

Suggested Answer_Syl12_Dec2015_Paper 10

INTERMEDIATE EXAMINATION GROUP II (SYLLABUS 2012)

SUGGESTED ANSWERS TO QUESTIONS DECEMBER 2015

Paper-10: COST & MANAGEMENT ACCOUNTANCY

Time Allowed : 3 Hours

Full Marks : 100

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

Note carefully:

This Question paper has been divided into 4 parts.

- You are required to answer Question No. 1, which is *compulsory* (Carrying 20 Marks).
- From Section-A: Cost & Management Accounting - Methods & Techniques, you are to answer any *two* Questions, each carrying 20 marks.
- From Section-B: Cost Records & Cost Audit, you are to answer any *two* Questions, each carrying 8 marks.
- From Section-C: Economics for Managerial Decision Making, you are to answer any *three* Questions, each carrying 8 marks.

COMPULSORY QUESTION

1. Answer all questions: 2×10=20

- (a) Product Z has a P/V ratio of 28%. Fixed operating costs directly attributable to Product Z during the 2nd Quarter of the financial year will be `2,80,000. Calculate the Sales Revenue required to achieve a quarterly profit of ` 70,000.
- (b) X Ltd., produces and markets 3 products-Chairs, Tables and Benches. The company is interested in presenting its budget for the next quarter ending 31st March. It expects to sell 4,200 Chairs, 800 Tables and 500 Benches during the said period at the selling price of ` 50, ` 85 and ` 158 per unit. The following information is made available for this purpose:

Inventory Levels planned:

Particulars	Chairs (Nos.)	Tables (Nos.)	Benches (Nos.)
Opening Stock	400	100	50
Closing Stock	200	300	50

Prepare the Production Budget for the Quarter ending 31st March.

- (c) Following details relating to product X during the month of April are available:

Standard cost per unit of X: Materials: 50kg at ` 40/kg.

Actual production: 100 units. Material Price Variance = ` 9,800 (Adverse)

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Actual Materials cost: ₹ 42/kg. Material Usage variance = ₹ 4,000 (Favourable)

Calculate the actual quantity of materials used during the month of April.

- (d) The budgeted annual sale of a firm is ₹ 80 lakhs and 25% of the same is cash sales. If the average amount of debtors of the firm is ₹ 5 lakhs, what will be the average collection period of credit sales?
- (e) The following information is given for the next year:
 Budgeted Sales – 5,00,000 units.
 Finished Goods: Closing Stock – 1,50,000 units; Opening Stock – 80,000 units.
 Equivalent units of WIP: Closing Stock – 60,000 units; Opening Stock – 50,000 units.
 Calculate the number of equivalent units produced.
- (f) What is the form for intimation of appointment of Cost Auditor by the company to the Central Government, as per the Companies (Cost records and Audit) Rules, 2014?
- (g) What are the applicability criteria for Cost audit, as per the Companies (Cost records and Audit) Rules, 2014?
- (h) Which rules govern maintenance of cost accounting records and cost audit as per Section 148 of the Companies Act, 2013?
- (i) The cost function of a firm is given by $c = x^3 - 4x^2 + 7x$, find at what level of output average cost is minimum.
- (j) What is “Skimming Price Policy”?

Answer:

1. (a) Required Sales = Desired Contribution/P/V Ratio = Fixed Cost + Desired Profit/P/V Ratio
 $= 2,80,000 + 70,000/28\% = ₹ 12,50,000$

(b) Production Budget

Particulars	Chairs (units)	Tables (units)	Benches (units)
Budgeted Sales Quantity	4,200	800	500
Add: Closing Stock of Finished Goods	200	300	50
Sub-total	4,400	1,100	550
Less: Op. Stock of Finished Goods	400	100	50
Budgeted Production Quantity	4,000	1,000	500

(c) Material Price Variance = $AQ \times SP - AQ \times AP = AQ (SP - AP)$

Or 9,800 (A) = $AQ \times (\text{₹} 40 - \text{₹} 42)$

Or $-9,800 = -2 \times AQ$ or $AQ = 4,900$ kg.

