Cost Sheet

A cost sheet is a statement which shows the break-up and build-up of costs, it is a document which provides for the assembly of the detailed cost of a cost center or a cost unit.

Cost sheet for the product ..... from ..... to ..... units produced .....

Elements of costs		Amount
Material Consumed		Xx
Direct Wages and Salaries		Xx
Direct expenses		Xx
Prime Cost	→	Xx
Production or Works or Factory Overheads		Xx
Gross Works Cost	→	Xx
Add : Opening stock of Work - in –Progress		Xx
Less : Closing stock of Work -in- Progress		Xx
Net Works Cost	→	Xx
Quality control cost		Xx
Research & development cost		Xx
Administrative Overheads (relating to production activity)		Xx
Less : Credit for Recoveries/Scrap/By-Products / misc. income		Xx
Add: Packing cost (primary)		Xx
Cost of production	→	Xx
Add: Opening stock of finished goods		Xx
Less: Closing stock of finished goods		Xx
Cost of goods sold	→	Xx
Marketing overheads:		
Administration overhead (relating to marketing activity)		Xx
Selling overhead		Xx
Distribution overhead		Xx
Cost of sales	→	Xx
Add: Profit		Xx
Estimated sales price		xxx

Notes:

1. **Material consumed -** Cost of material consumed shall consist of cost of material, duties and taxes, freight inwards, insurance, and other expenditure directly attributable to procurement. Trade discount, rebates and other similar items will be deducted for determining the cost of materials.

2. **Direct wages and salaries** - It is the total of payment made to the employees who are engaged in the production of goods and provision of services. Employee cost is also known as labour cost; it includes the following:

   (a) Wages and salary;

   (b) Allowances and incentives;

   (c) Payment for overtimes;

   (d) Employer's contribution to Provident fund and other welfare funds;

   (e) Other benefits (leave with pay, free or subsidised food, leave travel concession etc.)

3. **Direct expenses** - Expenses other than direct material cost and direct employee cost, which are incurred to manufacture a product or for provision of service and can be directly traced in an economically feasible manner to a cost object. The following costs are examples for direct expenses:

   (a) Royalty paid/ payable for production or provision of service;

   (b) Hire charges paid for hiring specific equipment;

   (c) Cost for product/ service specific design or drawing;

   (d) Cost of product/ service specific software;

   (e) Other expenses which are directly related with the production of goods or provision of service.

4. **Production / works overhead/ manufacturing expenses** are the indirect costs incurred in the production process i.e. all overheads costs incurred from the state of procurement of material till the stage of production of finished goods.

   (a) Consumable stores and spares

   (b) Depreciation of plant and machinery, factory building etc.

   (c) Lease rent of production assets

   (d) Repair and maintenance of plant and machinery, factory building etc.

   (e) Indirect employees cost related with production activities

   (f) Drawing and Designing department cost.

   (g) Insurance of plant and machinery, factory building, stock of raw material & WIP etc.

   (h) Amortized cost of jigs, fixtures, tooling etc.

   (i) Service department cost such as Tool Room, Engineering & Maintenance, Pollution Control etc.

5. Quality Control Cost

The quality control cost is the expenses incurred relating to quality control activities for adhering to quality standard. These expenses shall include salaries & wages relating to employees engaged in quality control activity and other related expenses. They have to check the quality of material received, quality of WIP, & quality of finished product.

6. Research and Development Cost

Research costs are the costs incurred for the original and planned investigation undertaken with a prospect of gaining new scientific or technical knowledge and understanding.

Development costs are the cost incurred in applying research findings or other knowledge to a plan or design for the production of new or substantially improve materials, devices, products, processes, systems or services prior to the commencement of commercial production or use.

7. Administrative Overheads

It is the cost related with general administration of the entity. It includes the followings:

(a) Depreciation and maintenance of, building, furniture etc. of corporate or general management.

(b) Salary of administrative employees, accountants, directors, secretaries etc.

(c) Rent, insurance, lighting, office expenses etc.

8. Selling costs - It is the cost related with sale of products or services. It includes the following costs:

(a) Salary and wages related with sales department and employees directly related with selling of goods.

(b) Rent, depreciation, maintenance and other cost related with sales department.

(c) Cost of advertisement, maintenance of website for online sales, market research etc.

9. Distribution Costs - It includes the cost related with making the goods available to the customers. The costs are

(a) Salary and wages of employees engaged in distribution of goods.

(b) Transportation and insurance costs related with distribution.

(c) Depreciation, hire charges, maintenance and other operating costs related with distribution vehicles

10. Additional Notes:

1. Primary packing costs is included in production cost whereas secondary packing cost is distribution cost. Primary packing is the minimum required packing at the time completion of production. So it should be added with the complete product although it is a Direct Expense.

2. Abnormal and non-recurring cost arising due to unusual or unexpected occurrence of events, such as heavy break down of plants, accident, market condition restricting sales below normal level, abnormal idle capacity, abnormal process loss, abnormal scrap and wastage, payments like VRS, retrenchment compensation, lay-off wages etc. The abnormal cost shall not form the part of cost of production.

3. Items not included in product cost

- Provision for bad debt & discount & rebate
- Interest on loan unless the loan is taken for a specific machine
- Provision for tax
- Cash discount
- Any charges of financial nature, etc.

Advantages of Cost sheet or Cost Statements:

(i) It provides the total cost figure as well as cost per unit of production.

(ii) It helps in cost comparison.

(iii) It facilitates the preparation of cost estimates required for submitting tenders.

(iv) It provides sufficient help in arriving at the figure of selling price.

(v) It facilitates cost control by disclosing operational efficiency.

TRADITIONAL FORMAT

M/S .....

COST SHEET FOR THE PRODUCT

For the period ..... Output: .....

PARTICULARS / ITEMS OF COST	Details	Amount
Raw Material Consumed		xxxx
Direct Wages		xxxx
Direct Expenses		xxxx
PRIME COST:		**XXXXX**
Factory / Works / Production Overhead		xxxx
Less: Sale of scrap		xxxx
Add: WIP or Semi Finished Goods (opening)	xxxx	
Less: WIP or Semi finished goods (closing)	(xxx)	xxxx
		xxxxx
Add: Packing (Primary)		xxxx
FACTORY COST/ WORKS COST		**XXXXX**
Office and Administrative Overhead		xxxx
COST OF PRODUCTION		**XXXXX**
Adjustment of finished goods:		
Add: Opening stock	xxx	
Less: Closing stock	(xxx)	xxxx
COST OF GOODS SOLD		**XXXXX**
Selling and Distribution Overhead:		xxxx
COST OF SALE		**XXXXX**
Add: Profit/(Loss)		xxxxx
SALES		**XXXXX**

Problems :

1. The following figure for the month of April, 2015was extracted from the records of a factory.

	₹
Opening stock of Finished Goods (5,000 units)	2,30,800
Purchase of Raw Materials	14,05,100
Direct Wages	10,25,000
Packing Cost	3,45,000
Research & Development Cost	4,23,600
Testing cost	1,34,700
Factory Overhead	100% of Direct Wages
Administration Overhead of production nature	₹20 per unit produced
Selling & Distribution Overhead	10% of Sales
Opening stock of material	₹ 34,000
Closing stock of material	₹ 56,000
Closing stock of Finished Goods (8,000 units)	?
Sales (45,000 units)	₹ 79,64,000
Closing WIP:	₹ 4,03,000

Prepare a cost sheet assuming that sales are made on the basis of "First-in first-out" principle.

2. From the following particulars relating to production and sales for the year ended 31.12.2015, prepare statement of cost of production and cost of goods sold showing interelia the prime cost.

