TUTOR MARKED ASSIGNMENT

Course Code	:	ECO - 10
Course Title	:	Elements of Costing
Assignment Code	:	ECO – 10/TMA/2016-17
Coverage	:	All Blocks

Maximum Marks: 100

Attempt all the questions.

1. "Money spent on installing a Cost Accounting System is not an expense but an investment." Explain this statement.

    (20)

2. (a) Explain the main requirements of an efficient System of material control.

    (b) What is Economic Order Quantity? How is it calculated? Explain with an example.

    (10+10)

3. (a) Discuss various principles of apportionment of overheads. Give few examples of the bases used for apportionment.

    (b) State briefly the causes of difference between profit shown by financial Accounting and Cost Accounting.

    (10+10)

4. A product passes through three processes X, Y and Z. The normal wastage of each process is – Process X 3%, Process Y 5% and Process Z 8%. Wastage of process X was sold at Rs. 2.50 per unit, that of process Y at Rs. 5.00 per unit and that of process Z at Rs. 8.50 per unit. 10,000 units were introduced to process X on 1st July, 2015 at a cost of Rs. 100 per unit. The other expenses are as follow:

	Process X	Process Y	Process Z
Material	Rs. 10000	Rs. 15000	Rs. 5000
Labour	Rs. 50000	Rs. 80000	Rs. 65000
Direct Expenses	Rs. 10450	Rs. 15895	Rs. 20000

The actual output was: Process X 9500 units, Process Y 9100 units and Process Z 8100 units. Prepare process accounts, normal and abnormal accounts with examples of each.

    (20)

5. (a) Explain the Accounting procedure of ascertaining profit with example of each when:
    (i) Contract is not completed and
    (ii) Contract is near completion

    (b) Differentiate between LIFO and FIFO methods of pricing the issue of materials. Under condition of rising prices, which of these two methods would you recommend and why?

    (10+10)

E.C.O.-10
Elements of Costing

Attempt all the questions.

Q. 1. "Money spent on installing a Cost Accounting System is not an expenses but an investment". Explain this statement.

Ans. Need For Costing: Every activity involved in production of goods or providing services involves some expenditure. This expenditure may be direct or indirect; the major purpose of such activity in business organization is to generate profit. Therefore, in order to achieve the goal of earning profit a firm should clearly identify the basic elements of a transaction which are Cost, Profit and Price.

For example, a mobile company launches a new mobile phone with excellent features to capture market. It has to incur Rs. 2000 for material, Rs. 3000 for labour, Rs. 2500 for other expenses on every set produced by it and supplied in market. The company has fixed the selling price of the mobile phone at Rs.10,000 per piece. Thus the cost of the phone is Rs. 7500 (2000 + 3000 + 2500), its selling price is Rs. 10,000; and clearly the profit per piece is Rs. 2500 (10,000 –7500).The management requires all such information for purposes of planning, cost control and decision-making. Financial accounting fails to fulfil this need of management which leads to development of new system of accounting cost information of each product, job department, process, etc. is available. All these deficiencies of financial accounting gave birth to "Cost Accounting".

COSTING AND ECONOMY

Costing is also a necessity for modern economy. The features which establish necessity of costing can be summarized as follows:

(i) **Global Competition:** There is high degree of competition in global market, to counter this competition, producers need to have strict control over cost and must follow sound pricing policies.

(ii) **Limited Resources:** There is limited availability of resources. Therefore economic utilization of resources should be done in order to reduce wastages and losses.

(iii) **Complex Management:** The management of organizations, specially of industries is really tedious as it requires action at every stage of operation and also demands regular monitoring.

(iv) **Fast Decisions:** Quick decision-making is required on basis of information available.

(v) **Social Responsibilities:** Every business organization has a responsibility towards society in terms of proper quality, reasonable prices, proper supply etc.

(vi) **Optimum Profit:** Every organization is set to earn profit, this can be achieved by efficient performance in activities like financial, production, marketing etc.

Looking at the above points, it can be concluded that costing is a unifying force behind business success. It performs all the functions which are required for a firm to enhance the revenue generation. Its main features like resource management, removal of wastage, pricing, management of processes, decision-making, fulfilling social responsibility etc. contributes to making large profits.

"Cost accounting is that part of management accounting which establishes budgets and standard cost and actual cost of operations, processes, departments or products and the analysis of variances, profitability or social use of funds." Its main objectives can be summarised as follows:

The foremost objective of cost accounting is to ascertain the cost of production and services rendered.

 (i) To determine the selling price of product.