(d) Credit sale = ₹ 80 – ₹ 20 = ₹ 60 lakhs

Hence, Avg. collection period = Debtors/Credit sales per month

$= 5/(60/12) = 5/5 = 1$ month.

(e) Sales + Closing Stock – Opposite Stock = Production

FG: $5,00,000 + 1,50,000 - 80,000 = 5,70,000$ Units

WIP: $+ 60,000 - 50,000 = 10,000$ Units

Units Number of equivalent units produced = 5,80,000 Units

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(f) Form No. CRA-2 is the form for intimation of appointment of Cost Auditor by the company to the central government, as per the Companies (Cost Records and Audit) Rules 2014.

(g) Applicability criteria for Cost Audit, as per the Companies (Cost Records and Audit) Rules 2014:

Even for regulated sector like Tele-communication, Electricity, Petroleum and Gas, Drugs and Pharma, Fertilizers and Sugar, Cost Audit requirement has been made subject to a turnover based threshold of `50 Crores for all products and services and `25 Crores for individual products and services. For non-regulated sector, the threshold is `100 Crores and `35 Crores respectively.

(h) The Central Government issued Companies (Cost Records and Audit) Rules, 2014 on June 30, 2014. Subsequently, it issued Companies (Cost Records and Audit) Amendment Rules, 2014 on December 31, 2014. The Amendment Rules has introduced certain changes to the original Rules issued on June 30, 2014. The Companies (Cost Records and Audit) Rules, 2014 read with the Amendment Rules, 2014 are now applicable and governs the maintenance of cost accounting records and cost audit as per section 148 of the Companies Act, 2013.

(i) Total cost = $x^3 - 4x^2 + 7x$

Average cost $y = x^2 - 4x + 7$

In order that average cost is minimum, $\frac{dy}{dx} = 0$ and

The value of $\frac{dy}{dx} = 2x - 4 = 0$

or, $x - 2 = 0$

$x = 2$

$\frac{d^2y}{dx^2} = 2$, which is positive, so that the function can have minimum values.

Minimum Average cost = $x^2 - 4x + 7 = 4 - (4 \times 2) + 7 = 11 - 8 = 3$

(j) **Skimming Price Policy:** When the product is new and a novelty and with a high degree of consumer acceptability, the firm may decide to charge a high mark up and therefore, charge a high price. This system of charging high prices for new products is known as price skimming for the object is to "skim the cream" from the market.

SECTION A

Cost & Management Accounting – Methods & Techniques

You are to answer any two questions, each carrying 20 marks out of the three questions given.

2. (a) The following data relates to a manufacturing company:

Plant Capacity = 4,00,000 units per annum. Present Utilization = 40%

Actual for the year 2014 were:

Selling price = ` 50 per unit, Material cost = ` 20 per unit,

Variable Manufacturing costs = ` 15 per unit and Fixed cost = ` 27,00,000.

In order to improve capacity utilization, the following proposal is considered:

Reduce Selling price by 10% and spend additionally `3,00,000 in Sales Promotion.

How many units should be produced and sold in order to increase profit by ` 8,00,000 per year?

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- (b) From the following particulars, find the most profitable Product – mix and prepare a statement of profitability of that Product-mix.

Particulars	Product – A	Product – B	Products - C
Budgeted Production (units)	4,000	5,000	1,500
Selling Price/unit (₹)	60	55	50
Requirement/unit:			
Direct Material (kg)	5	3	4
Direct Labour (Hours)	4	3	2
Variable Overhead (₹)	7	13	8
Fixed Overhead (₹)	5	10	15
Cost of Direct Material/kg (₹)	4	4	4
Direct Labour hour-rate (₹)	2	2	2

All the 3 Products are produced from the same Direct Material, using the same type of Machines and Labour.

Direct labour is the key-factor, which is limited to 18,600 Hours.

