costs.

6. (D) ₹ 1,000

   For 2,000 purchase orders, cost budgeted is 1 lac.

   For 200, corresponding amount would be 10,000.

   But actual = 9,000. Hence over recovered is 10,000 – 9000 = 1000.

   Or

   Cost driver rate for order = 1,00,000 / 2,000 = 50 per order.

Cost recovered = 50 × 200 = 10,000.

Actual = 9,000

Over recovery = 1000

7. (D) All of the above costs

Because all of the costs mentioned can be identified with specific goods/product and would be deducted from the selling price to determine the direct product profit.

8. (D) ₹ 1,10,280

Indirect costs per machine: ₹

Material handling	₹ 8 × 50	= 400
Machining	₹ 68 × 12	= 816
Assembly	₹ 75 × 15	= 1,125
Inspection	₹ 104 × 4	= 416
		= 2,757

For the order: ₹ 2,757 × 40 = ₹ 1,10,280

9. (D) Inspection, Machine hours

Inspection hours, and not machine hours, drive the cost of inspection.

10.

1	Telephone Bill	c	Cost Pool
2	Customer Service	a	Activities
3	Telephone	d	Resources
4	Number of Calls	b	Cost Driver

11. (C) ₹ 1,57,000

Material Cost under Activity Based Costing is

Material cost – ₹ 1, 50,000

Material reordering cost- ₹ 4500

Material Handling Cost- ₹ 2500

Total Material Cost- ₹ 1, 57,000

12. (B) ₹ 744.50

Computation of Cost per Unit of Product X

Overheads cost per unit

Machine Hours = 1.5 x 500 = 750

Machine oriented activity cost = ₹ 1,35,400

Machine Oriented Cost per Hr. = (135400 / 750) = ₹181

Machine Oriented Cost per Unit = (₹181 X1.5) = 271.50

Material Ordering Nos. = 6 x 500 = 3000

Material Ordering Cost = ₹ 69,570

Material Ordering Cost per Unit = (69570 / 3000) = ₹23

Total Cost of Product x is

Raw Material cost	₹ 300
Labour cost	₹ 150
Machine Oriented Cost	₹ 271.50
Material Ordering Cost	₹ 23
Total Cost	₹ 744.50

13. (C) Activities – Cost of Activities – Cost Drivers – Cost Allocated to cost Objects
14. (B) Elements that would cause a change in the cost activity
15. (D) All of the above
16. (C) Single Rate Method

Unit 2

Just in Time (JIT)

I. Multiple Choice Questions

1. Which of the following is not suitable for a JIT production system?

   (A) Batch production

   (B) Jobbing production

   (C) Process production

   (D) Service production

2. Stock Control data for Material P are:

   Annual usage: 3600 units; Cost per unit: ₹ 100; Cost of placing an order: ₹ 40; Stockholding Cost: 20% of the overall stock volume; Lead time: One month The EOQ based on the above data is:

   (A) 210 units

   (B) 175 units

   (C) 90 units

   (D) 120 units

3. Nulook Ltd. Uses a JIT system and back flush accounting. It does not use a raw material stock control account During May, 8000 units were produced and sold. The standard cost per unit is ₹ 100; this includes materials of ₹ 45. During May, ₹ 4,80,000 of conversion costs were incurred.

   The debit balance on cost of goods sold account for May was

   (A) ₹ 8,00,000

   (B) ₹ 8,40,000

   (C) ₹ 8,80,000

   (D) ₹ 9,20,000

4. Kanban Japanese System under JIT approach ensures that

   (A) Continuous supply of inventory or product

   (B) Minimum & maximum level of stock to be maintained

   (C) Inventory valuation

   (D) All of the above

5. JIT relates to
   (A) Time Management
   (B) Inventory and product handling
   (C) Delivery systems
   (D) None of the above
6. The operational activity of setting up equipment is classified as a
   (A) unit-level activity.
   (B) facility-level activity.
   (C) batch-level activity.
   (D) product-level activity.

Answer

1. (A) Batch production

   Batch production uses stocks to supply customers whilst other products are being produced. Stocks are avoided in a JIT system. Jobbing production makes products to customer order and is ideal for JIT.

2. (D) 120 units

   120 units as per the following computation:

   EOQ = $\sqrt{2AB/C}$, where

   A = Annual Requirement of the material = 3,600 units.

   B = Buying or Ordering Cost /Order = ₹ 40.

