

**INTERMEDIATE EXAMINATION**

**GROUP II**

**(SYLLABUS 2012)**

**SUGGESTED ANSWERS TO QUESTIONS**

**JUNE 2017**

**Paper- 10 : COST AND MANAGEMENT ACCOUNTANCY**

Time Allowed : 3 Hours

Full Marks : 100

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

All workings must form part of your Answer. Assumptions, if any, must be clearly indicated.

- Please:
1. Write answers to all parts of a question together.
  2. Open a new page for answer to a new question.
  3. Attempt the required number of questions only.

Section – A

(25 Marks)

Answer Question No. 1 Which is compulsory.

1. Answer all questions:

(a) Choose the correct answer from the given four alternatives.

2×5=10

(i) In two consecutive periods, sales and profit were ₹1,60,000 and ₹8,000 respectively in the first period and ₹1,80,000 and ₹ 14,000 respectively during the second period. If there is no change in fixed cost between the two periods, then P-V ratio must be:

- (A) 20%
- (B) 25%
- (C) 30%
- (D) 40%

(ii) Budgeted sales for the next year is 5,00,000 units. Desired ending finished goods inventory is 1,50,000 units and equivalent units in ending W-I-P inventory is 60,000 units. The opening finished goods inventory for the next year is 80,000 units, with 50,000 equivalent units in beginning W-I-P inventory. How many equivalent units should be produced?

- (A) 5,80,000
- (B) 5,50,000
- (C) 5,00,000
- (D) 5,75,000

(iii) Akash Ltd. is preparing its cash budget for the period. Sales are expected to be ₹ 1,00,000 in April, 2016; ₹ 2,00,000 in May, 2016; ₹ 3,00,000 in June, 2016 and ₹ 1,00,000 in July, 2016. Half of all sales are cash sales and the other half are on credit.

Experience indicates that 70% of the credit sales will be collected in the month

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following the sale, 20% the month after that and, 10% in the third month after the sale.

The budgeted collection for the month of July, 2016 is:

- (A) ₹ 1,30,000
- (B) ₹ 1,80,000
- (C) ₹ 2,60,000
- (D) ₹ 3,60,000

(iv) During the month of March, 560 kg. of material was purchased at a total cost of ₹ 15,904. The stock of material increased by 15 kg. It is the company's policy to value the stocks at standard purchase price. If the material price variance was ₹224 (A), the standard price per kg. of material is:

- (A) ₹ 28-40
- (B) ₹ 28-80
- (C) ₹ 28-00
- (D) ₹ 29-20

(v) Output of a Process is 2,500 units, normal loss is 10% of input and abnormal loss is 200 units. How many units were introduced in the Process?

- (b) (i) What types of Educational Services are covered under the Companies (Cost Records and Audit) Rules, 2014? 3
- (ii) Whether separate Form CRA-2 is required to be filed by a company having two or more different types of products covered under cost audit? 2

(c) Match the column 'A' with Column 'B' 5

Column 'A'		Column 'B'	
1.	Transfer Price	(A)	Goal Congruence
2.	Zero Base Budgeting	(B)	Responsibility Accounting
3.	Performance Budgeting	(C)	Performance Measurement
4.	Throughput Accounting	(D)	Notional Profit
5.	Profit Earned on a Contract Account	(E)	Not on the Basis of Trends

(d) The average cost of a product is given by the following function:

$$\text{Average cost} = x^3 + 10x^2 - 9x.$$

Find the total cost, average variable cost and marginal cost. 5

**Answer: 1**

(a) (i) C- 30%

Change in profit/Change in sales = P/V ratio

$$\text{= ₹ (14,000 - 8,000) / ₹ (1,80,000 - 1,60,000)}$$

$$\text{= 6,000 / 20,000 = 0.30 or 30\%}$$

(ii) A - ₹5,80,000

Using production related budgets, units to produce equals budgeted sales + desired ending finished goods inventory + desired equivalent units in ending W-I-P inventory - beginning finished goods inventory - equivalent units in beginning W-I-P inventory.