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Answer:

2. (a)

A.	Let the desired sales (in units)	x
B.	Revised SP (₹ 50 less 10%) = (50 – 5)	= ₹ 45/unit
C.	Total Sales (A × B)	= 45x
D.	Less: Variable Cost:	
	Material cost @ ₹ 20 = 20x	
	Variable Mfg. cost @ ₹ 15 = 15x	35x
E.	Revised Contribution (C) – (D) =	10x
F.	Less: Total Fixed Costs:	
	Present Fixed cost ₹ 27,00,000	
	Addl. Promotion Exp. ₹ 3,00,000	30,00,000
G.	Profit (E – F) =	10x – 30,00,000

$10x - 30,00,000 = ₹ 5,00,000$ (Desired Profit) See note ii below.

$10x = ₹ 35,00,000$ or $x = 3,50,000$ units.

Working Notes:

i. Existing Loss = Sales – Variable costs – Fixed Cost.
 $= (4,00,000 \times 40\% \times 50) - (4,00,000 \times 40\% \times 35) - ₹ 27,00,000$
 $= ₹ 3,00,000$

ii. Desired Profit = ₹ 8,00,000 – ₹ 3,00,000 = ₹ 5,00,000

3,50,000 units should be produced and sold to increase profit by ₹ 8,00,000

2. (b) Statement showing contribution/labour hrs (Key factor)

Particulars	Product-A (₹)	Product-B (₹)	Product-C (₹)
a. Selling Price/unit	60	55	50

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b. Variable Cost/unit			
Direct Material Cost (₹ 4/kg)	20	12	16
Direct Labour Cost (₹ 2/hr)	8	6	4
Variable Overhead	7	13	8
Total(b)	35	31	28
c. Contribution/unit =(a)-(b)	25	24	22
d. Direct Labour hrs/unit (key factor)	4hrs	3hrs	2hrs
e. Contribution/Labour hrs(c) ÷ (d)	25/4 =6.25	24/3 = 8	22/2 =11
f. Ranking	III	II	I

Direct Labour hr is the key factor, which is limited to 18,600 hrs.

The available 18,600 Labour hrs are utilized to produce 3 Products in order of the above rank assigned. The details of the products to be produced, keeping in view of the available labour hrs and their ranking are as follows:

Product	Ranking	Units to be Produced	Labour hrs/ Unit	Total Labour hrs.
C	I	1,500	2 hrs	3,000 hrs
B	II	5,000	3 hrs	15,000 hrs
A	III	150(Bal. fig)	4 hrs	600 hrs
				18,600 hrs

Profitability Statement based on most profitable product-mix

Product Mix	Units to be produced	Contribution/unit (₹)	Total (₹)
Product- A	150	25	3,750
Product- B	5,000	24	1,20,000
Product- C	1,500	22	33,000
		Total Contribution	1,56,750
Less: Fixed Cost (Based on Budgeted Prodn.)			
Product-A (4,000 units @ ₹ 5) = 20,000			
Product-B (5,000 units @ ₹ 10) = 50,000			92,500
Product-C (1,500units @ ₹ 15) = 22,500			Profit = 64,250

3. (a) CT Ltd. provides you the following information:

Production capacity	Costs and sales At 80%	(₹ Lakhs) At 60%
Direct Material	2.00	1.50
Direct Labour	2.00	1.50
Direct Expenses	1.60	1.20
Production overheads	4.00	3.85
Administrative overheads	4.00	3.80
Selling & Distribution overheads	4.00	3.75
Sales	20.00	15.00

Required: Draw up a Flexible Budget at 90% capacity.

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(b) A product passes through three processes – A, B and C. 10,000 units at a cost of ₹ 1.10 were issued to process A. The other direct expenses were as follows:

	Process A	Process B	Process C
Sundry materials	1,500	1,500	1,500

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Direct Labour	4,500	8,000	6,500
Direct Expenses	1,000	1,000	1,503

The wastage of process A was 5% and in process B 4%.

The wastage of process A sold at ₹ 0.25 per unit and that of B at ₹ 0.50 per unit and that of C at ₹ 1.00 per unit.

The overhead charges were 160% of direct labour.

The final product was sold at ₹ 10 per unit, fetching a profit of 20% on sales.

Find out the percentage of wastage in process C.