   C = Carrying or Stockholding Cost per unit per annum = ₹ 100 × 20%

   EOQ = $\sqrt{2}$ x 3,600 x 40/20 =120 units.

3. (B) ₹ 8,40,000

	₹
Cost of goods sold	8,00,000
(Less) Material Cost	(3,60,000)
Conversion Cost Allocated	4,40,000
Conversion Cost incurred	4,80,000
Excess charged to cost of goods sold account	40,000

   Total debit on cost of goods sold account = ₹ 8,00,000 + ₹ 40,000 = ₹ 8,40,000

4. (A) Continuous Supply of Inventory or Product
5. (B) Inventory and product handling
6. (C) batch-level activity.

Unit 3

Enterprise Resource Planning (ERP)

I. Multiple Choice Questions

1. Enterprise Resource Planning is
   (A) An accounting software
   (B) Software that integrates all the departments and functions across the company
   (C) Engineering drawing software
   (D) Software used to track the weighbridge record

Answer

1. (B) Software that integrates all the departments and functions across a company

Unit 4

Bench Marking

I. Multiple Choice Questions

1. Bench marking is
   (A) A continuous process
   (B) The practice of setting targets using external information
   (C) Method to provide performance assessment
   (D) All of the above

Answer

1. (D) All of the above

Chapter 5

Cost of Quality and Total Quality Management

Unit 1

Total Quality Management (TQM)

I. Multiple Choice Questions

1. TQM stands for
   (A) Technical Quantitative Management
   (B) Total Quality Management
   (C) Theory of Queuing Management
   (D) None of the Above
2. Four Ps of Total Quality Management
   (A) Principles, Project, Problem, & Process
   (B) People, Process, Problem & Preparation
   (C) Product identification, Product quality, Product utility & Product expectation
   (D) None of the above

Answer

1. (B) Total Quality Management
2. (B) People, Process, Problem & Preparation

Unit 2
Praise Analysis

I. Multiple Choice Questions

1. PRAISE stands for
   (A) Appreciating someone
   (B) Product, Recognition, Adoption, Invention, Solution & Evaporation
   (C) Problem Identification, Ranking, Analysis, Innovation, Solution & Evaluation
   (D) None of the above

Answer

1. (C) Problem Identification, Ranking, Analysis, Innovation, Solution & Evaluation

Unit 3
Six Sigma

I. Multiple Choice Questions

1. Six Sigma is about
   (A) Quality systems
   (B) Quality control process
   (C) Statistical technique
   (D) None of the above
2. DMIADV is a methodology associated with
   (A) Pareto Analysis
   (B) PRAISE
   (C) Six Sigma
   (D) None of the above
3. Six Sigma has two key methodologies. These are:
   (A) DMACI and DMIADV
   (B) DMACI and DMAIDV
   (C) DMAIC and DMAIDV
   (D) DMAIC and DMIADV
4. Match the following:
   (A) Dr. Deming believes (1) Common Causes
   (B) Ishikawa Development (2) To prevent defect
   (C) Type of variation is due to (3) Cause & Effect diagram
   (D) Crosby's Objective of quality (4) Histogram

   The correct order is
   (A) A-3, B-2, C-1, D-4
   (B) A-2, B-3, C-4, D-1
   (C) A-2, B-3, C-1, D-4
   (D) A-4, B-3, C-1, D-2

Answer

1. (A) Quality systems
2. (C) Six Sigma
3. (D) DMAIC and DMIADV
4. (C) A-2, B-3, C-1, D-4

Unit 4

Pareto Analysis

I. Multiple Choice Questions

1. Pareto analysis recognizes
   (A) 80:20 Rule
   (B) 50:50 Rule
   (C) 20:80 Rule
   (D) None of the above

Answer

1. (A) 80:20 Rule

Unit 5
Quality Costs

I. Multiple Choice Questions

1. 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

2. Cost of Rework is a cost related to

   (A) Internal failure

   (B) Appraisal

   (C) Prevention

   (D) None of the above

3. The cost incurred to ensure that failures do not happen

   (A) External failure cost

   (B) Internal failure cost

   (C) Prevention cost

   (D) None of the above

4. Which of the following is not a quality parameter for service organizations?

   (A) Consistency

   (B) Friendliness

   (C) Durability

   (D) Promptness

5. A factory is setting up a special inspection at the supply point of raw materials at ₹ 80,000. Consequent to this, there is lesser number of returns from customers. These goods used to be sold for ₹ 1,00,000 and variable costs are ₹ 80,000. The change in quality costs are

(A) Decrease by ₹ 80,000

(B) Decrease by ₹ 60,000

(C) Decrease by ₹ 20,000

(D) No change

6. Liability claims is an example of

(A) prevention costs.