Therefore, in this case, units to produce is equal to 5,00,000 + 1,50,000 + 60,000 - 80,000 - 50,000 = 5,80,000

(iii) B - ₹1,80,000

Collection from July 2016, cash sales will be half of total sales or ₹ 50,000

From April ₹ 50,000 of credit sales, collection should be 10% or ₹ 5,000

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From May ₹ 1,00,000 of credit sales, collections should be 20% or ₹ 20,000  
 From June ₹ 1,50,000 of credit sales, collection will be 70% or ₹ 1,05,000  
 Thus total collections will amount to ₹(50,000 + 5,000+ 20,000 + 1,05,000)  
 = ₹ 1,80,000

(iv) C - ₹28.00

Actual cost ₹ 15,904

Less : adverse material price variance 224

Actual purchases at standard price ₹15,680

Standard price = ₹ 15,680/560 = ₹28.00

(v) Let 'X' be the units introduced, then Normal loss = 0.10X

Abnormal Loss = 200 units

Then output will be  $X - 0.10x - 200 = 2500 - 0.90X = 2700 - X$

$= 2700 / 0.90 = 3000$  units .

(b) (i) 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 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,

(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 of 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.

(ii) CRA-2 Form(intimation for appointment of cost auditor to Central Government) has replaced the earlier Form 23C(application seeking approval for appointment of cost auditor). A single Form CRA-2 is required to be filed providing details of the sectors/industries covered under cost audit and details of cost auditor. For Companies appointing multiple cost auditors, only one single Form CRA-2 is required to be filed . Provision has been made in the Form to accommodate details of multiple cost auditors.

(c) Match the following

Column 'A'		Column 'B'	
1.	Transfer Price	(A)	Goal Congruence
2.	Zero Base Budgeting	(E)	Not on the Basis of Trends
3.	Performance Budgeting	(B)	Responsibility Accounting
4.	Throughput Accounting	(C)	Performance Measurement
5.	Profit Earned on a Contract Account	(D)	Notional Profit

(d) (i) The Total Cost =  $x(x^3 + 10x^2 - 9x) = x^4 + 10x^3 - 9x^2$

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(ii) The average variable cost =  $x^3 + 10x^2 - 9x \left[ \frac{x^4 + 10x^3 - 9x^2}{x} \right]$

(iii) Marginal Cost =  $\frac{d}{dx} (x^4 + 10x^3 - 9x^2) = 4x^3 + 30x^2 - 18x$

## SECTION – B

(Cost and Management Accounting — Methods & Techniques and Cost Records & Cost Audit)

Answer any three questions.

17× 3=51

2. (a) A review of the result of the first quarter of the year made by the top management of M/s. SS Ltd., which makes only one product, revealed the following:

Sales in units	10,000
Loss	₹10,000
Fixed cost (for the year ₹1,20,000)	₹30,000
Variable cost per unit	₹ 8

The Finance Manager who feels perturbed suggests that the company should at least break-even in the second quarter with a drive for increased sales. Towards this, the company should introduce a better packing which will increase the cost by ₹ 0.50 per unit.

The Sales Manager has an alternative proposal. For the second quarter, additional sales promotion expenses can be increased to the extent of ₹5,000 and a profit of ₹ 5,000 can be aimed at during the period with increased sales.

The Production Manager feels otherwise. To improve the demand, the selling price per unit has to be reduced by 3%. As a result, the sales volume can be increased to attain a profit level of ₹4,000 for the quarter.

The Managing Director asks you as a Cost Accountant to evaluate the three proposals, calculate the P/V ratio and additional sales volume that would be required in each case and suggest which proposal should be accepted. 12

- (b) What is differential cost? State the essential features of differential cost.

2+3=5

Answer: 2

- (a) Selling Price per unit for the first quarter

Fixed cost	₹ 30,000
Less: Loss	₹ 10,000
Contribution	₹ 20,000
Contribution per unit	₹ 2.00 (20,000 ÷ 10,000)
S-V = Contribution or S=Contribution + V	= ₹2.00 + 8.00 or ₹ 10.00

### For second quarter: Finance Manager's Proposal

Revised variable cost = ₹8.00 + 0.50 = ₹8.50

Revised contribution = ₹10.00 - 8.50 = ₹1.50

Break-even point(units) = Fixed cost ÷ contribution per unit

= ₹ 30,000 ÷ ₹ 1.50 = 20,000 units

P/V ratio =  $1.5/10 \times 100 = 15\%$ .