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Answer:

3. (a) Working Notes:

STATEMENT SHOWING THE CALCULATION OF FIXED AND VARIABLE EXPENSES

A Particulars	B Variable Costs at 20%	C = B × 80/20 Variable Costs at 80%	D = Total Cost at 80%	E = D-C Fixed Cost
Direct Material	0.50	2.00	2.00	Nil
Direct Labour	0.50	2.00	2.00	Nil
Direct Expenses	0.40	1.60	1.60	Nil
Prod. Overheads	0.15	0.60	4.00	3.40
Admin. Overheads	0.20	0.80	4.00	3.20
Selling & Distribution Overheads	0.25	1.00	4.00	3.00
Total	2.00	8.00	17.60	9.60

Flexible Budget (in lakhs of Rupees)

Particulars		Capacity Level		
		60%	80%	90%
A.	Sales	15.00	20.00	22.50
B.	Variable cost of sales:			
	Direct Material	1.50	2.00	2.250
	Direct Labour	1.50	2.00	2.250
	Direct Expenses	1.20	1.60	1.800
	Prod. Overheads	0.45	0.60	0.675
	Admin. Overheads	0.60	0.80	0.900
	Selling & Distribution Overheads	0.75	1.00	1.125
		6.00	8.00	9.000
C.	Contribution (A – B)	9.00	12.00	13.50
D.	Fixed costs:			
	Prod. Overheads	3.40	3.40	3.40
	Admin Overheads	3.20	3.20	3.20
	Selling & Distribution Overheads	3.00	3.00	3.00
		9.60	9.60	9.60
E.	Profit (C – D)	(0.60)	2.40	3.90

3. (b) **Process – A- Account**

Particulars	Units	`	Particulars	Units	`
To Material introduced A/c	10,000	11,000	By Normal Loss A/c (10,000 × 5%) × 0.25	500	125

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To Additional Material A/c		1,500	By transfer to Process – B A/c @ `2.64 per unit	9,500	25,075
To Direct Labour A/c		4,500			
To Direct Expenses A/c		1,000			
To Overhead A/c		7,200			
	10,000	25,200		10,000	25,200

Process –B- Account

Particulars	Units	`	Particulars	Units	`
To Transfer from Process – A A/c	9,500	25,075	By Normal Loss A/c (9,500 × 4%) × 0.50	380	190
To Direct Material A/c		1,500	By Transfer to Process – C A/c @ `5.283 per unit	9,120	48,185
To Direct Labour A/c		8,000			
To Direct Expenses A/c		1,000			
To Overhead A/c		12,800			
	9,500	48,375		9,500	48,375

Process –C- Account

Particulars	Units	`	Particulars	Units	`
To Transfer from Process - B A/c	9,120	48,185	By Normal Loss A/c	696	696
To Direct Material A/c		1,500	By transfer to Finished Stock A/c @ `8 per unit	8,424	67,392
To Direct Labour A/c		6,500			
To Direct Expenses A/c		1,503			
To Overhead A/c		10,400			
	9,120	68,088		9,120	68,088

Working Notes:

Let the no. of units of loss in Process 'C' be 'x'.

Scrap value = $x \times 1 = x$.

$68,088 - x = 8(9120 - x)$ units

$68,088 = 72,960 - 7x$

$7x = 4,872$

$x = 696$ units

Required % is

$= (696 \div 9,120) \times 100 = 7.63\%$

4. (a) A company is at present working at 90% of its capacity and producing 13,500 units per annum. It operates a flexible budgetary control system.

The following figures are obtained from its budget:

	90%	100%
Sales	15,00,000	16,00,000
Fixed Expenses	3,00,500	3,00,600
Semi- Fixed expenses	97,500	1,00,500
Variable Expenses	1,45,000	1,49,500

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Units made	13,500	15,000
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Labour and materials costs per unit are constant under present conditions. Profits margin is 10%.