(B) appraisal costs.

(C) external failure costs.

(D) internal failure costs.

Answer

1. (B) ₹ 6,000

Original price is not relevant

Rework income	₹ 36,000
Less: Cost of rework	₹ 20,000
Net inflow	₹ 16,000, it is relevant

The other alternative relevant cash flow is from sale as scrap = ₹ 6,000

Hence the opportunity cost is ₹ 6.000.

2. (A) Internal failure

3. (C) Prevention cost

4. (C) Durability

Opportunity Cost of Project B is ₹ (50,00,000 – 30,00,000) = ₹ 20,00,000

5. (D) No change

6. (A) Prevention costs

Chapter 6

Application of Operation Research and Statistical Tools in Strategic Decisions Making

Unit 1
Learning Curve

I. Multiple Choice Questions

1. For a Learning Curve percentage of 72%, the time to be taken to complete the 4th unit of a 12-unit job involved in the assembly line, if the initial unit requires 80 hours, will be

   (A) 43.50 hrs

   (B) 41.47 hrs

   (C) 46.71 hrs

   (D) 40.95 hrs

2. If the direct labour cost is reduced by 20% with every doubling of output, what will be the cost of labour for the sixteenth unit produced as an approximate percentage of the cost of the first unit produced?

   (A) 51.2%

   (B) 40.96%

   (C) 62%

   (C) None of these

3. If the time taken to produce the first unit of a product is 4000 hrs, what will be the total time taken to produce the 5th to 8th unit of the product, when a 90% learning curve applies?

   (A) 10,500 hours

   (B) 12,968 hours

   (C) 9,560 hours

   (D) 10,368 hours

4. A Ltd., developing a new product, makes a model for testing and goes for regular production. From past experience of similar models, it is known that a 90% learning curve applies. If the time taken to make the model is 300 hours, what will be the total time taken to produce 3rd to 4th unit of the product?

   (A) 540 hours

   (B) 486 hours

   (C) 432 hours

(D) None of the above

5. ASHLIN LTD., has developed a new product just complete the manufacture of first four units of the product. The fist unit took 2 hours to manufacture and the first four units together took 5.12 hours to produce. The Learning Curve rate is

   (A) 83.50%

   (B) 80.00%

   (C) 75.50%

   (D) None of (A), (B) or (C)

6. An operation has a 90% learning curve and the first unit produced took 28 minutes. The labour cost is ₹ 20 per hour. How much should the second unit cost?

   (A) ₹ 9.80

   (B) ₹ 7.60

   (C) ₹ 8.40

   (D) ₹ 6.60

7. S Ltd. manufactures a product whose time for the first unit is 1000 hours. It experience a learning curve of 80%, What will be the total time taken in hours for unit 5 to 8?

   (A) 4096 hours

   (B) 3200 hours

   (C) 1536 hours

   (D) 2000 hours

8. X is a factory making a certain product where learning curve ratio of 80% and 90% apply respectively for two equally paid workers, A and B

   (A) The labour cost of manufacturing the 4th product will be more for A

   (B) The labour cost of manufacturing the 4th product will be more for B

   (C) The labour cost is the same for the fourth product

   (D) Nothing can be said about the specific product since learning applies ratio to the average quantity of the product

9. Learning curve theory is based on the idea that

   (A) Maximum efficiency can be achieved in the beginning

   (B) Maximum efficiency cannot be achieved in the beginning

   (C) Maximum efficiency cannot be achieved

   (D) None of the above

10. In Learning Curve theory relationship between labour cost per unit and cumulative production are

    (A) Directly proportional

(B) Inversely proportional

(C) No relationship at all

(D) None of the above

11. If the first time you perform a job takes 60 minutes, how long will the eighth job take if you are on an 80% learning curve?

(A) 48 minutes

(B) 30.72 minutes

(C) 31 minutes

(D) None of the above

12. ABC Ltd. has developed a new product just complete the manufacture of first four units of the product. The first unit took 2 hours to manufacture and the fits four units together took 5.12 hours to produce. The Learning Curve rate is

(A) 83.50%

(B) 80.00%

(C) 75.50%

(D) None of the above

13. A learning curve is a function

(A) where unit costs increase as productivity increases.