Therefore additional 10,000 units should be sold to breakeven.

### Sales Manager's Proposal

Present fixed cost	₹ 30,000
Add: Sales promotion expenses	₹ 5,000
Revised fixed cost	₹ 35,000
Revised Profit	₹ 5,000

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Revised contribution 40,000  
Revised Sales Volume = Revised contribution ÷ contribution per unit (first quarter)  
= ₹40,000 ÷ ₹2. or 20,000 units.  
In this case also, the additional sales volume of 10,000 units is required.

## Production Manager's Proposal

Revised selling price = ₹ 9.70 (reduced by 3%)  
Contribution per unit = ₹9.70 - ₹8.00 = ₹ 1.70  
Revised contribution = Existing fixed cost + Revised profit  
= ₹30,000 + ₹4,000 = ₹34,000  
Revised sales volume = Revised contribution ÷ contribution per unit  
= ₹34,000 ÷ 1.70 = 20,000 units.  
P/V ratio =  $1.70/9.70 \times 100 = 17.52\%$ .  
Additional Sales Volume required is 10,000 units.

## Conclusion:

The summary of profitability of the three proposals:

	Proposals		
	Financial Manager	Sales manager	Production Manager
P/V ratio	15%	20%	17.52%
Net Profit	Nil	₹5,000	₹4,000

It is noticed that the additional Sales volume in all the three proposals is 10,000 units to achieve the desired objective. Therefore, the sales volume does not affect the decision. The P/V ratio and Net Profit of Sales Manager's proposal are the maximum and therefore this proposal should be accepted.

## (b) Differential Cost :

Differential Cost is the change in the costs which results from the adoption of an alternative course of action. The alternative actions may arise due to change in sales volume, price, product mix (by increasing, reducing or stopping the production of certain items), or methods of production, sales, or sales promotion, or they may be due to 'make or buy' or take or refuse' decisions. When the change in costs occurs due to change in the activity from one level to another, differential cost is referred to as incremental cost or detrimental cost, if a decrease in output is being considered, i.e. total increase in cost divided by the total increase in output. However, accountants generally do not distinguish between differential cost and incremental cost and the two terms are used to mean one and the same thing.

### The essential features of differential costs are as follows:-

1. The basic data used for differential cost analysis are costs, revenue and the investment factors which are relevant in the problem for which the analysis is undertaken.
2. Total differential costs rather than the costs per unit are considered.
3. Differential cost analysis is made outside the accounting records.
4. As the differences in the costs at two levels are considered, absolute costs at each level are not as relevant as the difference between the two. Thus, items of costs which do not change but are identical for the alternatives under consideration, are ignored.
5. The differentials are measured from a common base point or position.
6. The stage at which the difference between the revenue and the cost is the highest, measured from the common base point, determines the choice from amongst a number of alternative actions.

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3. (a) M. J. Ltd. manufactures 4 products, viz., A, B, C and D. The data relating to production activity are as under:

Product	Quantity of Production (units)	Material Cost/Unit ₹	Direct labour hours/unit	Machine hours/unit	Direct labour cost/unit
A	1,000	10	1	0-50	6
B	10,000	10	1	0-50	6
C	1,200	32	4	2.00	24
D	14,000	34	3	3.00	18

The Production overheads are as under:

	₹
• Overhead applicable to machine oriented activity	1,49,700
• Overhead relating to ordering materials	7,680
• Set up costs	17,400
• Administration overheads for spare parts	34,380
• Material handling costs	30,294

The following further information have been compiled:

Product	No. of set up	No. of material orders	No. of times materials handled	No. of spare parts
A	3	3	6	6
B	18	12	30	15
C	5	3	9	3
D	24	12	36	12

Required:

- (i) Select a suitable cost driver for each item of overhead expense and calculate the cost per unit of cost driver.
- (ii) Using the concept of activity based costing, compute the factory cost per unit of each product. 5+7=12
- (b) Distinguish between Cost Control and Cost Reduction. 5