 (ii) To classify different cost elements.

 (iii) To identify causes of wastage and application of remedies to remove them.

 (iv) Reduce and control cost through comparisons and analysis.

 (v) To help management in formulating policies and taking decisions.

 (vi) It leads to judgement of efficiency of organization as a whole as well as department wise.

 (vii) It produces statements at such intervals as management requires. It is essential for management to review production, sale, profit etc.

"Costing" is the classifying, recording, and appropriate allocation of expenditure to determine cost of products or services; and for presentation suitably of arranged data for purpose of control and guidance of management. It is an underlying force behind the business success. It aids pricing, control resources, manage processes, checks wastage, facilitates decision-making, discharge social obligations and provide an opportunity for profit growth in an organization. Due to all these functions firms adapt this system. Costing is also a necessity for modern economy. Its few characteristics establishes its importance. These are as follows:

 (i) Due to shortage of resources wastages are required to be eliminated, this can be done by the information provided by cost accounts.

 (ii) In order to meet the competition in the global market firm need to have sound pricing policy. It can only be made with the help of information provided by cost accounts.

 (iii) Firm need to make rapid decisions. Costing facilitates quick decision-making.

 (iv) Cost Accounts helps organizations in discharging social responsibility in terms of fair prices, good quality goods, continuous supply.

 (v) Firms are set-up with goal of making profits, these are based on efficient performance of personnel in various fields. Costing facilitates measuring performances.

 (vi) Management has become complex, it demands attention at every stage to fulfils this requirement of management firm needs costing.

Q. 2. (a) Explain the main requirements of an efficient System of material control.

Ans. Material control may be defined as the control over the procurement, storage and usage of material. It is done to maintain continuous flow of materials and at same time avoiding excessive investment in inventory. The main objectives of material control are:

 1. To ensure continuous availability of material in factory.

 2. To avoid over stocking of material.

3. To bring Economy in purchases.
4. To ensure that purchase of material should be of appropriated quality.
5. Material should be properly stored in order to avoid deterioration.
6. The management should be informed about the cost of material and the stock available.

(b) What is Economic Order Quantity? How is it calculate? Explain with an example.

Ans. A size or quantity of material to be purchased or goods to be manufactured, taking in consideration the effects of minimum or maximum quantities on cost, production or sales is known as economic order quantity.

The economic order quantity can be calculated by making the use following formula:

$$EOQ = \frac{2UO}{\sqrt{I}}$$

Where

EOQ = Economic order quantity

U = Annual usage in units

O = Cost of placing one order including the cost of receiving the goods

I = Cost of carrying one unit of inventory for one year.

Assumptions in the calculation of economic order quantity.

1. The quantity of item to be consumed is known.
2. Cost per unit is known and no discounts are availed.
3. The cost of ordering and carrying are known, fixed per unit. They will be constant throughout.
4. There is no delay in delivery of goods.

$$EOQ = \sqrt{\frac{2UO}{1}}$$

$$= \sqrt{\frac{2 \times 4000 \times 15}{20 \times 18/100}}$$

$$= 182.5$$

Economic Order Quantity

It refers to the size of the order which gives maximum economy in purchasing any material. It is also referred as optimum or standard ordering quantity. It is fixed mainly after taking into consideration the following cost.

(i) Ordering cost: It is the cost of placing an order and securing the suppliers. It varies from time to time depending upon the numbers of orders placed and the number of items ordered. The more frequently the orders are placed and fewer the quantities purchased on each order the greater will be the ordering cost and vice versa.

(ii) Inadequate inventory or stock out cost: It includes the cost of expediting purchases, obtaining ruch deliveries, keeping track of back orders etc. all associated with carrying too little inventory. Besides that loss of sales, customers goodwill etc, arising from non-fulfillment of delivery promises are also covered by this category. The precise ascertainment of such cost is virtually impossible.

(iii) Inventory carrying cost: It is the cost of keeping items in stock. It includes in erest on investment, obsolescence losses, store keeping cost, insurance premium etc. The large the volume of inventory the higher will be the inventory carrying cost and vice versa.

The first two costs may be referred as the " Cost of acquiring" While the last as "cost of holding" inventory. The cost of acquiring decreases while the cost of holding increases with every increase in the quantity of purchase lot. A balance is therefore stock between the two opposing factors and the economic order quantity is determined at a level for which the aggregate of acquiring and holding costs in minimum.

Formulla

$$Q = \sqrt{\frac{2U \times P}{S}}$$

Where   Q = Economic order quantity

U = Quantity Purchased or used in a year.