(B) that increases at a greater rate as workers become more familiar with their tasks.

(C) that is linear.

(D) that measures the decline in labour-hours per unit due to workers becoming better at a job.

14. To complete the first setup on a new machine took an employee 200 minutes. Using an 80% incremental unit-time learning model indicates that the second setup on the new machine is expected to take

(A) 120 minutes.

(B) 160 minutes.

(C) 60 minutes

(D) 80 minutes.

Answer

1. (B) 41.47 hrs

At 72% Learning Curve, T-4 - Time taken by the 4th Unit = 80 (.72)(.72) = 41.47 hrs.

Note: In the arithmetic method followed above, every time the number the number of repetitions doubles, the time to perform the activity is reduced by the Learning Curve Coefficient.

2. (B) 40.96%

Units	Average Time (hours)
1st	100%
2nd	80% x 100%
4th	80% of 2nd
8th	80% of 4th
16th	80% of 8th = 0.80 x 0.80 x 0.80 x 0.80 = 40.96%

Say, 41% of the time required for the 1st Unit.

3. (D) 10,368 hours

Units	Average Time (hours)	Total Time (hours)
1	4000	4000
2	3600	7200
4	3240	12960
8	2916	23328

Total Time for 5th to 8 units = 23328 – 12960 = 10,368 hrs.

4. (C) 432 hours

Cumulative Output	Average Time / Unit (hrs)	Total Time (hrs)	Incremental Time (hrs)
1	300	300	
2	270 (0.9 x 300)	540	
3	243 (0.9 x 270)	972	432 (972 – 540)

5. (B) 80.00%

Let the learning rate be x.

Since the first unit took 2 hours, average time for the first two units = 2x and the average time for the first 4 units = $2x \times x = 2x^2$.

6. (B) ₹ 7.60

1st unit = 28 min.

Average time p.u. for 2 units = 0.9 × 28 = 25.2

Total time for 2 units = 25.2 × 2 = 50.4

Time for second unit = 50.4 – 28 = 22.4 minutes

Cost for second unit = 22.4 × 20 ₹/hr./60 minutes = 7.47

Since, (B) is close to 7.47, b is acceptable. Otherwise, none of the given data.

7. (C) 1536 hours

As per the following :

At 80% Learning Curve, the total time for 8 units will be 8*512 i.e. 4096 hours and for 4

units it is 4*640 i.e. 2560 hours. Hence the time taken for units 5 to 8 will be 1536 (4096 – 2560)

8. (B) The labour cost of manufacturing the 4th product will be more for B

9. (B) Maximum efficiency cannot be achieved in the beginning

10. (B) Inversely proportional

11. (B) Three doublings from 1 to 2 to 4 to 8 implies .83.
Therefore, we have $60 \times (.8)3 = 60 \times .512 = 30.72$ minutes

12. (B) 80%

Let the learning rate be x. Since the first unit took 2 hours, average time for the first two units = 2x and

The average time for the first 4 units = $2x \times x = 2x^2$.

$2x^2$ $= 5.12 \div 4 = 1.28.$

Or, x $= \sqrt{1.28} \div 2 = \sqrt{0.64}$

$= 0.80$ i.e. 80%.

13. (D) that measures the decline in labor-hours per unit due to workers becoming better at a job.

14. (A) 120 minutes.

Unit 2

Linear Programming

I. Multiple Choice Questions

1. Linear Programming is a technique for
   (A) Optimization
   (B) Minimization
   (C) Maximization
   (D) None of These
2. Which of the following is a valid constraint for a linear programming problem?
   (A) $3x2 + 4x + 1 = 0$
   (B) $5xt + 2x2 \leq 10$
   (C) $4xx + 3x2 > 7$
   (D) $(12x1 + 4x2)/3x2 \leq 8x1$

Answer

1. (A) Optimization
2. (B) $5xt + 2x2 \leq 10$

   Other options do not conform to linearity or fundamental of constraints.