Answer: 3 (a)

Computation of Cost Driver rates

- (1) Overheads relating to Machinery oriented activity  
 Cost Driver => Machine Hour Rate  
 $(1000 \times 0.5) + (10000 \times 0.5) + (1200 \times 2) + (14,000 \times 3)$   
 $1,49,700/49,900 = ₹ 3 \text{ per hour}$
- (2) Overheads relating to ordering materials  
 Cost driver => No. of Material orders  
 $7680/30 = ₹ 256 \text{ per order}$
- (3) Set up costs  
 Cost driver => No. of set ups

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17400/50 = ₹348 per set up

(4) Administrative Overheads for spare parts

Cost driver => No. of spare parts

34380/36 = ₹ 955 per spare part.

(5) Material Handling costs

Cost driver => No. of times materials handled

30294/81 = ₹ 374 per material handling

Computation of factory cost for each product

	A		3		C		D	
Materials		10.00		10.00		32.00		34.00
Labour		6.00		6.00		24.00		18.00
Overheads								
	1.500		1.50		6.00		9.00	
Ordering of Materials	0.768		0.31		0.64		0.22	
Set up Costs	1.044		0.63		1.45		0.60	
Administrative Spare Parts	5.730		1.43		2.39		0.82	
Material handling	2.244	11.29	1.12	4.99	2.81	13.29	0.96	11.60
Factory Cost (₹)		27.29		20.99		69.29		63.60

Answer: 3 (b)

Cost Control	Cost Reduction
i. Cost control is the effort towards achieving the cost reduction	i. Cost Reduction is the final result. It represents permanent reduction in cost
ii. The process of cost control is to set up a target like any other control measure. Other steps in any system of control are: collection of actuals and comparison with standard, variances, remedial action thereof.	ii. <b>Cost Reduction</b> is the final achievement in the process of Cost Control.
iii. It assumes existence of standards	iii. There is always scope for further improvements. Thus Cost Reduction challenges standards and targets.
iv. It is a preventive function	iv. It is a corrective function
v. It lacks dynamic approach	v. It is a dynamic and ever continuous approach
vi. Costs are optimised	vi. There is always scope for further reduction, in the achieved costs under controlled conditions at all times.

4. (a) The cost of an article at a capacity level of 10,000 units is given under A below. For a variation in capacity above or below this level, the individual expenses vary as indicated in B below:

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	A (₹)	B
Material Cost	50,000	100% varying
Labour Cost	30,000	100% varying
Power	3,000	80% varying
Repairs and Maintenance	3,500	80% varying
Stores	2,000	100% varying
Inspection	800	25% varying
Depreciation	10,000	100% varying
Administrative Overhead	3,600	25% varying
Selling Overhead	4,500	50% varying
<b>Total</b>	<b>1,07,400</b>	
<b>Cost per unit</b>	<b>10-74</b>	

Find out the unit cost of the product under each individual expenses at production level of 8000 units and 12000 units. 10

(b) What is meant by inter firm comparison? Briefly explain its benefits. 3+4=7

Answer: 4 (a)

Production (units)	10,000	8,000	12,000
1. VARIABLE Cost:	₹	₹	₹
Material Cost(100% variable)	50,000	40,000	60,000
Labour cost (100% variable)	30,000	24,000	36,000
Power(80% variable)	2,400	1,920	2,880
Repairs and Maintenance(80% variable)	2,800	2,240	3,360
Stores (100% variable)	2,000	1,600	2,400
Inspection(25% variable)	200	160	240
Depreciation (100% variable)	10,000	8,000	12,000
Administrative overhead(25% variable)	900	720	1,080
Selling overhead(50% variable)	2,250	1,800	2,700
<b>Total Variable Cost</b>	<b>1,00,550</b>	<b>80,440</b>	<b>1,20,660</b>
2. Fixed Cost			
Power (20% fixed)	600	600	600
Repairs (20% fixed)	700	700	700
Inspection (75% fixed)	600	600	600
Admn. overhead (75% fixed)	2700	2,700	2,700
Selling overhead (50% fixed)	2,250	2,250	2,250
<b>Total fixed cost</b>	<b>6,850</b>	<b>6,850</b>	<b>6,850</b>
<b>Total cost (1+2)</b>	<b>1,07,400</b>	<b>87,290</b>	<b>1,27,510</b>
<b>Cost per unit</b>	<b>10.74</b>	<b>10.91</b>	<b>10.63</b>