	₹
Raw materials as on 1.1.15	25,000
Work in progress as on 1.1.15	36,000
Finished goods as on 1.1.15 (8,000 units)	144,000 at cost
Raw materials purchased	200,000
Direct wages	270,000
Factory expenses	144,000
Administration expenses	90,000
Selling expenses	54,000
Distribution expenses	36,000
Sale proceed of finished goods (30,000 units)	900,000
Raw material as on 31.12.15	45,000
Work in progress as on 31.12.15	54,000
Finished goods as on 31.12.15 (10,000 units)	AT COST

3. A company is a metal and wood cutting manufacture, selling products to the home construction market. Consider the following data for the month of October, 2015:

	₹
Sandpaper	5000
Material handling cost	175000
Lubricants and coolants	12500
Misc. indirect manufacturing labour	100000
Direct manufacturing labour	750000
Direct material 1.10.2015	100000
Direct material 31.10.2015	125000
Finished goods 1.10.2015	250000
Finished goods 31.10.2015	375000
Work in progress 1.10.2015	25000
Work in progress 31.10.2015	35000
Plant leasing costs	135000
Depreciation-plant equipments	90000
Property taxes on plant equipment	10000
Fire insurance on plant equipment	7500
Direct material purchased	1150000
Sales revenue	3400000
Marketing promotions	150000
Marketing salaries	250000
Distribution costs	175000
Customer service costs	250000

Prepare Cost Sheet with a separate supporting schedule of cost of goods manufactured.

4. The following figures are available from the Trial balance of X ltd on 30.09.2015:

	₹
Inventories:	
Finished goods	80,000
Raw materials	140,000
Work in progress	200,000
Office Appliances	17,400
Plant & machinery	460,500
Building	200,000
Sales	768,000
Sales returns and rebates	14,000
Materials purchased	320,000

	₹
Freight incurred on materials	16,000
Purchase returns	4,800
Direct labour	160,000
Indirect labour	18,000
Factory supervision	10,000
Repairs and upkeep factory	14,000
Heat light and power	65,000
Rates and Taxes	6,300
Miscellaneous factory expenses	18,700
Sales commission	33,600
Sales traveling	11,000
Sales promotion	22,500
Distribution department: Salaries and expenses	18,000
Office salaries and expenses	8,600
Interest on borrowed funds	2,000

Further details are available as follows:

(i)	Closing inventory	
	Finished goods	115,000
	Raw materials	180,000
	Work in progress	192,000
(ii)	Accrued expense on:	
	Direct labour	8,000
	Indirect labour	1,200
	Interest on borrowed funds	2,000
(iii)	Depreciation to be provided on	
	Office appliances	5%
	Plant & Machinery	10%
	Buildings	4%

(iv) Distribution of the following costs:

Heat, Light and Power to Factory, Office and distribution in the ratio 8:1:1.

Rates and taxes two thirds to factory and one third to office.

Depreciation on building to factory, office and selling in the ratio 8:1:1

You are required to prepare statement showing cost of sales, selling and distribution expense and administrative expenses and condensed profit and loss statement.

5. A fire occurred in the factory premises on October 31st, 2014. The accounting records have been destroyed. Certain accounting records were kept in another building. They reveal the following information for the period September 1st ,2014 to October 31st, 2014 :

(i) Direct materials purchased	₹ 2,50,000
(ii) Work in process inventory, 1.9.2014	₹ 40,000
(iii) Direct material inventory, 1.9.2014	₹ 20,000
(iv) Finished goods inventory, 1.9.2014	₹ 37,750
Indirect manufacturing costs	40% of conversion cost
Sales revenues	₹ 7,50,000
Direct manufacturing labour	₹ 2,22,250
Prime costs	₹ 3,97,750
Gross margin percentage based on revenues	30%
Cost of production	₹ 5,55,775

The loss is fully covered by insurance company. The insurance company wants to know the historical cost of the inventories as a basis for negotiating a settlement.

Required:-

Finished goods inventory,	31.10.2014
Work-in-process inventory,	31.10.2014
Direct materials inventory,	31.10.2014

6. The cost structure of an article, the selling price of which is ₹ 45,000 is follows :

Direct Material	:	50% of the Total cost
Direct Labour	:	20% of the Total cost
Overhead	:	Balance

Due to anticipated increase in existing material price by 15% and in the existing labour rate by 25%, the existing profit would come down by 25% if the selling price remains unchanged.

Prepare a comparative statement showing the cost, profit and sale price under the present conditions and with the increase expected for future, assuming the same percentage of profit on cost as at present (calculations may be made to the nearest rupee) had to be earned.

7. M/s Shaw & Co. manufactures two types of pens A and B. Production costs for the year ended 31st March 2015 were:

	₹
Direct Material	4,00,000
Direct Wages	2,24,000
Production overhead	96,000
	7,20,000

It is ascertained that the cost per unit ratios are

(a) Direct Material in type A consists twice as much as that in type B.

(b) The direct wages for type B were 60% of those for type A.

(c) Production overhead was the same per pen of A and B type.

(d) Administrative overhead for each type was 200% of direct wages.

(e) Selling cost was ₹ 0.50 per pen for both types.

(f) Production during the year were:

Type A 40,000 pens of which 36,000 were sold.

Type B 120,000 pens of which 100,000 were sold.

(g) Selling price was ₹14 for type A and ₹10 per pen for type B.

Prepare a Statement showing Cost and Profit.

8. The following data relates to the manufacture of a standard product during the month of April, 20X8:

Raw materials	₹ 1,80,000
Direct wages	₹ 90,000
Machine hours worked (hours)	10,000
Machine hour rate (per hour)	₹ 8
Administration overheads	₹ 35,000
Selling overheads (per unit)	₹ 5
Units produced	4,000
Units sold	3,600
Selling price per unit	₹ 125

You are required to prepare a cost sheet in respect of the above showing profit for the month

9. The following information has been obtained for the period from June 1 to June 30, 2018.

	On June 1, 20X8 (₹)	On June 30, 20X8 (₹)
Cost of raw materials	60,000	50,000
Cost of work-in-process	12,000	15,000
Cost of stock of finished goods	90,000	1,10,000
Purchase of raw materials during June' 20X8		4,80,000
Wages paid		2,40,000
Factory overheads		1,00,000
Administration overheads (related to production)		50,000
Selling & distribution overheads		25,000
Sales		10,00,000

Prepare a statement giving the following information:

(a) Raw materials consumed;

(b) Prime cost;

(c) Factory cost;

(d) Cost of goods sold; and

(e) Net profit.

10. The books of Adarsh Manufacturing Company present the following data for April, 20X9:

Direct labour cost ₹ 17,500 being 175% of works overheads. Cost of goods sold excluding administrative expenses ₹ 56,000.

Inventory accounts showed the following opening and closing balances:

	April 1 (₹)	April 30 (₹)
Raw materials	8,000	10,600
Work-in-progress	10,500	14,500
Finished goods	17,600	19,000

Other data are:

	(₹)
Selling expenses	3,500
General and administration expenses	2,500
Sales for the month	75,000

Prepare cost sheet

11. A Ltd. Co. has capacity to produce 1,00,000 units of a product every month. Its works cost at varying levels of production is as under:

Level	Works cost per unit (₹)
10%	400
20%	390
30%	380
40%	370
50%	360
60%	350
70%	340
80%	330
90%	320
100%	310

It's fixed administration expenses amount to ₹ 1,50,000 and fixed marketing expenses amount to ₹ 2,50,000 per month respectively. The variable distribution cost amounts to ₹ 30 per unit.

It can sell 100% of its output at ₹ 500 per unit provided it incurs the following further expenditure:

(a) It gives gift items costing ₹ 30 per unit of sale;

(b) It has lucky draws every month giving the first prize of ₹ 50,000; 2nd prize of ₹ 25,000, 3rd prize of ₹ 10,000 and three consolation prizes of ₹ 5,000 each to customers buying the product

(c) It spends ₹ 1,00,000 on refreshments served every month to its customers;

(d) It sponsors a television programme every week at a cost of ₹ 20,00,000 per month.