- i. You are required to determine the differential cost of producing 1,500 units by increasing capacity to 100%.
- ii. What would you recommend for an export price for these 1,500 units, taking into account that the overseas prices are much lower than the indigenous prices? 5+5

(b) Gemini chemicals Ltd. provides the following information from its records:

Material	Quantity (kgs)	Rate/kg (₹)
A	8	6
B	4	4
	12	

During April 2015, 1,000 kgs of GEMCO were produced. The actual consumption of material was as under:

Material	Quantity (kgs)	Rate/kg (₹)
A	760	7
B	500	5
	1,260	

- Calculate:
- i. Material cost variance
 - ii. Material Price variance
 - iii. Material Usage variance

2+4+4

Answer:

4. (a) Computation of Material and labour cost:

Particulars		
Sales at present		15,00,000
(-) Profit @10%		1,50,000
Total Cost		13,50,000
(-) All costs other than material & Labour		
Fixed Expenses	3,00,500	
Semi-fixed Expenses	97,500	
Variable Expenses	1,45,000	5,43,000
Material & Labour		8,07,000

i. Statement showing differential cost of 1,500 units:

Particulars	
Material & Labour (8,07,000 × 1,500/13,500)	89,667
Fixed Expenses (3,00,600 - 3,00,500)	100
Semi-fixed expenses (1,00,500 - 97,500)	3,000
Variable Expenses (1,49,500 - 1,45,000)	4,500
Differential cost	97,267

ii. Differential cost per unit = 97,267/1,500 = ₹ 64.84

The minimum price for these 1,500 units should not be less than ₹ 64.84

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4. (b)

Note : In the absence of any information in the question it is assumed that the standard output is 10 kgs per 12 kgs of input.

As per the given problem

Material	Standard			Actual		
	Quantity	Rate	Amount (₹)	Quantity	Rate	Amount (₹)
A	800	6	4,800	760	7	5,320
B	400	4	1,600	500	5	2,500
	1200		6,400	1260		7,820

Material Cost Variance

= Standard Cost – Actual Cost = 6,400 – 7,820 = 1,420 (A)

Material Price Variance

Actual Quantity × (Standard Price – Actual Price)

A = 760 × (6 – 7) = 760 (A)

B = 500 × (4 – 5) = 500 (A)

1,260 (A)

Material Usage Variance

= Standard Price × (Standard Quantity – Actual Quantity)

A = 6 × (800 – 760) = 240 (F)

B = 4 × (400 – 500) = 400 (A)

160 (A)

Material Cost Variance = Material Price Variance + Material Usage Variance
1420 (A) = 1260 (A) + 160 (A)

SECTION B

Cost Records & Cost Audit

You are to answer any two questions, each carrying 8 marks.

5. (a) Maintenance of Cost Accounting Records and Cost Audit under the Companies Act, 2013, states that the cost records are to be maintained in Form CRA-1. However, CRA-1 does not prescribe any format but only provides principles to be followed for different cost elements. What are the role and status of Cost Accounting Standards and its applicability vis-a-vis CRA- 1? 4

(b) What is the procedure to be followed for fixing the remuneration of a Cost Auditor? 4

Answer:

5. (a) The principles of maintenance of cost accounting records have been notified in the Rules in CRA – 1.

The principles are in synchronous with the cost accounting standards. The Rules are principle-based and no formats have been prescribed for maintenance of Cost accounting records like pre-2011 industry specific rules. No separate format-based records maintenance has been prescribed even for the Regulated Industry and the prescription has left it open for the Industry to maintain cost accounting records

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according to its size and nature of business so long as it determines a true and fair view of the cost of production, cost of sales and margin of the products/services. The cost audit report is required to be in conformity with the 'Cost auditing standards' as referred to in Section 148 of the Companies Act, 2013.

It is also to be noted that the council of the Institute of Cost Accountants of India has made it mandatory for the Cost Accountants in practice to follow and conform to the Cost Accounting Standards issued by it and it is incumbent on the cost auditors to report any deviations from the cost accounting standards.

- 5. (b)** Rule 14 of the Companies (Audit and Auditors) Rules, 2014 has laid down the procedure of appointment and fixing the remuneration of a Cost Auditor.

