

PAPER – 4 : COST ACCOUNTING AND FINANCIAL MANAGEMENT

Section A : Cost Accounting

QUESTIONS

1. Identify the correct answer from the given alternatives of the following questions
 - (a) Which of the following concept is known as cost behavior-oriented approach to product costing?
 - (i) Standard costing (ii) Marginal costing
 - (iii) Process costing (iv) Absorption costing
 - (b) "Conversion cost" refers to
 - (i) Manufacturing costs incurred to produce units of output
 - (ii) All costs associated with manufacturing other than direct labour costs.
 - (iii) Cost which are related with marketing, shipping, warehousing.
 - (iv) The sum of direct material costs and all factory overhead costs.
 - (v) The sum of raw material costs and overheads costs.
 - (c) Which of the following is the correct valuation base for finished goods stock for balance sheet purposes?
 - (i) Variable cost per unit. (ii) Marginal cost per unit.
 - (iii) Production cost per unit (iv) Total cost per unit.
 - (d) Which of the following is true at break-even point?
 - (i) Total Sales revenue = Variable cost
 - (ii) Profit = Fixed cost
 - (iii) Sales revenue = Total cost – Variable cost
 - (iv) Contribution = Fixed cost
 - (e) If the raw material prices are affected by inflation, which of the following methods of valuing stocks will give the lowest gross profit?
 - (i) LIFO (ii) Replacement cost
 - (iii) FIFO (iv) Simple average
 - (f) Which of the following does not generally appear on a GRN?
 - (i) Receiving Date (ii) Quantity received
 - (iii) Price of goods (iv) Description of goods.
 - (g) Which of the following is usually prepared everyday by employees for each job worked on?
 - (i) Labour job ticket (ii) Time card
 - (iii) Punch card (iv) Bin card
 - (h) The Margin of safety may be defined as:
 - (i) The difference between planned sales and break-even point sales.
 - (ii) The extent to which sales revenue exceeds variable cost.
 - (iii) The excess of future sales over the current actual sales.
 - (iv) The point at which break-even point sales are achieved.

- (i) In order to identify costs that relate to a specific product, an allocation base should be chosen that
- Does not have a cause and effect relationship
 - Has partial cause and effect relationship
 - Considers variable costs but not fixed costs.
 - Considers direct material and direct labour but not factory overhead.
- (j) Within a given capacity, fixed cost per unit is
- Variable.
 - Fixed.
 - Both.
 - Neither variable nor fixed.
2. Mr. Mohit has a furniture factory. He specialises in the manufacture of small dining tables of standard size of which he can make 15,000 a year. The cost per table worked out as under for the year 2005-2006, when he made and sold 10,000 tables.

	Rs.
Materials	30
Labour	10
Overhead [fixed (recovered @ 50% of material cost)]	<u>15</u>
	<u>55</u>

Price is fixed by adding a standard margin of 10% to the total cost arrived at as above.

In 2006-2007 due to fall in the cost of materials, total cost worked out as under:

	Rs.
Materials	20
Labour	10
Overhead (recovered @ 50% of material cost)	<u>10</u>
	<u>40</u>

Mr. Mohit maintained his standard margin of 10% on the cost of sales. Sales were at the same level as in 2006-2007. You are asked to:

- Determine profit or loss for the year 2006-2007.
 - Compute the price, which should have been charged in 2006-2007 to yield the same profit or loss as in 2005-2006.
3. A firm is engaged in the manufacture of two products 'A' and 'B'. Product A uses one unit of component 'P' and two units of components 'Q'. Product B uses two units of component 'P', one unit of component 'Q' and two units of component 'R'. Component 'R' which is assembled in the factory uses one unit of component 'Q'. Components 'P' and 'Q' are purchased from the market.

The firm has prepared the following forecast of sales and inventory for the next year.

Products		A	B
Sales	Units	8,000	15,000
Inventories:			
At the end of the year	Units	1,000	2,000
At the beginning of the year	Units	3,000	5,000

The production of both the products and the assembling of the component 'R' will be spread out uniformly throughout the year.