It can market 30% of its output at ₹ 550 per unit without incurring any of the expenses referred to in (a) to (d) above.

Prepare a cost sheet for the month showing total cost and profit at 30% and 100% capacity level.

12. Arnav Inspat Udyog Ltd. has the following expenditures for the year ended 31st March, 2020 :

Sl. No.		Amount (₹)	Amount (₹)
(i)	Raw materials purchased		10,00,00,000
(ii)	GST paid on the above purchases @18% (eligible for input tax credit)		1,80,00,000
(iii)	Freight inwards		11,20,600
(iv)	Wages paid to factory workers		29,20,000
(v)	Contribution made towards employees' PF & ESIS		3,60,000
(vi)	Production bonus paid to factory workers		2,90,000
(vii)	Royalty paid for production		1,72,600
(viii)	Amount paid for power & fuel		4,62,000
(ix)	Amount paid for purchase of moulds and patterns (life is equivalent to two years production)		8,96,000
(x)	Job charges paid to job workers		8,12,000
(xi)	Stores and spares consumed		1,12,000

Sl. No.		Amount (₹)	Amount (₹)
(xii)	Depreciation on:		
	Factory building	84,000	
	Office building	56,000	
	Plant & Machinery	1,26,000	
	Delivery vehicles	86,000	3,52,000
(xiii)	Salary paid to supervisors		1,26,000
(xiv)	Repairs & Maintenance paid for: Plant & Machinery	48,000	
	Sales office building	18,000	
	Vehicles used by directors	19,600	85,600
(xv)	Insurance premium paid for:		
	Plant & Machinery	31,200	
	Factory building	18,100	
	Stock of raw materials & WIP	36,000	85,300
(xvi)	Expenses paid for quality control check activities		19,600
(xvii)	Salary paid to quality control staffs		96,200
(xviii)	Research & development cost paid for improvement in production process		18,200
(xix)	Expenses paid for pollution control and engineering & maintenance		26,600
(xx)	Expenses paid for administration of factory work		1,18,600
(xxi)	Salary paid to functionalmangers:		
	Production control	9,60,000	
	Finance & Accounts	9,18,000	
	Sales & Marketing	10,12,000	28,90,000
(xxii)	Salary paid to General Manager		12,56,000
(xxiii)	Packing cost paid for:		
	Primary packing necessary to maintain quality	96,000	
	For re-distribution of finished goods	1,12,000	2,08,000
(xxiv)	Interest and finance charges paid (for usage of non- equity fund)		7,20,000
(xxv)	Fee paid to auditors		1,80,000
(xxvi)	Fee paid to legal advisors		1,20,000
(xxvii)	Fee paid to independent directors		2,20,000
(xxviii)	Performance bonus paid to sales staffs		1,80,000
(xxix)	Value of stock as on 1st April, 2019:		
	Raw materials	18,00,000	
	Work-in-process	9,20,000	
	Finished goods	11,00,000	38,20,000
(xxx)	Value of stock as on 31st March, 2020:		
	Raw materials	9,60,000	
	Work-in-process	8,70,000	
	Finished goods	18,00,000	36,30,000

Amount realized by selling of scrap and waste generated during manufacturing process – ₹ 86,000/-

From the above data you are required to PREPARE Statement of cost for ArnavIspat Udyog Ltd. for the year ended 31st March, 2020, showing (i) Prime cost, (ii) Factory cost,(iii) Cost of Production, (iv) Cost of goods sold and (v) Cost of sales.

13. Fromthe following particulars, you are required to PREPARE monthly cost sheet of Aditya Industries:

	Amount (₹)
Opening Inventories:	
- Raw materials	12,00,000
- Work-in-process	18,00,000
- Finished goods (10,000 units)	9,60,000
Closing Inventories:	
- Raw materials	14,00,000
- Work-in-process	16,04,000
- Finishedgoods	?
Raw materials purchased	1,44,00,000
GST paid on raw materials purchased (ITC available)	7,20,000
Wages paid to production workers	36,64,000
Expenses paid for utilities	1,45,600
Office and administration expenses paid	26,52,000
Travelling allowance paid to office staffs	1,21,000
Selling expenses	6,46,000

Machine hours worked- 21,600 hours

Machine hour rate- ₹ 8.00 per hour

Units sold- 1,60,000

Units produced- 1,94,000

Desired profit- 15% on sales

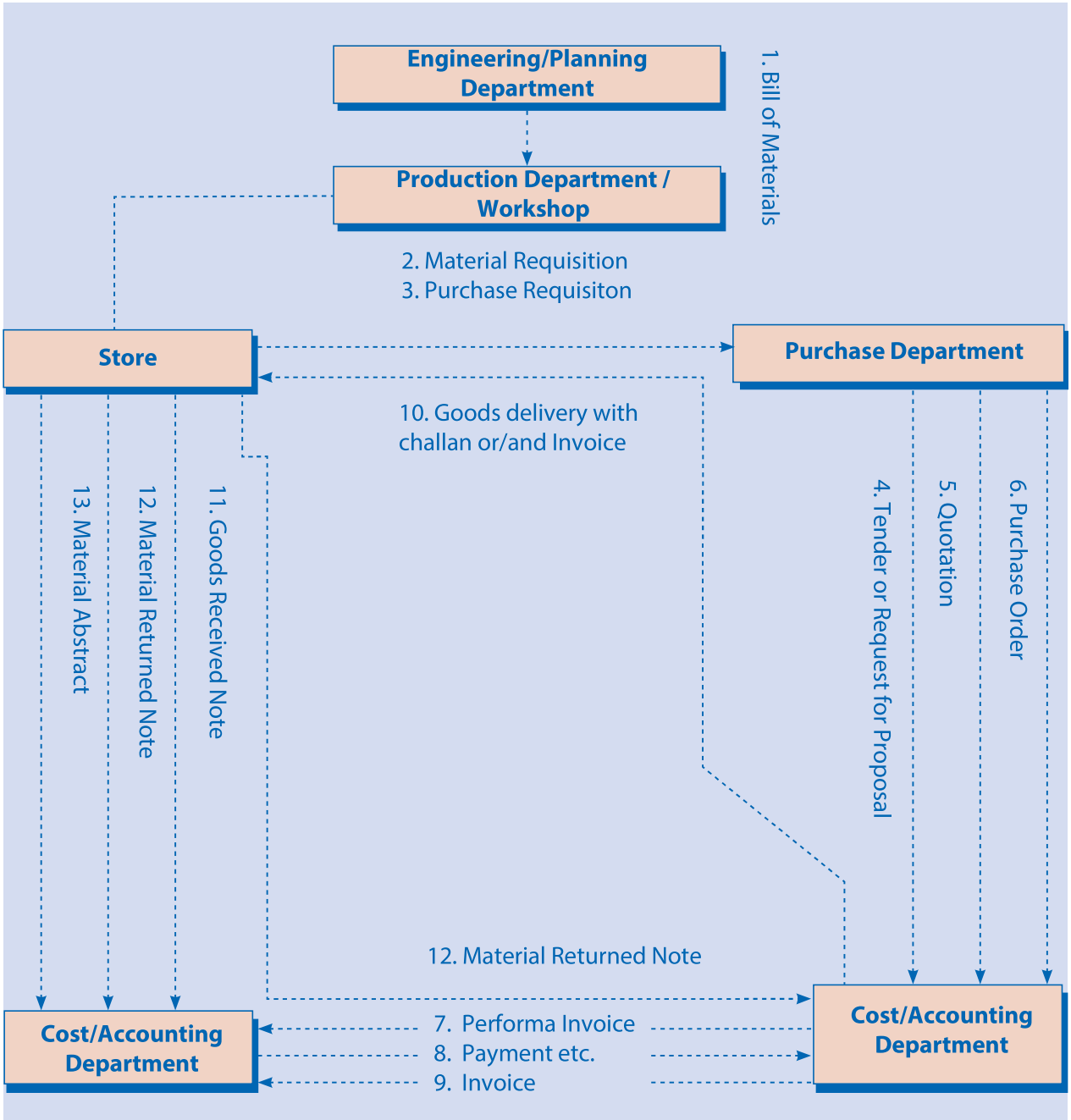
Material:

1. Elements of Material Control:

Material control involves efficient functioning of the following operations:

- Purchasing of materials
- Receiving of materials
- Inspection of materials
- Storage of materials
- Issuing materials
- Maintenance of inventory records

2. MATERIALS PROCUREMENT PROCEDURE :-



Bill of Materials / Materials specification list:

Bill of material is a complete schedule of parts and materials required for a particular order prepared by the Drawing Office and issued by it together with necessary blue prints of drawings.