Answer: 4 (b)

### Firm Comparison

Inter-firm comparison as the name denotes means the techniques of evaluating the performances, efficiencies, deficiencies, costs and profits of similar nature of firms engaged in the same industry or business. It consists of exchange of information, voluntarily of course,



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concerning production, sales cost with various types of break up, prices, profits, etc., among the firms who are interested or willing to make the device a success. The basic purposes of such comparison are to find out the weak points in an organisation and to improve the efficiency by taking appropriate measures to wipe out the weakness gradually over a period of time.

The benefits which are derived from Inter-firm Comparison are appended below:

- a. Inter-firm Comparison makes the management of the organisation aware of strengths and weakness in relation to other organisations in same industry.
  - b. As only the significant items are reported to the Management, time and efforts are not unnecessarily wasted.
  - c. The management is able to keep up to date information of the trends and ratios and it becomes easier for them to take the necessary steps for improvement.
  - d. It develops cost consciousness among the members of the industry.
  - e. Information about the organisation is made available freely without the fear of disclosure of confidential data to outside market or public.
5. (a) A company fixes the inter-divisional transfer prices for its products on the basis of cost plus an estimated return on investment in its division. The relevant portion of the budget for Division A for the year 2016-17 is given below:

Fixed assets	₹ 5,00,000
Current assets (other than debtors)	₹3,00,000
Debtors	₹2,00,000
Annual fixed cost of the division	₹8,00,000
Variable cost per unit of product	₹10
Budgeted volume of production per year (units)	400000
Desired return on investment	28%

You are required to determine the transfer price for the division A.

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- (b) Prepare a Cash Budget for the three months ending on 30th June, 2018 from the information given below:

(i)

Month	Sales (₹)	Materials (₹)	Wages (₹)	Overheads (₹)
February	14,000	9,600	3,000	1,700
March	15,000	9,000	3,000	1,900
April	16,000	9,200	3,200	2,000
May	17,000	10,000	3,600	2,200
June	18,000	10,400	4,000	2,300

- (ii) Credit terms are:  
 Sales : 10% sales are on cash, 50% of the credit sales are collected in the next month and the balance in the following month.  
 Creditors - Materials 2 months  
               - Wages ¼ month  
               - Overheads ½ month
- (iii) Cash and Bank balance on 1st April, 2018 is expected to be ₹6,000.
- (iv) Other relevant information are:
- Plant and Machinery will be installed in February, 2018 at a cost of ₹96,000. The monthly installments of ₹2,000 is payable from April onwards.
  - Dividend @ 5% on Preference Share Capital of ₹ 2,00,000 will be paid on 1st June.
  - Advance to be received for sale of vehicles ₹9,000 in June.

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- Dividends from investments amounting to ₹1,000 are expected to be received in June.
- Income tax (advance) to be paid in June is ₹ 2,000.

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Answer: 5 (a)

Statement showing the transfer price for Division A:

Fixed assets		₹5,00,000
Working Capital-Current Assets	₹3,00,000	
-Debtors	2,00,000	5,00,000
Total investment		10,00,000
Desired rate of return		28%
Total Return(i, e., Profit) ₹ 10,00,000 × 28%		₹2,80,000
Budget production p.a., (units)		4,00,000
Return per unit		₹0.70
Variable Cost per unit		₹10.00
Fixed cost per unit (₹ 8,00,000 + 4,00,000)		₹2.00
Transfer price for Division A		₹12.70

Answer: 5 (b)

Sales realisation		Realization from Debtors	
Month	Sales	Credit sales	₹
February	14,000 × 90%	12,600 × 50%	= 6,300
March	15,000 × 90%	13,500 × 50%	= 6,750
			13,050 in April 2018
March	15,000 × 90%	13,500 × 50%	= 6,750
April	16,000 × 90%	14,400 × 50%	= 7,200
			13,950 in May 2018
April	16,000 × 90%	14,400 × 50%	= 7,200
May	17,000 × 90%	15,300 × 50%	= 7,650
			14,850 in June 2018