The rule states that For the purpose of sub-section (3) of section 148,—

- (a) in the case of companies which are required to constitute an audit committee—
- (i) the Board shall appoint an individual, who is a cost accountant in practice, or a firm of cost accountants in practice, as cost auditor on the recommendations of the Audit committee, which shall also recommend remuneration for such cost auditor;
 - (ii) the remuneration recommended by the Audit Committee under (i) shall be considered and approved by the Board of Directors and ratified subsequently by the shareholders;
- (b) in the case of other companies which are not required to constitute an audit committee, the Board shall appoint an individual who is a cost accountant in practice or a firm of cost accountants in practice as cost auditor and the remuneration of such cost auditor shall be ratified by shareholders subsequently.

- 6. (a) What is the procedure for appointment of Cost Auditor under the Companies Act, 2013? 4**

- (b) What types of Educational Services are covered under the Companies (Cost Records and Audit) Rules, 2014? 4**

Answer:

- 6. (a)** The cost auditor is to be appointed by the Board of Directors on the recommendation of the Audit Committee, where the company is required to have an Audit Committee. The cost auditor proposed to be appointed is required to give a letter of consent to the Board of Directors. The company shall inform the cost auditor concerned of his or its appointment as such and file a notice of such appointment with the Central Government within a period of thirty days of the Board meeting in which such appointment is made or within a period of one hundred and eighty days of the commencement of the financial year, whichever is earlier, through electronic mode, in form CRA-2, along with the fee as specified in Companies (Registration Offices and Fees) Rules, 2014.

Any casual vacancy in the office of a cost auditor, whether due to resignation, death or removal, shall be filled by the Board of Directors within thirty days of occurrence of such vacancy and the company shall inform the Central Government in Form CRA-2 within thirty days of such appointment of cost auditor.

- 6. (b)** The Companies (Cost Records and Audit) Rules 2014 covers "Education services, other than such similar services falling under philanthropy or as part of social spend which do not form part of any business". Any company imparting training or education by means

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of any mode is covered under Education Services. However, auxiliary services provided by companies, as a separate independent entity, to educational institutions viz.,

- (i) transportation of students, faculty and staff;
- (ii) catering service including any mid-day meals scheme;
- (iii) security or cleaning or house-keeping services in such educational institution;
- (iv) Services relating to admission to such institution or conduct of examination are not included under Education Services. In case the educational institution covered under the Rules is providing the above auxiliary services as a part of their total operations, then the institution will be required to maintain records for such auxiliary services also.

7. (a) What is the status of companies after the notification of Companies (Cost Records and Audit) Rules, 2014, who have not filed Cost Audit Report and/or Compliance Report pertaining to any year prior to financial year commencing on or after April, 2014? 4

(b) Is there any obligation on the part of Cost Auditor to report offence of fraud being or has been committed in the company by its officers or employees? 4

Answer:

7. (a) Companies that were covered under the Companies (Cost Records and Audit) Rules, 2011 or any of the 6 industry specific Cost Accounting Records Rules and were required to file Compliance Report and/or Cost Audit Report for and upto any financial year commencing prior to April 1, 2014 are required to comply with the erstwhile Rules and file the Compliance Report and/or Cost Audit Report in XBRL Mode for the defaulted years. For this purpose, the Costing Taxonomy 2012 will continue to be available and such reports would be required to be filed in Form A-XBRL and Form I-XBRL, as the case may be.

7. (b) Sub-rule(7) of Rule 6 of the Companies(Audit and Auditors)Rules,2014 states that 'the provisions of sub-section(12) of section 143 of the Act and the relevant rules made there under shall apply mutatis mutandis to a cost auditor during the performance of his functions under section 148 of the Act and these rules'.

As per sub-section (12)of section 143 of the Companies Act 2013,it is obligatory on the part of cost auditor to report offence of fraud, which is being or has been committed in the company by its officers or employees, to the Central Government, as per the prescribed procedure under the Rules.

As per the proviso to the above sub-section, it has been stated that in case of a fraud involving lesser than the specified amount, the auditor shall report the matter to the audit committee constituted under section 177 or to the Board in other cases within such time and in such manner as may be prescribed.

SECTION C

Economics For Managerial Decision Making

Answer any three questions from this Section, each carrying 8 marks.