The firm at present orders its inventory of components 'P' and 'Q' in quantities equivalent to 3 months' consumption. The firm has been advised that savings in the provisioning of components can arise by changing over to the ordering quantities. The firm has compiled the following data relating to the two Components:

		P	Q
Component usage per annum		30,000	48,000
Price per unit	Rs.	2.00	0.80
Order placing costs per order	Rs.	15.00	15.00
Carrying costs p.a.		20%	20%

Required:

- (a) Prepare a budget of production and requirements of components for the next year.
 - (b) Find the economic order quantity.
 - (c) Based on the economic order quantity calculated in (b) above, calculate the savings arising from switching over to the new ordering system both in terms of cost and reduction in working capital.
4. Discuss the following
- (a) "ABC Analysis" as a technique of Inventory Control.
 - (b) "Just in Time Purchasing"
 - (c) Spoilage and its treatment in Cost Accounting
5. Tania Electronics Ltd. furnishes the following information for 10,000 TV valves manufactured during the year, 2006.

	Rs.		Rs.
Materials	90,000	Clerical Salaries and	
Direct wages	60,000	Management expenses	33,500
Power and consumable stores	12,000	Selling expenses	5,500
Factory indirect wages	15,000	Sale proceeds of scraps	2,000
Lighting of factory	5,500	Plant repairs,	
Defective work (cost of rectification)	3,000	Maintenance and depreciation	11,500

The net selling price was Rs. 31.60 per unit and all the units were sold.

As from 1st January, 2007 the selling price was reduced to Rs. 31.00 per unit. It was estimated that production could be increased in 2007 by utilising 50% spare capacity. Rates for materials and direct wages will increase by 10%.

You are required to prepare:

- (a) Cost sheet for the year, 2006, showing various elements of cost per unit, and
 - (b) Estimated cost profit for 2007 assuming that 15,000 units will be produced and sold during the year. Factory overheads are recovered as a percentage of direct wages and office and selling expenses as a percentage of works cost. (Apply the same respective percentages as in the previous year.)
6. Both direct and indirect labour of a department in a factory are entitled to production bonus in accordance with a Group Incentive Scheme, the outlines of which are as follows:
- (a) For any production in excess of the standard rate fixed at 10,000 tons per month (of 25 days) a general incentive of Rs.10 per ton is paid in aggregate. The total amount payable to each separate group is determined on the basis of an assumed percentage of such excess

production being contributed by it, namely @ 70% by direct labor, @ 10% by inspection staff, @ 12% by maintenance staff and @ 8% by supervisory staff.

- (b) Moreover, if the excess production is more than 20% above the standard, direct labor also get a special bonus @ Rs.5 per ton for all production in excess of 120% of standard.
- (c) Inspection staff are penalized @ Rs.20 per ton for rejection by customer in excess of 10% of production.
- (d) Maintenance staff are also penalized @ Rs.20 per hour of breakdown.

From the following particulars for a month, work out the production bonus earned by each group:

- (a) Actual working days: 20
 - (b) Production: 11,000 tons
 - (c) Rejection by customer: 200 tons
 - (d) Machine breakdown: 40 hours
7. A skilled worker in Young Ltd. is paid a guaranteed wage rate of Rs. 30 per hour. The standard time per unit for a particular product is 4 hours. Chandra Prakash, a worker, is paid wages under the Rowan incentive scheme and he has earned an effective hourly rate of Rs. 37.50 on the manufacture of that particular product.

What would have been his total earnings and effective hourly rate, had he been put on the Halsey incentive scheme (50%)

8. XYZ Ltd. began business on 2nd January, 2007. It made a variety of products, each batch requiring varying attention and effort. Predetermined overhead rates were computed on 2nd January, 2007 as follows:

$$\text{Variable overheads} = \frac{\text{Budgeted variable overheads}}{\text{Total expected activity}} = \frac{\text{Rs.50,000}}{25,000 \text{ hrs.}} = \text{Rs.2 per hour}$$

$$\text{Fixed overheads} = \frac{\text{Budgeted fixed overheads}}{\text{Total expected activity}} = \frac{\text{Rs.1,50,000}}{25,000 \text{ hrs.}} = \text{Rs.6 per hour}$$