### Cash Budget ₹

Particulars	April'18	May'18	June'18
A. Opening Balance	6,000	3,950	3,000
B. Receipts from:			
Cash Sales	1,600	1,700	1,800
Debtors	13,050	13,950	14,850
Advance	-	-	9,000
Dividends from Investments	-	-	1,000
Total B	14,650	15,650	26,650
Total A+B	20,650	19,600	29,650
C. Payments:			
Creditors	9,600	9,000	9,200
Wages	750	800	900

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	2,400	2,700	3,000
Overheads	950	1,000	1,100
	1,000	1,100	1,150
Plant & Machinery :			
Installment	2,000	2,000	2,000
Preference Dividend	-	-	10,000
Advance Income Tax	-	-	2,000
Total C	16,700	16,600	29,350
D. Closing Balance(A+B) -(C)	3,950	3,000	300

6. (a) State the significance of different Forms in Companies (Cost Records & Audit) Rules, 2014. 8
- (b) Draw a flow chart of applicability of Cost Audit Rule-4 for Regulatory and Non-regulatory sectors under Companies (Cost Records and Audit) Rules, 2014. 5
- (c) Mention any eight (8) headings prescribed in Form CRA-1 for maintaining cost records. 4

**Answer: 6 (a)**

CRA- 1: Maintain Cost Records in Form CRA - 1. Every company under rule 5 including all units and branches thereof, shall, in respect of each of its financial year commencing on or after the 1st day of April, 2014, maintain cost records in Form CRA-1.

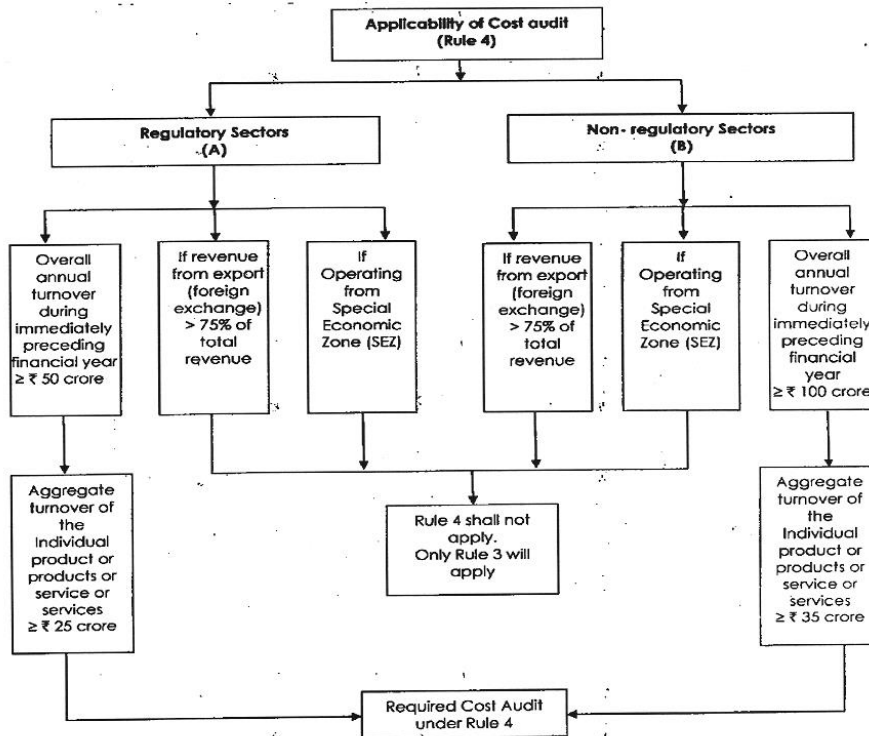
CRA- 2: Form of intimation of appointment of Cost Auditor by the Company to Central Government. Every company referred to in rule 6(1) shall inform the cost auditor concerned of his or its appointment as such and file a notice of such appointment with the Central Government within a period of thirty 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.