P = Cost of placing an order

S = Annual cost of storage of one unit.

Example: A factory requires 1500 units of an item per month each costing as 27 per unit. The cost per order is Rs 150 and the inventory carrying charges workout 20% of the average inventory. Find the economic order quentity and the number of order per year.

Solution: Here U = $1500 \times 12 = 18000$

P = Rs 150

$$S = 27 \times \frac{20}{100}$$

$$Q = \sqrt{\frac{2 \times 18000 \times 150}{27 \times \frac{20}{100}}}$$

$$= 1000 \text{ unit}$$

$$\text{No. of order placed} = \frac{U}{Q}$$

$$= \frac{18000}{1000} = 18 \text{ orders.}$$

Q. 3. (a) Discuss various principles of apportionment of overheads. Give few examples of the basses used for apportionment.

Ans. After ascertaining the total costs of overheads by means of allocation, apportionment, and re-apportionment, they should be charged to cost units. It is important to distribute the overheads for computation of cost of production.

The process of charging or apportioning the overheads of the cost centres to cost units is known as "absorption".

There are many by which absorption rate can be computed. The difference lie between them only on the base selected the numerator in all the methods is the total overheads for the department and denominator is base selected. There are six methods of overhead absorption these are as follows:

Production Units Method

It is the simplest method. Here the number of units produced is taken as base. The overhead rate is ascertained in terms of per unit of a product. It is suitable for those industries, where the output can be measured in terms of physical units like mining, brick-making and foundries. This method is suited best where the units are uniform in size and are of good quality and standard.

For example, If the production overheads are Rs. 75,000 and the number of units produced are 1,500 the overhead rate will be:

$$\text{Overhead rate} = \frac{\text{Amount of production overhead}}{\text{No. of units produced in that Department}}$$

$$= \frac{75,000}{1,500} = \text{Rs. 50 per unit}$$

Direct Material Cost Method

The base in this method is direct material cost. The overhead absorption rate is computed as a percentage of direct material cost.

For example, If production overheads are Rs.1,00,000 and the direct material cost is Rs. 2,00,000 the overhead rate will be 50% of material cost calculated as follows:

$$= \frac{\text{Production overheads}}{\text{Material costs}} \times 100$$

$$= \frac{1,00,000}{2,00,000} \times 100 = 50\%$$

If the direct material cost of job is Rs. 3000, then the overhead to be absorbed by cost unit will be 50% of Rs. 3000 i.e. Rs. 1,500.

Direct Wages Method

Under this method, the absorption rate is ascertained by taking direct wages as the base and expressing it as a percentage of direct wages.

For example, Production overheads are Rs. 1,60,000 and the direct labour cost is Rs. 2,00,000, the overhead rate will be 80% of direct wages calculated as follow:

$$\text{Overhead rate} = \frac{\text{Production overheads}}{\text{Prime cost}} \times 100$$

$$= \frac{1,60,000}{2,00,000} \times 100 = 80\%$$

Now, if the direct wages of job are Rs. 4,000, the absorption of production overheads by the job will be 80% Rs. 4,000 i.e. Rs. 3,200.

Prime Cost Method

Prime cost is the aggregate of direct materials and direct wages. In order to combine the advantages of both the methods, sometimes prime cost is taken as the basis for the overhead absorption rate.

$$\text{Overhead rate} = \frac{\text{Production overheads}}{\text{Prime Cost}} \times 100$$

$$\text{Production overhead} = \text{Rs. 80,000}$$

$$\text{Prime Cost} = \text{Rs. 1,00,000}$$

$$\text{Overhead rate} = \frac{80,000}{1,00,000} \times 100 = 80\%$$

If the prime cost of a job is Rs. 500; production overhead to be absorbed by the job will be 80% of Rs. 500 i.e., Rs. 400.

Machine Hour Method

This method is similar to labour hour method. But, instead of taking labour hours as the base, machine be ignored under this method, and this is the main limitation of this method.

Direct Labour Hour Method

Under this method, the overhead absorption rate is calculated per labour hour. It is one by dividing the total overheads in the production department by the number of hours worked by labour in that department. The overhead pertaining to a job or product is ascertained by multiplying the hourly rate with the number of labour hours spent for that job or product.

This method tries to eliminate the defects of direct wage method. It take into consideration the time factor and the difference in wages rate does not affect its validity. It is suited to those concerns which are labour oriented.

(b) State briefly the causes of difference between profit shown by financial Accounting and Cost Accounting.