A summary of results obtained for the month of January 2007 is given below:

	Rs.
Direct material purchased	1,10,000
Direct materials used	99,000
Direct labour cost incurred (21,250 hours @ Rs.12.20)	2,59,250
Variable factory overhead incurred	42,000
Fixed factory overhead incurred	1,50,000

There was no work in process on 31.1.2007. The costs of goods sold (before considering under-applied overheads) was Rs.3,96,188. The sales was Rs.6,00,000 and selling and administration expenses were Rs.1,00,000. Prepare an income statement for the month where the under-applied overhead is considered as a direct adjustment of cost of goods sold and determine the gross and net profits. Ignore Income Tax.

9. (a) Discuss briefly the Step method and Reciprocal Service method of secondary distribution of overheads.
- (b) Differentiate between Job costing and Batch costing.

10. Bappa Ltd, an engineering company, having 25 different types of automatic machines, furnishes you the following data for 2006-2007 in respect of Machine B:

	Rs.
1 Cost of machine (Life 10 years with no scrap value)	50,000
2 Overhead expenses are:	
Factory rent	50,000 p. a.
Heating and lighting	40,000 p. a.
Supervision	1,50,000 p.a.
Reserve equipment for Machine B	5,000 p. a.
Area of the factory	80,000 sq.m.
Area occupied by Machine B	
Power cost : 50 paise per hour while in operation.	3,000 sq. m
3. Wages of operator is Rs. 24 per day of 8 hours including all fringe benefits. He attends to one machine when it is under set up and two machines while under operation.	
4. Estimated production hours	3,600 p.a.
Estimated set up time in hours	400 p.a.

Prepare a schedule of comprehensive machine hour rate and find the overhead chargeable to the following jobs:

	Job 5300	Job 5700
Set up time (hours)	80	40
Operation time (hours)	130	160

11. Moserbear Ltd. specialises in producing and packaging compact discs (CDs) for the music recording industry. Moserbear Ltd. uses a job order cost system. The following data summarise the operations related to production for March, the first month of operations:

- (a) Materials purchased on account, Rs. 15,500.
 (b) Materials requisitioned and labour used:

	Materials Rs.	Factory Labour Rs.
Job No. 1000	2,650	1,770
Job No. 1001	1,240	650
Job No. 1002	980	420
Job No. 1003	3,420	1,900
Job No. 1004	1,000	500
Job No. 1005	2,100	1,760
For general factory use	450	650

- (c) Factory overhead costs incurred on account, Rs. 2,700.
 (d) Depreciation of machinery, Rs. 1,750.
 (e) Factory overhead is applied at a rate of 70% of direct labour cost.
 (f) Jobs completed: Nos. 1000, 1001, 1002, 1004.

- (g) Jobs 1000, 1001 and 1002 were shipped, and customers were billed for Rs. 8,100, Rs. 3,800, and Rs. 3,500 respectively.

Instructions:

1. Journalise the entries to record the transactions identified above (Narrations are not required).
 2. Determine the account balances for Work in Process and Finished Goods.
 3. Prepare a schedule of unfinished jobs to support the balance in the work in process account.
 4. Prepare a schedule of completed jobs on hand to support the balance in the finished goods account.
12. Omaxe Ltd is a construction company, which has undertaken three contracts. Information for the previous year along with other details is provided to you below:

	Contract A (Rs.000).	Contract B (Rs.000).	Contract C (Rs.000)
Contract price	1,760	1,485	2,420
Balances brought forward at the beginning of the year:			
Material on site		20	30
Written down value of plant and machinery		77	374
Wages accrued		5	10
Transactions during previous year:			
Profit previously transferred to profit and loss a/c			35
Cost of work certified (cost of sales)		418	814
Transactions during current year:			
Material delivered to site	88	220	396
Wages paid	45	100	220
Salaries and other cost	15	40	50
Written down value of plant issued to site	190	35	
Head office expenses apportioned during the year	10	20	50
Balances c/fwd at the end of the year:			
Material on site	20		
Written down value of plant and machinery	150	20	230
Wages accrued	5	10	15
Value of work certified at the end of the year	200	860	2100
Cost of work not certified at the end of the year			55

The agreed retention rate is 10% of the value of work certified by the contractee's architect. Contract C is scheduled to be handed over to the contractee in the near future. It is estimated that Rs 3,05,000 shall be needed to be spent in addition to what has been tabulated above to complete this particular contract. This amount includes an allowance for plant depreciation, construction services and for contingencies.