CRA- 3 : Form of the Cost Audit Report. Every cost auditor, who conducts an audit of the cost records of a company, shall submit the cost audit report along with his or its reservations or qualifications or observations or suggestions, if any, in Form CRA-3.

CRA-4 : Form for filing Cost Audit Report with the Central Government. Every company covered under rule 6 shall, within a period of thirty days from the date of receipt of a copy of the cost audit report, furnish the Central Government with such report along with full information and explanation on every reservation or qualification contained therein, in Form CRA-4 along with fees specified in the Companies (Registration Offices and Fees) Rules, 2014.

**Answer: 6 (b)**

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Answer: 6 (c)

The form CRA-I prescribes the form in which cost records shall be maintained. The form categorizes the requirement of maintaining proper details as per 30 headings. The headings are as follows:

(1) Material Cost, (2) Employee Cost, (3) Utilities, (4) Direct Expenses, (5) Repair and Maintenance, (6) Fixed Assets and Depreciation, (7) Overheads, (8) Administrative Overheads, (9) Transportation Cost, (10) Royalty and Technical Know-how, (11) Research and Development expenses, (12) Quality Control Expenses, (13) Pollution Control Expenses, (14) Service Department Expenses, (15) Packing Expenses, (16) Interest and Financing Charges, (17) Any other item of Cost, (18) Capacity Determination, (19) Work-in-progress and finished stock, (20) Captive Consumption, (21) By-Products and Joint Products, (22) Adjustment of Cost Variances, (23) Reconciliation of Cost and Financial Accounts, (24) Related Party Transactions, (25) Expenses or Incentives on Exports, (26) Production records, (27) Sales records, (28) Cost Statements, (29) Statistical Records, (30) Records of Physical Verification.

## SECTION - C (Economics for Managerial Decision Making)

Answer any two from the following.

12x2=24

7. (a) The Demand Curve for X is given by the equation:

$p = 24 - \frac{1}{2}\sqrt{q}$ , where  $p$  and  $q$  denote price and quantity respectively. Find the point price elasticity for  $p = ₹12$ .

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(b) Shadow prices are imputed values — Discuss.

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**Answer: 7 (a)**

Given the demand curve,

$$P = 24 - \frac{1}{2} \sqrt{q} \dots\dots\dots (1) \text{ where } P = 12$$

Differentiating equation (1) w.r. to q

$$\frac{dp}{dq} = - \frac{1}{2} \left( \frac{1}{2\sqrt{q}} \right) = - \frac{1}{4\sqrt{q}}$$

$$\frac{dq}{dp} = - 4 \sqrt{q} \dots\dots\dots (2)$$

If P = 12, considering equation (1)

$$12 = 24 - \frac{1}{2} \sqrt{q}$$

$$\frac{1}{2} \sqrt{q} = 24 - 12 = 12$$

$$\sqrt{q} = (12) \times 2 = 24$$

$$q = 576 \dots\dots\dots (3)$$

Price Elasticity of demand at P= 12.

$$\begin{aligned} \left| \frac{p}{q} \times \frac{dq}{dp} \right| &= \left| \frac{12}{576} \times (-4\sqrt{q}) \right| \\ &= \left| \frac{12}{576} \times (-4\sqrt{576}) \right| \\ &= \left| -\frac{12.4}{\sqrt{576}} \right| = \left| \frac{12.4}{24} \right| \\ &= |-2| = 2 \end{aligned}$$

**Answer: 7 (b)**

**Shadow Pricing** : The producer has to decide two questions '

1. How much of each product should be produced to maximize profits,
2. What price is worth paying for additional quantities of a scarce resource.

To decide the second question "What price is worth paying for additional quantity of a scarce resource", very often shadow prices" are used. Shadow prices are not prices obtained by observing the real world. Shadow prices are "imputed values". The shadow prices show the marginal contribution of the factors of production employed. It is calculated by using the "simplex method". These imputed values show the increase in profit which would result if an additional unit of that scarce factor is used. The imputed value is the reduction in contribution if that scarce factor is removed.