Unit 3
Transportation

I. Multiple Choice Questions

1. Hungarian method is a way to solve problem related to
   (A) Transportation
   (B) Assignment
   (C) Learning Curve
   (D) None of These
2. Which of the following is not a method to solve Transportation problems
   (A) Least Cost Method
   (B) NWC Method
   (C) Hungarian Method
   (D) VA Method
3. Least Cost Method is a way to solve problem related to
   (A) Linear Programming
   (B) Assignment
   (C) Transportation
   (D) All of these
4. In a transportation matrix (where Ri are rows and Cj are columns), the second allocation under the North West Corner Rule can be
   (A) R1C2
   (B) R1C3
   (C) R2C3
   (D) None of these

Answer

1. (B) Assignment
2. (C) Hungarian Method
3. (C) Transportation
4. (A) R1C2

Unit 4 Simulation

I. Multiple Choice Questions

1. Simulation is
   (A) An analysis & modeling tool
   (B) Manufacturing System
   (C) Quality control Mechanism
   (D) None of these
2. Which of the following is not a type of simulation
   (A) Behavioural simulation
   (B) Functional simulation
   (C) Pareto Analysis
   (D) Static timing analysis
3. Simulation may be applied to:
   (A) Bricklaying
   (B) Scheduling aircraft
   (C) Paper manufacturing
   (D) Toy manufacturing

Answer

1. (A) An analysis & modeling tool
2. (C) Pareto Analysis
3. (B) Scheduling aircraft

Unit 5

Network Analysis – CPM/PERT

I. Multiple Choice Questions

1. Which of the following is correct in the context of network analysis?

   (A) There can be one or more activities without a predecessor in a network

   (B) Where two activities have the same start and end events, the end event of one activity is numbered differently and then connected by a dummy to the original start event

   (C) When crashing is carried out, the non-critical paths have to remain non critical

   (D) If the critical path is longer than the other paths, the project may be completed by using a path having a shorter duration

2. In the context of Critical Path Analysis, the portion of the float of an activity which cannot be consumed without affecting adversely the float of the subsequent activities is called

   (A) Free float

   (B) Interfering float

   (C) Independent float

   (D) Total float

3. In CPA (Critical Path Analysis) which of the following is not a correct step in sequence?

   (A) Understanding the logic of the system under consideration

   (B) Constructing the net work

   (C) Providing estimates for activity duration

   (D) Implementing and controlling the net work

4. 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

5. In a PERT network, the optimistic time for a particular activity is 9 weeks and the pessimistic time is 21 weeks. Which one of the following is the best estimate of the standard deviation for the activity?

   (A) 12

   (B) 9

   (C) 6

   (D) 2

6. Identify the correct statement in the context of network analysis:

   (A) There can be one or more activities without a predecessor in a network

   (B) Where two activities have the same start and end events, the end event of one activity is numbered differently and then connected by a dummy to the original start event

   (C) When crashing is carried out, the non-critical paths have to remain non critical

   (D) If the critical path is longer than the other paths, the project may be completed by using a path having a shorter duration.

7. The following will be the appropriate action to finish a project early

   (A) Crash activities on the non critical path so that they become critical

   (B) Crash activities on the non critical paths so that they remain non critical

   (C) Crash activities on the critical path so that they become non critical

   (D) Crash activities on the critical paths such that the critical paths remain critical

Answer

1. (A) There can be one or more activities without a predecessor in a network.

   More than 1 activity can begin at the first node, say 1 – 2, 1 – 3, 1 – 4, etc.

   Each of these will have no predecessor.

2. (B) Interfering float

   Interfering float is that part of the total float which causes a reduction in the float of the successor activities. It is the difference between the latest finish time of the activity in question and the earliest starting time of the following activity or zero, whichever is larger.

3. (D) Implementing and controlling the net work

   Because step no. 4 i.e. (d) should be satisfying the objectives. Implementing and controlling the network would be the final step.

4. (D) ₹10

   Change in Costs (B – A) = ₹ 50,000

Change in Units (B – A) = ₹ 5,000

VC per unit = ₹50, 000 ÷ 5,000 = ₹ 10

Total Cost at A = ₹ 1,00,000

VC : 5,000 × ₹ 10 50,000

Total FC ₹ 50,000 ÷ 5,000 units

= ₹10 per unit

5. (D) 2
   Standard Deviation equals (pessimistic time minus optimistic Time) / 6 that is
   21 – 9 / 6 = 2.

6. (B) The labour cost of manufacturing the 4th product will be more for B
   The labour cost of manufacturing the 4th product will be more for B since B will take more time per unit of product.

7. (D) Crash activities on the critical paths such that the critical paths remain critical

I. One Word Answer

1. What is interfering float in the context of critical path analysis?

Answer

1. Interfering float is that part of the total float which causes a reduction in the float of the successor activities.