Ans. Difference in profits shown by Financial Accounts and the profits shown by Cost Accounts arise because of the following reasons:

Items shown only in financial accounts and not in cost accounts:

There are some items that are recorded in financial accounts only. They are not shown in cost accounts. These items of such expenses and losses lower down the profit in financial accounts while gain and incomes increases the financial profit.

These items are classified as under:

(*a*) Financial charges

   (*i*) Cash discount allowed

  (*ii*) Interest paid on debentures, bank loans, mortgages, etc.

 (*iii*) Penalties and fines paid

 (*iv*) Income-tax paid

  (*v*) Loss on sale of fixed assets

 (*vi*) Loss on sale of investments

(*vii*) Obsolescence loss

(*viii*) Expenses on issue of shares /debentures

 (*ix*) Discount on issue of shares/debentures

  (*x*) Goodwill, preliminary expenses, etc. written off.

(*b*) Financial incomes

   (*i*) Interest received on investments, bank deposits

  (*ii*) Dividend received on investments

 (*iii*) Share transfer fees received

 (*iv*) Rent received

  (*v*) Profit on sale of fixed assets

 (*vi*) Profit on sale of investments

(*vii*) Cash discount received.

(*c*) Items of appropriation

   (*i*) Transfer of profits to reserves

  (*ii*) Dividend paid

 (*iii*) Proposed dividend.

Items shown only in cost accounts and not in financial accounts:

There are very less number of items that are shown only in cost accounts. These are not recorded in financial accounts. These items are:

(*a*) **Interest on capital employed:** Management generally charges interest on capital employed for costing purpose. But in actual no interest is paid.

(*b*) **Charges in lieu of rent:** To establish comparison between the costs of production in own factory and cost of production in rented factory management charge notional rent. No rent is paid in actual.

Under/Over Absorption of Overheads:

Overheads are recovered on the basis of per determined rates. The amount of overhead recovered and incurred usually differ. If overheads are not fully recovered in cost accounts, the shortfall is known as "under absorbed overheads". On the other hand if overheads recovered in cost accounts are in excess of the actual expenditure, the excess amount is known as "Over absorbed overheads".

Q. 4. A product passes through three processes X, Y and Z. The normal wastage of each process is - Process X 3%, Process Y 5% and Process Z 8%. Wastage of process Z was sold at Rs. 2.50 per unit, that of process Y at Rs. 5.00 per unit and that of process Z at Rs. 8.50 per unit. 10,000 units were introduced to process X on 1st July, 2015 at a cost of Rs. 100 per unit. The other expenses are as follow:

	Process X	Process Y	Process Z
Material	**Rs. 10000**	**Rs. 15000**	**Rs. 5000**
Labour	**Rs. 50000**	**Rs. 80000**	**Rs. 65000**
Direct Expenses	**Rs. 10450**	**Rs. 15895**	**Rs. 20000**

The actual output was: Process X 9500 units, Process Y 9100 units and Process Z 8100 units, Prepare process accounts normal and abnormal accounts with examples of each.

Ans.

Process X A/c

Dr.   Cr.

Particulars	Unit	Amount	Particulars	Unit	Amount
To unit introduced	10,000	10,00,000 (10,000 × 100)	By Normal Loss	300	750
To material		10,000	By Abnormal loss	200	220.55
To labour		50,000	By Transfer	9500	1047645
To Direct expenses	10,000	1070450	To Process Y A/c	10,000	10,70,450

Process Y A/c

Dr.   Cr.

Particulars	Unit	Amount	Particulars	Unit	Amount
To Process A/c	9500	10,47645	By Normal Loss	475	2375
To Material	15000				
To Labour		80,000			
			By Tranfer to process C A/c	9100	11,65,773
To Direct exp.		15895			
To Abnormal gain	75	9608			
	9575	11,68,148		9575	11,68,148

Process Z A/C

Particulars	Unit	Amount	Particulars	Unit	Amount
To Process Y A/c	9100	11,65,773	By Normal Loss	728	6188
To Material		5000	By Abnormal Loss A/c	272	40273
To Labhour		65000	By Finished goods	81000	
		20,000			12,09,312
	9100	12,55,773		9100	1255,773

Normal Loss Z A/C

Particulars	Unit	Amount	Particulars	Unit	Amount
To Process X	300	750	By cas (Sale orf scrap)	400	2000
To material Y	475	2375			
To Process Z	728	6188	By abnormal less gain	75	375
			By Abnormal	(Bal fig)	6938
		9313			9313

Abnormal Loss and gain A/c

Particulars	Unit	Amount	Particulars	Unit	Amount
To Normal Loss A/C	75	375	By Process Y A/c	75	6908
To Normal Loss A/c		6938			
By Costing profit					
and Loss A/c		2295			
(Balance figure)		9608			9608

Q. 5. (a) Explain the Accounting procedure of ascertaining profit with example of each when:

(i) Contract is not completed and

Ans. Large contracts take more than a year to complete. The profit is calculated on the work in progress in order to avoid high tax liability and to avoid problems. Every year the certain portion of profit is transferred to credit side of contract account.