8. (a) Given,  $c = x^3 - 10x^2 + 9x$ ;  $R = 12x^2 + 11x - 4$ . Find the total profit and marginal profit. 8  
 (b) Critically examine the COBB-DOUGLAS production function. 4

**Answer: 8 (a)**

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$$C = x^3 - 10x^2 + 9x$$

$$R = 12x^2 + 11x - 4$$

$$\text{Total Profit} = R - C = 12x^2 + 11x - 4 - x^3 + 10x^2 - 9x$$

$$= -x^3 + 22x^2 + 2x - 4$$

$$= -(x^3 - 22x^2 - 2x + 4) \text{ (Say P)}$$

$$\text{Marginal Profit} = (3x^2 - 44x - 2)$$

Answer: 8 (b)

- 1) Cobb-Douglas production function is criticized because it shows a constant return to scale. But constant returns to scale are not actuality. Industry is either subject to increasing returns or diminishing returns. Due to scarcity and indivisibility of some factors it is not possible to make a proportionate change of all factors. So constant returns are not possible.
  - 2) No entrepreneur will like to increase the inputs to have constant returns only. His aim will be to get increasing returns but not constant returns
  - 3) Problems arise when this production function is applied to each firm in the industry and to the industry as a whole. This function as applied to each firm may not give the same result as that of the industry.
  - 4) It is based on the assumption that factors of production are substitutable and excludes complementary of factors. But, in the short non-complementary of factors is possible. Therefore, it applies more to the long run than the short run.
9. (a) Fiscal or Budgetary Policies in India are designed to achieve certain objectives. Explain. 6
- (b) Discuss briefly the Pricing Policies based on market conditions. 6

Answer: 9 (a)

1) **Fiscal Policy or Budgetary Policy:**

Fiscal policy or budgetary policy in India is designed to achieve the following objectives:

- (i) To achieve rapid economic development;
- (ii) To reduce concentration of income and wealth so as to create socialistic pattern of society;
- (iii) To achieve plan targets of growth and employment
- (iv) To reduce regional imbalances by providing incentive for backward area location of industries, and
- (v) To modify industrial structure according to plan frame work by encouraging/discouraging investments in certain industries.

Answer: 9 (b)

**PRICING POLICIES BASED ON MARKET CONDITIONS:**

- (a) **Perfect Competition:** A firm can only sell its product at the market price and nothing above it. In the long run, for an efficient firm, the sales price is just equal to the average cost. Normal profit is made. There is no excess profit.
- (b) **Monopoly:** Monopolies are almost always nationalized enterprises for which the criterion of maximization of profit is not justifiable. In reality, a firm enjoys monopoly position only because it has succeeded in eliminating or absorbing its competitors. It is therefore

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probable that, initially, it was better organized and more efficient.

- (c) **Temporary- monopoly:** This situation occurs more frequently. A firm invents a new product and places it on the market. For quite some time the demand will remain low, as consumers are not yet aware of the product. The firm will enjoy a de facto monopoly under the protection of its patents. Then, as the product enters into common usage, demand develops rapidly. Additional firms try to enter the market. They develop new production methods. Gradually, prices and production techniques tend to stabilize. So at the end, the market evolves towards an ordinary competitive one.
- (d) **Skimming Price Policy:** When the product is new but with a high degree of consumer acceptability, the firm may decide to charge a high mark up and, therefore, charge a high price. The system of charging high prices for new products is known as price skimming for the object is to "skim the cream" from the market.
- (e) **Duopoly:** This is the case where there are only two firms in an industry. Each duopolistic can choose his production in such a way as to maximize his income for a given value of output. Each duopolistic has no interest in modifying his behaviour as long as the other does not modify his.
- (f) **Oligopoly:** In oligopolistic situations, entrepreneurs attempt to avoid price wars which are ruinous for the industry. Being aware of the fact that their rivals can do the same, they refrain from seeking to increase their share of the market through price cuts. As a result, oligopoly can attain a certain stability characterized by: a) the 'price leadership' of a firm, b) the reduction of hidden prices, and c) competition in fields other than that of price (like competition in fields other than that of price (like promotion, packaging, etc.)
- (g) **Monopolistic competition:** In this type of market, price policies are extremely varied because of product differentiation. Each firm is faced with a separate demand curve and a market price.