8. (a) If the Primal of a LPP is:

$$\text{Max. } Z = 3x_1 + 5x_2 + 4x_3$$

Subject to

$$2x_1 + 3x_2 \leq 8$$

$$3x_1 + 2x_2 + 2x_3 \leq 10$$

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$5x_2 + 4x_3 \leq 15,$
And x_1, x_2 and $x_3 \geq 0$, What would be its dual? 4

(b) State the broad features of Monopolistic Competition? 4

Answer:

8. **(a)** The dual to the LPP would be:

$Z_{min} = 8 Y_1 + 10 Y_2 + 15 Y_3$ subject to

$$2Y_1 + 3Y_2 + 0Y_3 \geq 3$$

$$3Y_1 + 2Y_2 + 5Y_3 \geq 5$$

$$0Y_1 + 2Y_2 + 4Y_3 \geq 4$$

$$Y_1, Y_2, Y_3 \geq 0 \text{ (Non-negativity factors)}$$

8. **(b)** Monopolistic competition is also known as Imperfect Competition or "Group Equilibrium".

The following are some of the broad features of Monopolistic Competition:

- (i) Existence of large number of firms: In Monopolistic competition, there are a large number of firms in the market. The output of each firm is very much less in the total output. Because of large number of firms, each firm acts independently without bothering about the reaction of the rivals.
- (ii) Product Differentiation: Product differentiation is another feature of monopolistic competition.
- (iii) Free entry and exit: There is a free entry and exit of the firms in monopolistic competition. The new firms may enter the market or the existing firms may leave the market.
- (iv) Excess capacity: In Monopolistic competition, the amount of output that is produced by the firm is less than the ideal output. This is called as "Excess Capacity".
- (v) Selling costs: The costs on advertisements are commonly called selling costs. It is that cost which shifts the demand curve towards right side. Therefore the selling costs are useful for the increase of demand. The producer spends on selling costs upto that situation where the additional revenue becomes zero. Through publicity and propaganda, the firm will popularize the quality of the products.

9. **(a) State the exceptions to the Law of Demand.** 4

(b) State the main features of Perfect Competition market. 4

Answer:

9. **(a)** The following are the exceptions to the Law of Demand.

- (i) Giffen Paradox: According to Giffen, even though the price, for necessary goods rises, the demand for them will not decrease. These goods are called "Giffen Goods"
- (ii) Prestigious goods : The law of demand will not operate in case of prestige goods like diamonds, cars etc., The demand for these does not decrease with the rise in the price, as these goods are attached with prestige.
- (iii) Speculative Business: The law of demand does not operate in case of the speculative business. If people think that the prices of goods increase in the future, now they will buy more units of that commodity. This is against the law of demand.
- (iv) Trade Cycles: The law of demand does not operate in periods of trade cycles. During the prosperity period, people may buy more goods at higher prices. In periods of depression, people buy fewer goods even though the prices are less.
- (v) Ignorance of the Consumers: The law of demand is not applicable in case of the ignorant consumers. By ignorance, people think that high priced goods are

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qualitative goods. Therefore the consumers would buy the goods even at high price.

9. (b) The following are the features of perfect competition market.
- (i) There must be large number of Buyers and Sellers.
 - (ii) In perfect competition, the goods produced by different firms are homogeneous or identical.
 - (iii) In perfect competition there is free entry and exit of the firms into the industry.
 - (iv) The buyers and the sellers must have the knowledge with regard to the prices of various commodities at different supply and demand forces.
 - (v) The factors must be mobilized from those places where they are getting less remuneration to those places where they will get maximum remuneration.
 - (vi) All commodities are identical in perfect competition. So the prices of the commodities are also uniform.
 - (vii) In order to maintain the uniform price level in perfect, competition we should not include the transport cost in the price level.
 - (viii) There is a difference between firm & industry under perfect competition. Firm is a production unit and where as industry is a group of firms.

10. (a) Given Cost Function $C = 3/5x + 15/4$, find

- i. Cost, when the output is 5 units.
- ii. Average Cost of 10 units. (1+1)

(b) Four Products — A, B, C and D have `5, `7, `3 and `9 as profitability respectively.

First type of material (limited supply of 800 kgs.) is required by A, B, C and D at 4 kg, 3 kg, 8 kgs and 2 kgs respectively per unit.