For standard products, printed copies of Bill of materials are kept with blank spaces for any special details of modifications to be filled in for a particular job/order. The schedule details everything, even to bolts and nuts, sizes and weight.

The documents solves a number of useful purposes, such as –

To stores department

1) It serves as an important basis of preparing material purchase requisitions by stores department.

2) It acts as an authorization for issuing total material requirement.

3) The clerical activity is reduced as the clerk issued the entire/part of the material requirement to the users, if the details of materials asked are present in the Bill of material.

To cost accounts department

1) It is used by cost accounts departments for preparing an estimate budget of material cost for the job/process.

2) It may be used as a device for controlling the excess cost of material used. This is done after determining material variances & ascertaining the reasons for the occurrence.

To production control department

1) It may be used by production control department for controlling usage of materials.

2) Its usage saves time which otherwise would have been wasted for preparing separate requisition of material.

Material Requisition Note

It is also known as material requisition slip, It is a voucher of authority used to get materials issued from store. Generally, it is prepared by the production department and materials are withdrawn on the basis of material requisition list or bill of materials. If no material list has been prepared, it is desirable that the task of the preparation of material requisition notes be left to the planning department or by the department requires the materials.

Difference between Bill of Material & Material Requisition

Bill of material	Material requisition note
1. It is a document prepared by the drawing office (part of production, planning & control.	1. It is prepared by the foreman of the consuming department.
2. It is a complete schedule of component parts & raw material required for a particular job per work order along with the necessary blueprint of drawings.	2. It is a document authorising store keeper to issue materials to the consuming department.
3. It often serves the purpose of a Store Requisition as it shows the complete schedule of materials required for a particular job i.e. it can replace stores requisition.	3. It cannot replace a bill of material.
4. It can be used for the purpose of quotation.	4. It is useful in arriving historical cost only.
5. It helps in keeping a quantitative control on materials draw through Stores Requisition.	5. It shows the material actually drawn from stores.

Purchase requisition

Purchase requisition is a request to the purchase department for procuring the various materials required by the production department, service department, administrative & commercial departments, etc.

It provides for the information in respect of specification of the materials & quantity to be purchased. It also gives information as to when this material are required. The original copy is sent to the purchase department, the duplicate copy is sent to the production, planning & control department (PPC) & the third copy is retained by the department which initiates purchase requisition. It may originate either in the stores department for all items in regular use or from the concerned production or service department in respect of special materials. The purchase manager should have with him a list of the persons authorized to requisition materials. Each purchase requisition should clearly state the quantity, quality & other specification along with the purpose for which materials are required.

Inviting Quotation/Request for Proposal (RFP)

After receipt of duly authorised purchase requisition from the store department or other departments, role of purchase department comes into play. Materials purchase department in a business house is confronted with the following issues:

(i) What to purchase?

(ii) When to purchase?

(iii) How much to purchase?

(iv) From where to purchase.

(v) At what price to purchase.

Purchase Orders

Having decided on the best quotation that should be accepted, the purchase manager or concerned officer proceeds to issue the formal purchase order. It is a written request to the supplier to supply specified materials at specified rates and within a specified period.

Goods received note

If everything is in order and the supply is considered suitable for acceptance, the Receiving department prepares a Receiving Report or Material Inward Note or Goods Received Note. Generally, it is prepared in quadruplicate, the copies being distributed to purchase department, store or order indenting department, receiving department and accounting department.

3. Store Records

Bin Cards

It is a quantitative record of inventory which shows the quantity of inventory available in a particular bin. Bin refers to a box/ container/ space where materials are kept. Card is placed with each of the bin (space) to record the details of material like receipt, issue and return. It is maintained by store department.

Advantages:

(i) There would be fewer chances of mistakes being made as entries are made at the same time as goods received or issued by the person actually handling the materials.

(ii) Control over stock can be more effective, in as much as comparison of the actual quantity in hand at any time with the book balance is possible.

(iii) Identification of the different items of materials is facilitated by reference to the Bin Card the bin or storage receptacle.

Disadvantages:

(i) Store records are dispersed over a wide area.

(ii) The cards are liable to be smeared with dirt and grease because of proximity to material and also because of handling materials.

(iii) People handling materials are not ordinarily suitable for the clerical work involved in writing Bin Cards.

Stores Ledger: A Stores Ledger is maintained to record of both quantity and cost of materials received, issued and those in stock. It's being a subsidiary ledger to the main cost ledger, it is maintained by the Cost/ Accounts Department. The source documents for posting the ledger are Goods received notes, Materials requisition notes etc.

Bin cards and Stores Ledger

Both bin cards and stores ledger are perpetual inventory records. None of them is a substitute for the other. These two records may be distinguished from the following points of view:

(i) Bin cards are maintained by the store keeper, while the stores ledger is maintained by the cost accounting department.

(ii) Bin card is the stores recording document whereas the stores ledger is an accounting record.

(iii) Bin card contains information with regard to quantities i.e. their receipt, issue and balance while the stores ledger contains both quantitative and value information in respect of their receipts, issue and balance.

(iv) In the bin card entries are made at the time when transaction takes place. But in the stores ledger entries are made only after the transaction has taken place.

(v) Inter departmental transfers of materials appear only in stores ledger.

(vi) Bin cards record each transaction but stores ledger records the same information in a summarized form.

4. Economic ordering quantity

EOQ is the size of the lot to be purchase which is economically viable.

Assumptions:-

(i) Ordering cost per order and carrying cost per unit per annum are known and they are fixed.

(ii) Anticipated usage of material in units is known.

(iii) Cost per unit of the material is constant and is known as well.

(iv) The quantity of material ordered is received immediately i.e. the lead time is zero.

5. Just in Time (JIT) purchases

JIT mean the purchases of goods materials such that delivery immediately precedes their use. This will ensure that stocks are as low as possible. JIT purchasing is implemented by developing closer relationship with supplier so that the company & supplier work together cooperatively. In JIT purchasing arrangement is made with supplier for more frequent deliveries of smaller quantities of materials so that each delivery is just sufficient to meet immediate production requirement.

JIT is based on two principles

(i) Produce goods only when it is required and

(ii) the products should be delivered to customers at the time only when they want.

It is also known as 'Demand pull' or 'Pull through' system of production. In this system, production process actually starts after the order for the products is received. Based on the demand, production process starts and the requirement for raw materials is sent to the purchase department for purchase.

Benefits :

1. The supplier of materials cooperates with the company & supply request quantity of materials for which order is placed before the start of production reducing the cost of stock outs.
2. Investment in raw materials & WIP is substantially reduced thereby saving opportunity/ interest cost.
3. It result in saving is factory space & thus storage costs.
4. JIT purchases results in saving in materials handling & breakage costs.

6. Inventory turnover ratio

ITR is calculation to indicate whether inventories have been used efficiently or not. The purpose is to ensure the blocking of only required minimum funds in inventory. ITR is the relationship between raw materials consumed & overage inventory of raw materials held. A high ratio is an indicator of fast moving stock. A low ratio indicates that locking up of working capital in undesirable stock. The ratio is calculated as follows.

Inventory turnover = Cost of materials used / Average value of stock.