Profit on uncompleted contracts must be taken into account in this usually based on the formula:

$$\frac{2}{3} \times \text{Notional Profit} \times \frac{\text{Cash Received}}{\text{Work Certified}}$$

After ascertaining the profit in respect of work certified, amount to be taken profit and loss account is determined on the basis of following rules:

1. In case, **the work on contract has not reasonably advanced**, the value of work certified is less than one-fourth of contract price than the whole amount of notional profit should be kept in reserve, i.e. No profit should be taken to profit and loss account.
2. In case the work on contract has reasonably advanced, say, upto one-fourth of the contract then:
   (*a*) If the value of work certified is one-fourth or more but less than half of the contract price, the amount of profit to be taken to profit and loss account is determined as follows:

$$\frac{1}{3} \times \text{Notional Profit} \times \frac{\text{Cash Received}}{\text{Work Certified}}$$

(*b*) If the value of work certified is half or more than half of the contract price, the amount of profit to be taken to Profit and Loss Account is determined as follows:

$$\frac{2}{3} \times \text{Notional Profit} \times \frac{\text{Cash Received}}{\text{Work Certified}}$$

(ii) Contract is near completion

Ans. In case the **work on the contract is nearing completion,** the basis of taking profit to Profit and Loss Account is the total estimated profit on complete contract, and not the notional profit. Hence/ you will have to work out first the total profit expected on the complete contract. For this purpose, further expenditure to be incurred on the remaining part of the contract is estimated and added to the costs incurred to date so as to arrive at the total cost, on the contract. By deducting this amount from the contract price, you will arrive at the total estimated profit. Thus

Total Estimated Profit = Contract Price - (Expenditure incurred to date + Additional Expenditure)

Having arrived at the total estimated profit as per the above equation, the profit to be taken to the Profit and Loss Account is determined as follows:

$$\text{Total estimated profit} \times \frac{\text{Work Certified}}{\text{Contract Price}} \times \frac{\text{Cash Received}}{\text{Work Certified}}$$

Alternatively

$$\text{Total Estimate Profit} \times \frac{\text{Work Certified}}{\text{Contract Price}}$$

The alternative formula may be used if the amount of cash received cannot be ascertained.

(b) Differentiate between LIFO and FIFO methods of pricing the issue of materials. Under condition of rising prices, which of these two methods would you recommend and why?

Ans. FIFO (First in First Out): Under this method issues are priced on the basis of earlier consignment and when the consignment is exhausted the price of next consignment is taken. For example:

Receipts	**Issues**
12th Oct. 400 kg. @ Rs. 2.00 per kg.	15th Oct. 600 kgs.
17th 500 kg @ 2.20 per kg	400 kg. @ Rs.2.00 per kg 800
	200 kg. @ Rs. 2.20 per kg. 440
	Total issue value 1,240

The various advantages of this method are:

 (*i*) It is simple to operate when there are no fluctuations in price.

 (*ii*) The valuation of closing stock is more near to current market price as well as at cost.

 (*iii*) The oldest units are used first and inventory comprises of latest stock.

 (*iv*) Fair valuation of closing stock is done as it includes recent purchase of materials.

The various disadvantages of this method are:

 (*a*) The calculation is cumbersome and complex.

 (*b*) The issue price may not reflect market price.

 (*c*) For pricing more then one price is required.

 (*d*) This doesn't facilitate comparison.

LIFO (Last in First Out): The method of pricing in which the price of the latest consignment is taken first it ensures that the material is issued on the actual cost.

Advantages

1. It is simple to operate.
2. The costs are related to the current price levels.
3. There is no unrealized profit /loss.
4. It is suitable in case of rising prices.

Disadvantages

1. Calculations become complex and cumbersome when the prices are fluctuating.
2. It will lead to low charge to production when price falls.
3. It make difficult to compare various jobs.
4. Cost at which closing stock is valued does not consider current conditions.

This method is best suited in case of rising prices because the materials charged to production will be higher leading to low profits. Then the tax liability will also be low. The cost of production will be closer to current prices.