Second type of materials has a limited supply 300 kgs and is for A, B, C and D at 1 kg 2 kgs 0 kg and 1 kg per unit.

Supply of the other type of materials consumed is not limited. Machine hrs. available are 500 hours and the requirements are 8, 5, 0 and 4 hours for A, B, C and D each per unit.

Labour hours are limited to 900 hours and requirements are 3,2,1 and 5 hours for A, B, C and D respectively.

How should the firm approach so as to maximize its profitability?

Formulate this as a linear programming problem.

You are not required to solve the LPP. 6

Answer:

10. (a)

- i. Given: $C = 3/5x + 15/4$
Cost when the output is 5 units
 $= 3/5 \times 5 + 15/4 = 3 + 15/4 = 6.75$
- ii. Average Cost of 10 units:
Average Cost $= 3/5 + 15/4x = 3/5 + 15/4 \times 10$
 $= 3/5 + 15/40 = 3/5 + 15/40 = 3/5 + 3/8 = 39/40 = 0.975$

10. (b)

Let 'x' be the no. of units of product A

Let 'y' be the no. of units of product B

Let 'p' be the no. of units of product C

Let 'z' be the no. of units of product D

Objective Function : Maximize $Z = 5x + 7y + 3p + 9z$

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	A	B	C	D	Supply in kgs
I. Type Material	4	3	8	2	800
II. Type Material	1	2	0	1	300
Machine	8	5	0	4	500
Labour	3	2	1	5	900
Profit	5	7	3	9	

Subject to constraints

$$4x + 3y + 8p + 2z \leq 800$$

$$x + 2y + 0 + z \leq 300$$

$$8x + 5y + 0 + 4z \leq 500$$

$$3x + 2y + p + 5z \leq 900 \text{ and}$$

$$x, y, p, z \geq 0 \text{ (Non-negative Function)}$$

11. (a) Write a brief note on the "intervention of Government in Indian economy". 2

(b) Calculate the trend values by the method of least squares from the data given for the year 2017?

Year	2008	2009	2010	2011	2012
Sales of TV (in' 000)	12	18	20	23	27

6

Answer:

11. (a) The intervention of Government in Indian economy can be analyzed under the following broad heads:

- i. Government as a regulator of business. Various acts have been passed to achieve the different objectives of the economy, like say Income Tax Act, SEBI, Essential Commodities Act, etc.,
- ii. Government as a promoter of business by setting up appropriate Financial institutions, sound banking system NABARD, IDBI, etc.,
- iii. Government as an Economic Planner thru' a process of Planned Development, Review System and Evaluation Plans.
- iv. Government as an Entrepreneur by setting Public Sector Undertakings, Public Utility Services, Nationalised Banks,
- v. Departmental Undertakings like Railway, ICF, BHEL, NLC etc., etc.,

11. (b) Calculation of Trend values by Least Square Method:

Year(X)	Sales(y)	Time Deviation (x)	xy	x ²	Trend Values y _c
2008	12	-2	-24	4	13.0
2009	18	-1	-18	1	16.5
2010	20	0	0	0	20.0
2011	23	+1	+23	1	23.5
2012	27	+2	+54	4	27.0
N = 5	Σy=100	Σx=0	Σxy= 35	Σx ² = 10	

Equation of straight line= $Y = a + bx$

Since $\Sigma x=0$, Value of $a = \Sigma y/N = 100/5 = 20$.

Value of $b = \Sigma xy / \Sigma x^2 = 35/10 = 3.5$

Equation of Straight line $y_c = a + b(X - 2010)$ or $y_c = 20 + 3.5$

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When $X=2008$, $y_c = 20 + (3.5x - 2) = 13$,

When $X=2009$, $y_c = 20 + (3.5x - 1) = 16.5$,

When $X=2010$, $y_c = 20$,

When $X=2011$, $y_c = 20 + (3.5 \times 1) = 23.5$,

When $X=2012$, $y_c = 20 + (3.5 \times 2) = 27$,

When $X=2017$, $y_c = 20 + (3.5 \times 7) = 44.5$.

Thus, the likely sale of TVs in 2017 would be 44.5 thousands.