Material turnover in days = Days during the period / Inventory turnover ratio.

7. Inventory control

ABC analysis of inventory control:

ABC stands for Always Best Control of inventory storage. It is a system of inventory control which exercises discriminating control over different items of stores classified on the basis of their relative investment/value & average quantity held during a period. The items of inventory are divided into three categories namely A, B & C according to their importance.

i. **'A' Category** of items consists of only a small percentage i.e., about 10% of the total items of material handled by the stores but require heavy investment i.e., about 70% of inventory value because of their high prices and heavy requirement.

ii. **'B' Category** of items comprises of about 20% of the total items of material handled by stores. The percentage of investment required is about 20% of the total investment in inventories.

iii. **'C' category** of items does not require much investment. It may be about 10% of total inventory value but they are nearly 70% of the total items handled by stores.

'A' category of items can be controlled effectively by using a regular system, which ensures neither over- stocking nor shortage of materials for production. Such a system plans its total material requirements by making budgets. The stocks of materials are controlled by

fixing certain levels like maximum level, minimum level and re-order level. A reduction in inventory management costs is achieved by determining economic order quantities after taking into account ordering cost and carrying cost. To avoid shortages and to minimize heavy investment of funds in inventories, the techniques of value analysis, variety reduction, standardization etc. are used along with aforesaid techniques.

In the case of 'B' category of items, as the sum involved is moderate, therefore, the same degree of control as applied in 'A' category of items is not warranted. The order for the items, belonging to this category may be placed after reviewing their situation periodically. This category of items can be controlled by routine control measures.

For 'C' category of items, there is no need of exercising constant control. Orders for items in this group may be placed either after six months or once in a year, after ascertaining consumption requirements.

Fast Moving, Slow Moving and Non Moving (FSN) Inventory:

(i) Fast Moving- This category of items are placed nearer to store issue point and the stock is reviewed frequently for making of fresh order.

(ii) Slow Moving- This category of items are given stored little far and stock is reviewed periodically for any obsolescence and may be shifted to Non-moving category.

(iii) Non Moving- This category of items are kept for disposal. This category of items is reported to the management and an appropriate provision for loss may be created.

Vital, Essential and Desirable (VED): Generally, this classification is done for spare parts which are used for production.

(i) Vital- Items are classified as vital when its unavailability can interrupt the production process and cause a production loss. Items under this category are strictly controlled by setting re-order level.

(ii) Essential- Items under this category are essential but not vital. The unavailability may cause sub standardisation and loss of efficiency in production process.

(iii) Desirable- Items under this category are optional in nature, unavailability does not cause any production or efficiency loss.

8. Perpetual Inventory and Continuous Stock Taking :

Perpetual inventory represents a system of records maintained by the stores department. It in fact comprises: (i) Bin Cards, and (ii) Stores Ledger.

The success of perpetual inventory depends upon the following:

(a) The Stores Ledger – (showing quantities and amount of each item).

(b) Stock Control cards (or Bin Cards).

(c) Reconciling the quantity balances shown by (a) & (b) above.

(d) Checking the physical balances of a number of items every day systematically and by rotation.

(e) Explaining promptly the causes of discrepancies, if any, between physical balances and book figures.

(f) Making corrective entries where called for after step (e) and

(g) Removing the causes of the discrepancies referred to in step (e)

Advantages of perpetual inventory:

(1) Physical stocks can be counted and book balances adjusted as and when desired without waiting for the entire stock-taking to be done.

(2) Quick compilation of Profit and Loss Account (for interim period) due to prompt availability of stock figures.

(3) Discrepancies are easily located and thus corrective action can be promptly taken to avoid their recurrence.

(4) A systematic review of the perpetual inventory reveals the existence of surplus, dormant, obsolete and slow-moving materials, so that remedial measures may be taken in time.

(5) Fixation of the various stock levels and checking of actual balances in hand with these levels assist the Store keeper in maintaining stocks within limits and in initiating purchase requisitions for correct quantity at the proper time.

Continuous Stock Verification: The checking of physical inventory is an essential feature of every sound system of material control. The system of continuous stock-taking consists of physical verification of items of inventory.

Advantages of continuous stock-taking:

1. Closure of normal functioning is not necessary.
2. Stock discrepancies are likely to be brought to the notice and corrected much earlier than under the annual stock-taking system.
3. The system generally has a sobering influence on the stores staff because of the element of surprise present therein.
4. The movement of stores items can be watched more closely by the stores auditor so that chances of obsolescence buying are reduced.
5. Final Accounts can be ready quickly. Interim accounts are possible quite conveniently.

9. TREATMENT OF NORMAL AND ABNORMAL LOSS OF MATERIALS

Nature	Meaning	Treatment – Normal Loss	Treatment – Abnormal Loss
Waste	The portion of raw material which is lost during storage or production and discarded. The waste may or may not have any value.	Cost of normal waste is absorbed by good production units.	The cost of abnormal loss is transferred to Costing Profit and loss account.
Scrap	The materials which are discarded and disposed-off without further treatment. Generally, scrap has either no value of insignificant value. Some time it may reintroduced into the process as raw material.	The cost of scrap is borne by good units and income arises on account realisable value is deducted from the cost.	The scrap account should be charged with full cost. The credit is given to the job or process concerned. The profit or loss in the scrap account, on realisation, will be transferred to the Costing Profit and Loss Account.
Spoilage	It is the term used for materials which are badly damaged in manufacturing operations, and they cannot be rectified economically and hence taken out of process to be disposed of in some manner without further processing.	Normal spoilage costs are included in costs either charging the loss due to spoilage to the production order or by charging it to production overhead so that it is spread over all products.	The cost of abnormal spoilage is charged to the Costing Profit and Loss Account. When spoiled work is the result of rigid specification, the cost of spoiled work is absorbed by good production while the cost of disposal is charged to production overhead.
Defectives	It signifies those units or portions of production which do not meet the quality standards. Defectives arise due to sub-standard materials, bad-supervision, bad-planning, poor workmanship, inadequate-equipment and careless inspection.	The cost less realisable value on sale of defectives are charged to material cost of good production.	Material Cost of abnormal defectives are not included in material cost but treated as loss after giving credit to the realisable value of such defectives. The material cost of abnormal loss is transferred to costing profit and loss account.

Problems:

COMPUTATION OF STOCK LEVELS

1. Calculate for each component (a) Re-ordering level, (b) Minimum level, (c) Maximum level, (d) Average stock level.

	X	Y
Normal Usage per week	150	200
Re-ordering Quantity	1,900	1,500
Maximum Usage per week	225	250
Minimum Usage per week	75	100
Re-ordering Period (weeks)	12 to 18	6 to 12

2. Calculate ROL from the following information: Maximum stock level 14,000 Lt; Minimum consumption 70 Lt per hour; minimum lead time 6 days; daily working hours in the factory is 9 hours; ROQ is 8,250 Lt.

3. Following details are related to a manufacturing concern:

Re-order Level	160,000 units
Economic Order Quality	90,000 units
Minimum Stock Level	100,000 units
Maximum Stock Level	190,000 units
Average Lead Time	6 days

Difference between minimum lead time and Maximum lead time 4 days Calculate:

(i) Maximum consumption per day

(ii) Minimum consumption per day

4. A company uses three raw materials A, B and C for a particular product for which the following data apply

Raw material	Usage Per unit of Product (Kgs)	Re-order Quantity (Kg)	Price per kg (₹)	Delivery period (in weeks)			Re- order Level (Kgs)	Minimum Level (Kgs)
				Min	Ave	Max		
A	10	10000	0.10	1	2	3	8000	–
B	4	5000	0.30	3	4	5	4750	–
C	6	10000	0.15	2	3	4	–	2000

Weekly production varies from 175 to 225 units, averaging 200 units of the said product. Calculate:

(i) Minimum Stock of A

(ii) Maximum stock of B

(iii) Re- order level of C

(iv) Average stock level of A

EOQ COMPUTATION AND DISCOUNT ANALYSIS

5. Calculate economic order quantity from the following information:

Annual purchase of RM	8,000 units
Ordering cost per order	₹ 15.00
Storage cost	2% p.a.
Risk of damages	3% p.a.
Insurance	1% p.a.
Interest rate	4% p.a.
Cost per unit of RM	₹ 15.00

6. Kartik & Co, manufactures a special product, which requires 'ZED'. The following particulars were collected for the year 2019-20:

(i)	Monthly demand of Zed	7,500 units
(ii)	Cost of placing an order	₹ 500
(iii)	Re-order period	5 to 8 weeks
(iv)	Cost per unit	₹ 60
(v)	Carrying cost p.a.	10%
(vi)	Normal usage	500 units per week
(vii)	Minimum usage	250 units per week
(viii)	Maximum usage	750 units per week

Required:

(i) Re-order quantity. (ii) Re-order level. (iii) Minimum stock level.
(iv) Maximum stock level. (v) Average stock level.

7. Shriram enterprise manufactures a special product "ZED". The following particulars were collected for the year 2011:

(a) Monthly demand of ZED – 1,000 units

(b) Cost of placing an order ₹ 100.

(c) Annual carrying cost per unit ₹ 15.

(d) Normal usage 50 units per week.

(e) Minimum usage 25 units per week.

(f) Maximum usage 75 units per week.

(g) Re-order period 4 to 6 weeks.

Compute from the above

(1) Re-order quantity (2) Re-order level (3) Minimum level
(4) Maximum level (5) Average stock level.

8. From the details given below, calculate:

(i) Re-ordering level (ii) Maximum level

(iii) Minimum level (iv) Danger level

Reordering quantity is to be calculated on the basis of following information:

Cost of placing a purchase order is ₹ 20. Number of units to be purchased during the year is 5,000. Purchase price per unit is ₹ 50. Annual cost of storage per unit is ₹ 5.

Details of lead time: Average 10 days, Maximum 15 days, Minimum 6 days. For emergency purchases 4 days.

Rate of consumption: Average: 15 units per day, Maximum: 20 units per day.

9. Zed Company supplies plastic crockery to fast food restaurants in metropolitan city. One of its products is a special bowl, disposable after initial use, for serving soups to its customers. Bowls are sold in pack 10 pieces at a price of ₹50 per pack.

The demand for plastic bowl has been forecasted at a fairly steady rate of 40,000 packs every year. The company purchases the bowl direct from manufacturer at ₹ 40 per pack within a three days lead time. The ordering and related cost is ₹ 8 per order. The storage cost is 10% per annum of average inventory investment.

Required:

i) Calculate Economic Order Quantity.

ii) Calculate number of orders needed every year.

iii) Calculate the total cost of ordering and storage bowls for the year.

iv) Determine when should the next order to be placed. (Assuming that the company does not maintain a safety stock and that the present inventory level is 333 packs with a year of 360 working days.

10. Annual requirement of Coca Cola of 144,000 units is currently purchased in 8 installments. Each unit costs ₹ 4 and the ordering cost is ₹ 100. The inventory carrying cost is estimated at 20% of unit value. How much money can be saved by Economic Order Quantity.

11. Simran Limited produces a product which has a monthly demand of 52,000 units. The product requires a Component X which is purchased at ₹ 15 per unit. For every finished product, 2 units of Component X are required. The ordering cost is ₹ 350 per order and the carrying cost is 12% p.a.

Required :

i. Calculate the economic order quantity for Component X.

ii. If the minimum lot size to be supplied is 26,000 units, what is the extra cost, the company has to incur?

12. M/s. Tubes Ltd. are the manufacturers of picture tubes for T.V. The following are the details of their operation during 2012:

Average monthly market demand	2,000 Picture Tubes
Ordering cost	₹ 100 per order.
Inventory carrying cost	20% p.a.
Cost of tubes	₹ 500 per tube
Normal usage	100 tubes per week
Maximum usage	200 tubes per week
Minimum usage	50 tubes per week
Lead time to supply	6 – 8 weeks

Compute from the above:

(a) Economic Order Quantity

(b) Maximum level of stock , Minimum level of stock , Re-order level.

13. A company manufactures a product from a raw material, which is purchased at ₹ 80 per kg. The company incurs a handling cost of ₹ 370 plus freight of ₹ 380 per order. The incremental carrying cost of inventory of raw materials is ₹ 0.25 per kg. per mensem. In addition, the cost of working capital finance on the investment in inventory of raw materials is ₹ 12 per kg. per annum. The annual production of the product is 1,00,000 units and 2.5 units are obtained from one kg of raw materials.

Required :

a. Calculate the economic order quantity of raw materials.

b. Advice, how frequently should orders for procurement be placed.

c. If the company proposes to rationalize placement of orders on quarterly basis, what percentage of discount in the price of raw materials should be negotiated ?

14. The following alternatives are available for evaluation of stock ZENCO :

(i) Purchase stock twice monthly, 200 units. (ii) Purchase monthly, 400 units.
(iii) Purchase every three months, 1,200 units. (iv) Purchase six monthly, 2,400 units.
(v) Purchase annually, 4,800 units.

It is ascertained that the purchase price per unit is 80p for order up to 1,000 units. A 5% discount is offered by the supplier on the whole order where delivers are 1,001 up to 2,000, & 10% reduction on the total order for deliveries in excess of 2000.

Each purchase incurs administration costs of ₹ 5. Storage, interest on capital and other costs are 25p p. u. of average stock quarterly held. You are required to advise management on the optimum order size.

15. A company uses a special bracket in the manufacture of its products which it orders from outside suppliers. The appropriate data are:

Demand	2,000 per annum
Ordering cost	₹ 20 per order
Carrying cost	20% of item price

Basic item price ₹ 10 per bracket.

The company is offered the following discounts on the basic price

For order Quantities	400 – 799	less 2%
	800 – 1599	less 4%
	1,600 and over	less 5%

(i) Compute EOQ. (ii) It is required to establish the most economical quantity to order.

16. EXE Limited has received an offer of quantity discounts on its order of materials as under:-

Price per tone ₹	Tones Nos.
1,200	Less than 500
1,180	500 and less than 1,000
1,160	1,000 and less than 2,000
1,140	2,000 and less than 3,000
1,120	3,000 and above.

The annual requirement for the material is 5,000 tonnes. The ordering cost per order is ₹ 1,200 and the stock holding cost is estimated at 20% of material cost per annum. You are required to compute the most economical purchase level.

17. JP Limited, manufacturers of a special product, follows the policy of EOQ (Economic Order Quantity) for one of its components. The component's details are as follows :

	₹
Purchase Price per Component	200
Cost of an Order	100
Annual Cost of Carrying one Unit in Inventory	10% of Purchase Price
Total Cost of Inventory Carrying and Ordering Per Annum	4,000

The company has got 2 offers

a. discount of 2% on the price of the component provided the lot size is 2,000 components at a time.

b. discount of 5% on the price of the component provided all components will purchase at a time.

Compute the EOQ & advise whether the quantity discount offer can be accepted. Assume that the inventory carrying cost does not vary according to discount policy.

18. KL Limited produces product 'M' which has a quarterly demand of 8,000 units. The product requires 3 kg. quantity of material 'X' for every finished unit of product. The other information are follows:

Cost of material 'X'	:	₹ 20 per kg.
Cost of placing an order	:	₹ 1,000 per order
Carrying Cost	:	15% per annum of average inventory

You are required:

(i) Calculate the Economic Order Quantity for material 'X'.

(ii) Should the' company accept an offer of 2 percent discount by the supplier, if he wants to supply the annual requirement of material 'X' in 4 equal quarterly installments?

19. A Company manufactures a special product which requires a component 'Alpha'.

The following particulars are collected for the year 20X1:

(i)	Annual demand of Alpha	8,000 units
(ii)	Cost of placing an order	₹ 200 per order
(iii)	Cost per unit of Alpha	₹ 400
(iv)	Carrying cost p.a.	20%

The company has been offered a quantity discount of 4 % on the purchase of 'Alpha' provided the order size is 4,000 components at a time.

Required:

(i) Compute the economic order quantity

(ii) Advise whether the quantity discount offer can be accepted.

20. The complete Gardener is deciding on the economic order quantity for two brands of lawn fertilizer. Super Grow and Nature's Own. The following information is collected:

	FERTILIZER	
	Super Grow	Nature's Own
Annual demand	2,000 bags	1,280 bags
Relevant ordering cost per purchase order	₹1,200	₹1,400
Annual relevant carrying cost per bag	₹480	₹560

Required:

(i) Compute EOQ for Super Grow and Nature's own.

(ii) For the EOQ, what is the sum of the total annual relevant ordering costs and total annual relevant carrying costs for Super Grow and Nature's own?

(iii) For the EOQ, compute the number of deliveries per year for Super Grow and Nature's own.

21. G. Ltd. produces a product which has a monthly demand of 4,000 units. The product requires a component X which is purchased at₹ 20. For every finished product, one unit of component is required. The ordering cost is ₹120 per order and the holding cost is 10% p.a.

You are required to calculate:

(i) Economic order quantity.

(ii) If the minimum lot size to be supplied is 4,000 units, what is the extra cost, the company has to incur?

(iii) What is the minimum carrying cost, the company has to incur?

22. Primex Limited produces product 'P'. It uses annually 60,000 units of a material 'Rex' costing ₹ 10 per unit. Other relevant information are:

Cost of placing an order	₹ 800 per order
Carrying cost	15% per annum of average inventory
Re-order period	10 days
Safety stock	600 units

The company operates 300 days in a year.

You are required to calculate:

(i) Economic Order Quantity for material 'Rex'.

(ii) Re-order Level

(iii) Maximum Stock Level

(iv) Average Stock Level

23. The quarterly production of a company's product which has a steady market is 20,000 units. Each unit of a product requires 0.5 kg. of raw material. The cost of placing one order for raw material is ₹100 and the inventory carrying cost is ₹ 2 per annum. The lead time for procurement of raw material is 36 days and a safety stock of 1,000 kg. of raw materials is maintained by the company. The company has been able to negotiate the following discount structure with the raw material supplier.

Order quantity (kg.)	Discount (₹)
Upto 6,000	NIL
6,001 – 8,000	400
8,001 –16,000	2,000
16,001 – 30,000	3,200
30,001 – 45,000	4,000

You are required to

(i) EOQ

(ii) Calculate the re-order point taking 30 days in a month.

(iii) Prepare a statement showing the total cost of procurement and storage of raw material after considering the discount of the company elects to place one, two, four or six orders in the year.

STOCK OUT AND PROBABILITY ANALYSIS

24. IPL Limited uses a small casting in one of its finished products. The castings are purchased from a foundry. IPL Limited purchases 54,000 castings per year at a cost of ₹ 800 per casting.

The castings are used evenly throughout the year in the production process on a 360-day-per-year basis. The company estimates that it costs ₹ 9,000 to place a single purchase order and about ₹ 300 to carry one casting in inventory for a year. The high carrying costs result from the need to keep the castings in carefully controlled temperature and humidity conditions, and from the high cost of insurance.

Delivery from the foundry generally takes 6 days, but it can take as much as 10 days. The days of delivery time and percentage of their occurrence are shown in the following tabulation:

Delivery time (days) :	6	7	8	9	10
Percentage of occurrence :	75	10	5	5	5

Required:

(i) Compute the economic order quantity (EOQ).

(ii) Assume the company is willing to assume a 15% risk of being out of stock. What would be the safety stock? The re-order point?

(iii) Assume the company is willing to assume a 5% risk of being out of stock. What would be the safety stock? The re-order point?

(iv) Assume 5% stock-out risk. What would be the total cost of ordering and carrying inventory for one year?

(v) Refer to the original data. Assume that using process re-engineering the company reduces its cost of placing a purchase order to only ₹ 600. In addition company estimates that when the waste and inefficiency caused by inventories are considered, the true cost of carrying a unit in stock is ₹ 720 per year.

(a) Compute the new EOQ.

(b) How frequently would the company be placing an order, as compared to the old purchasing policy?

25. M/s Tyrotubes stocks sufficient quantity of tyres of almost every vehicle. In year end 2011-12, the report of sales manager revealed that M/s Tyrotubes experienced stock-out of tyres.

The stock-out data is as follows:

Stock-out of Tyres	No. of times
100	2
80	5
50	10
20	20
10	30
0	33

M/s Tyrotubes loses ₹ 150 per unit due to stock-out and spends ₹ 50 per unit on carrying of inventory.

Determine optimum safety stock level.

PRICING OF MATERIAL ISSUES AND VALUATION OF INVENTORY

26. Work out the following using FIFO and LIFO methods of inventory valuation on the basis of following information (a) Value of Closing stock as on 31-3-19 (b) Cost of goods sold during March, '19 (c) Profit or loss for March '19

Sales for the month;	₹ 9,62,500
Opening Stock as on 1-3-19:	60,000 kg @ ₹ 6
Purchases	
March 15,	75,000 kg @ ₹ 7.50
March 24,	50,000 kg @ ₹ 8.00
Closing stock as on 31-3-19:	65,000 kg
General Administrative Expense for the month:	₹ 15,000

27. Prepare Stores Ledger using FIFO, LIFO and Weighted average methods of pricing issues for the month of Sep, 2019:

Material Remco :

1-9-2019	Opening	200 units at ₹ 4 per unit.
3-9-19	Purchases	350 units at ₹ 5
5-9-19	Issues	250 units
6-9-19	Purchases	400 units at ₹ 6
9-9-19	Issues	500 units
10-9-19	Purchases	500 units at ₹ 7
13-9-19	Issues	600 units

28. A.T.Ltd furnishes the following store transaction for September 2012:

1.9.12	Opening balance	25 units	₹ 162.50
4.9.12	Issue Req. no.85	8 units	
6.9.12	Receipt from B&Co. GRN No.26	50 units	@ ₹ 5.75per unit
7.9.12	Issue Req no.97	12 units	
10.9.12	Returns to B &Co.	10 units	
12.9.12	Issue Req No.108	15 units	
13.9.12	Issue Req No.110	20 units	
15.9.12	Receipt from M&Co. GRN.No.33	25 units	@ ₹ 6.10per unit
17.9.12	Issue Req No.121	10 units	
19.9.12	Received replacement from B & Co. GRN No.38	10 units	
20.9.12	Returned from department MRR No.4	5 units	
22.9.12	Transfer from job182 to Job187 in the Dept MTR 6	5 units	
26.9.12	Issue Req.No.146	10 units	
29.9.12	Transfer from Dept A to Dept B MTR 10	5 units	
30.9.12	Shortage in stock taking	2 units	

Write up the price store ledger on FIFO method

29. Aditya Ltd. is engaged in heavy engineering works on the basis of job order received from industrial customers. The company has received a job order of making turbine from a power generating company. Below are some details of stores receipts and issues of copper wire, used in the manufacturing of turbine:

Feb. 1	Opening stock of 1,200 Kgs. @ ₹475 per kg.
Feb. 5	Issued 975 kgs. to mechanical division vide material requisition no. Mec 09/13
Feb. 6	Received 3,500 kgs. @ ₹460 per kg vide purchase order no. 159/2013
Feb. 7	Issued 2,400 kgs. to electrical division vide material requisition no. Ele 012/13
Feb. 9	Returned to stores 475 kgs. by electrical division against material requisition no. Ele 012/13.
Feb. 15	Received 1,800 kgs. @ ₹480 per kg. vide purchase order no. 161/ 2013
Feb. 17	Returned to supplier 140 kgs. out of quantity received vide purchase order no. 161/2013.
Feb. 20	Issued 1,900 kgs. to electrical division vide material requisition no. Ele 165/2013

On 28th February, 2014 it was found that 180 kgs. of wire was fraudulently misappropriated by the stores assistant and never recovered by the company.
Prepare Stock Ledger using 'Weighted Average' method of valuing the issues.

Solution:

Store Ledger of Aditya Ltd. (Weighted Average Method)

Date	Receipts			Issues			Balance of Stock		
Feb.	Qty (kg.)	Rate (₹)	Amount (₹)	Qty (kg.)	Rate (₹)	Amount (₹)	Qty (kg.)	Rate (₹)	Amount (₹)
1	-	-	-	-	-	-	1,200	475.00	5,70,000
5	-	-	-	975	475.00	4,63,125	225	475.00	1.06,875
6	3500	460.00	16,10,000	-	-	-	3,725	460.91	17,16,875
7	-	-	-	2,400	460.91	11,06,175	1,325	460.91	6,10,700
9	475	460.91	2,18,932	-	-	-	1,800	460.91	8,29,632
15	1,800	480.00	8,64,000	-	-	-	3,600	470.45	16,93,632
17	-	-	-	140	480.00	67,200	3,460	470.07	16,26,432
20	-	-	-	1,900	470.07	8,93,133	1,560	470.06	7,33,299
28	-	-	-	180*	470.06	84,611	1,380	470.06	6,48,688

* 180 kgs. is abnormal loss, hence it will be transferred to Costing Profit & Loss A/c

ABC ANALYSIS

30. A factory uses 4,000 varieties of inventory. In terms of inventory holding and inventory usage, the following information is compiled:

No. of varieties of inventory	%	% value of inventory holding (average)	% of inventory usage (in end-product)
3,875	96.875	20	5
110	2.750	30	10
15	0.375	50	85
4,000	**100.000**	**100**	**100**

Classify the items of inventory as per ABC analysis with reasons.

31. From the following details, draw a plan of ABC selective control:

Item	Units	Unit cost (₹)
1	7,000	5.00
2	24,000	3.00
3	1,500	10.00
4	600	22.00
5	38,000	1.50
6	40,000	0.50
7	60,000	0.20
8	3,000	3.50
9	300	8.00
10	29,000	0.40
11	11,500	7.10
12	4,100	6.20

INVENTORY TURNOVER RATIOS

32. Calculate the material turnover ratio for the year 2019 from the following details and determine the fast moving material:

	Material X	Material Y
Opening stock 1.1.2019	25,000	87,500
Purchase during the year	190,000	1,25,000
Closing stock 31.12.2019	15,000	62,500

LANDED COST OF MATERIAL

33. A manufacture of Surat purchased three Chemicals A, B and C from Mumbai. The invoice gave the following information:

		₹
Chemical A:	3,000 kg. @ ₹ 420 per kg.	12,60,000
Chemical B:	5,000 kg. @ ₹ 380 per kg.	19,00,000
Chemical C:	2,000 kg. @ ₹ 475 per kg.	9,50,000
GST (recoverable)		2,05,500
Railway Freight		1,00,000
Total Cost		**44,15,500**

A shortage of 200 kg in Chemical A, of 280 kg in Chemical B and of 100 kg. in chemical C was noticed due to breakages. At Surat, the manufacturer paid octroi duty @ ₹ 0.10per kg. He also paid cartage ₹ 220 for Chemical A, ₹ 632 for Chemical B and ₹ 318 for Chemical C.

Calculate the stock rate that you would suggest for pricing issue of chemical assuming a provision of 5% towards further deterioration.

34. At what price per unit would Part No. A 32 be entered in the Stores Ledger, if the following invoice was received from a supplier :

Invoice	(₹)
200 units Part No. A 32 @ ₹ 5	1,000.00
Less : 20% discount	(200.00)
	800.00
Add : SGST @ 12%	96.00
	896.00
Add : Packing charges (5 non-returnable boxes)	50.00
	946.00

(i) A 2 per cent cash discount will be given if payment is made in 30 days.

(ii) Documents substantiating payment of SGST is enclosed for claiming Input credit.

MISCELLANEOUS PROBLEMS

35. Raw materials 'AXE' costing ₹ 150 per kg. and 'BXE' costing ₹ 90 per kg. are mixed in equal proportions for making product 'A'. The loss of material in processing works out to 25% of the product. The production expenses are allocated at 40% of direct material cost. The end product is priced with a margin of 20% over the total cost.

Material 'BXE' is not easily available and substitute raw material 'CXE' has been found for 'BXE' costing ₹ 75 per kg. It is required to keep the proportion of this substitute material in the mixture as low as possible and at the same time maintain the selling price of the end product at existing level and ensure the same quantum of profit as at present. You are required to compute the ratio of the mix of the raw materials 'AXE' and 'CXE.

36. A company has the option to procure a particular material from two sources:

Source I assures that defectives will not be more than 2% of supplied quantity.

Source II does not give any assurance, but on the basis of past experience of supplies received from it, it is observed that defective percentage is 2.8%.

The material is supplied in lots of 1,000 units. Source II supplies the lot at a price, which is lower by ₹ 100 as compared to Source I. The defective units of material can be rectified for use at a cost of ₹ 5 per unit.

You are required to find out which of the two sources is more economical

37. Aditya Ltd. produces a product 'Exe' using a raw material Dee. To produce one unit of Exe, 2 kg of Dee is required. As per the sales forecast conducted by the company, it will able to sale 10,000 units of Exe in the coming year. The following is the information regarding the raw material Dee:

(i) The Re-order quantity is 200 kg. less than the Economic Order Quantity (EOQ).

(ii) Maximum consumption per day is 20 kg. more than the average consumption per day.

(iii) There is an opening stock of 1,000 kg.

(iv) Time required to get the raw materials from the suppliers is 4 to 8 days.

(v) The purchase price is ₹125 per kg.

There is an opening stock of 900 units of the finished product Exe.

The rate of interest charged by bank on Cash Credit facility is 13.76%.

To place an order company has to incur ₹ 720 on paper and documentation work.

From the above information find out the followings in relation to raw material Dee:

(a) Re-order Quantity

(b) Maximum Stock level

(c) Minimum Stock level

(d) Calculate the impact on the profitability of the company by not ordering the EOQ. [Take 364 days for a year]

38. Arnav Electronics manufactures electronic home appliances. It follows weighted average Cost method for inventory valuation. Following are the data of component X :

Date	Particulars	Units	Rate per unit (₹)
15-12-19	Purchase Order- 008	10,000	9,930
30-12-19	Purchase Order- 009	10,000	9,780
01-01-20	Opening stock	3,500	9,810
05-01-20	GRN*-008 (against the Purchase Order- 008)	10,000	-
05-01-20	MRN**-003 (against the Purchase Order- 008)	500	-
06-01-20	Material Requisition-011	3,000	-
07-01-20	Purchase Order- 010	10,000	9,750
10-01-20	Material Requisition-012	4,500	-
13-01-20	GRN-009	10,000	-
13-01-20	MRN-004	400	-
15-01-20	Material Requisition-013	2,200	-
24-01-20	Material Requisition-014	1,500	-
25-01-20	GRN-010	10,000	-
28-01-20	Material Requisition-015	4,000	-
31-01-20	Material Requisition-016	3,200	-

*GRN-Goods Received Note; **MRN- Material Returned

Note Based on the above data, you are required to CALCULATE:

(i) Re-order level

(ii) Maximum stock level

(iii) Minimum stock level

(iv) PREPARE Store Ledger for the period January 2020 and DETERMINE the value of stock as on 31-01-2020.

(v) Value of components used during the month of January, 2020.

(vi) Inventory turnover ratio.