You are required to prepare contract accounts for each of the three contracts and recommend how much profit or loss should be taken up for the year

13. A transport service company is running five buses between two towns which are 50 kms apart. Seating capacity of each bus is 50 passengers. The following particulars were obtained from their books for April 2007:

	Rs.
Wages of drivers, conductors and cleaners	24,000
Salaries of office staff	10,000
Diesel oil and other oil	35,000

Repairs & maintenance	8,000
Taxation, insurance etc.	16,000
Depreciation	26,000
Interest and other expenses	20,000
	<u>1,39,000</u>

Actually passengers carried were 75% of seating capacity. All buses ran all 30 days of the month. Each bus made one round trip per day.

Find out the cost per passenger kilometer.

14. ABC Ltd operates an integrated cost accounting system and has a financial year which ends on 30 September. It operates in a processing industry in which a single product is produced by passing inputs through two sequential processes. A normal loss of 10 per cent of input is expected in each process.

The following account balances have been extracted from its ledger at 31st August, 2005:

	Debit	Credit
	Rs.	Rs.
Process 1 (materials Rs. 4,400: conversion costs Rs. 3,744)	8,144	
Process 2 (process 1 Rs. 4,431: conversion costs Rs. 5,250)	9,681	
Abnormal loss	1,400	
Abnormal gain		300
Overhead control account		250
Sales		5,85,000
Cost of sales	4,42,500	
Finished goods stock	65,000	

ABC Ltd uses the weighted average method of accounting for work in process. During September, 2005 the following transactions occurred:

		Rs.
Process 1:	Materials input	4,000 kg. 22,000
	Labour cost	12,000
	Transfer to process 2	2,400 kg.
Process 2:	Transfer from process 1	2,400 kg.
	Labour cost	15,000
	Transfer to finished goods	2,500 kg.

Overhead costs incurred amounted to Rs. 54,000.

Sales to customers were Rs. 52,000.

Overhead costs are absorbed into process costs on the basis of 150 per cent of labour cost.

The losses which arise in process 1 have no scrap value: those arising in process 2 can be sold for Rs. 2 per kg.

Details of opening and closing work in process for the month of September, 2005 are as follows:

	Opening	Closing
Process 1	3,000 kg.	3,400 kg.
Process 2	2,250 kg.	2,600 kg.

In both processes closing work in process is fully complete as to material cost and 40 per cent complete as to conversion cost.

Stocks of finished goods at 30 September 2005 were valued at cost of Rs. 60,000.

Requirements:

Prepare the ledger accounts for September, 2005 and the annual profit and loss account of ABC Ltd. (Commence with the balances given above, balance off and transfer any balances as appropriate).

15. Your company uses an integrated accounting system and applies overheads on the basis of "pre-determined" rates. The following are the figures from the Trial Balance as on 31.03.2005:

	Rs.
Manufacturing overheads	4,26,544 Dr.
Manufacturing overheads applied	3,65,904 Cr.
Work-in-progress	1,41,480 Dr.
Finished goods stock	2,30,732 Dr.
Cost of goods sold	8,40,588 Dr.

You are required to show the profit implications under the following two methods,

- (i) Write off to profit and loss account.
 - (ii) Adjustment to cost of sales and inventories of WIP and finished goods
16. ABC Ltd has received a request for a price quotation from one of its regular customers for an order of 500 units with the following characteristics:

Direct labour per unit produced	2 hours
Direct material per unit produced	Rs. 22
Machine hours per unit produced	1 hour
Number of component and material purchases	6
Number of production runs for the component prior to the assembly	4
Average set up time per production run	3 hours
Number of deliveries	1
Number of customer visits	2
Engineering design and support	50 hours
Customer support	50 hours

Details of the activities required for the order are as follows:

Direct labour processing and assembly activities	Rs. 10 per labour hour
Machine processing	Rs. 30 per machine hour
Purchasing and receiving materials and components	Rs. 100 per purchase order
Scheduling production	Rs. 250 per production run
Setting – up machines	Rs. 120 per set up hour
Packaging and delivering orders to customers	Rs. 400 per delivery
Invoicing and account administration	Rs. 120 per customer order
Marketing and order negotiation	Rs. 300 per customer visit
Customer support activities including after sales service	Rs. 50 per customer service hour
Engineering design and support	Rs. 80 per engineering hour

You are required to estimate the full cost of the order under an activity based setup classifying expenses as

- ◆ Unit level expenses

- ◆ Batch level expenses
- ◆ Product sustaining expenses
- ◆ Customer sustaining expenses

17. The following data are available in respect of Process A for February, 2007 of Surana Ltd:

Opening work-in-progress 800 units Rs. 4,000.

Degree of completion of opening work-in-progress:

Materials	100%
Labour	60%
Overhead	60%

Input of materials 9,200 units at a total cost of Rs. 36,800

Direct wages incurred Rs. 16,740

Production overhead Rs. 8,370

Units scrapped in the process 1,200. The stage of completion of these units was:

Materials	100%
Labour	80%
Overhead	80%

Closing work-in-progress 900 units. The stage of completion of these units was:

Materials	100%
Labour	70%
Overheads	70%

Units completed and transferred to the next process 7,900.

Normal process loss is 8% of the total input (opening stock plus units put in).

Scrap value is Rs. 4 per unit.

You are required to:

- (a) Compute equivalent production;
 - (b) Calculate the cost per equivalent units for each element;
 - (c) Calculate the cost of abnormal loss (or gain), closing work-in-progress and the units transferred to the next process using the FIFO method;
 - (d) Prepare the process and other accounts.
18. Ball Bearings Ltd. is committed to supply 24,000 bearings per annum to Polar Fans Ltd. on a steady daily basis. It is estimated that it costs 10 paise as inventory holding cost per bearings per month and that the set-up-cost per run of bearing manufacture is Rs. 324.
- (i) What should be the optimum run size for bearing manufacture?
 - (ii) What should be the interval between two consecutive optimum runs?
 - (iii) Assuming that the company has a policy of manufacturing 6,000 bearings per run, how much extra costs the company would be incurring as compared to the optimum run suggested in (i) above ?
 - (iv) Find out the minimum inventory holding cost.
19. (a) Discuss briefly the treatment of overtime in cost accounting.
 (b) Discuss briefly the Gantt Task and Bonus system
20. (a) Define uniform costing. Explain its Limitations.

- (b) Explain the requisites of Inter-firm comparison.
21. (a) Briefly explain the concept of 'Opportunity Cost'.
- (b) Distinguish between 'Cost control' and 'Cost reduction'

SUGGESTED ANSWERS / HINTS

1. (a) (ii) (b) (i) (c) (iii) (d) (iv) (e) (i) (f) (iii) (g) (i) (h) (i) (i) (ii)
(j) (i)

2. (a) Statement showing the Profit
(for the year 2005-2006)

Production and sale	10,000 tables	
	Total	Per unit
	Rs.	Rs.
Material (Rs.30×10,000 tables)	3,00,000	30.00
Labour (Rs.10×10,000 tables)	<u>1,00,000</u>	<u>10.00</u>
Prime cost	4,00,000	40.00
Overhead (50% of materials cost)	<u>1,50,000</u>	<u>15.00</u>
Total cost	5,50,000	55.00
Profit (10% of total cost)	<u>55,000</u>	<u>5.50</u>
Selling price	<u>6,05,000</u>	<u>60.50</u>

Statement showing the Profit or Loss (for the year 2006-2007)

Production and sale	10,000 tables	
	Total	Per unit
	Rs.	Rs.
Total cost as given (Rs.40×10,000)	4,00,000	40.00
Profit @ 10%	<u>40,000</u>	<u>4.00</u>
Selling price	4,40,000	44.00
Less: Revised total cost		
Materials	2,00,000	
Labour	1,00,000	
Overhead*	<u>1,50,000</u>	
	<u>4,50,000</u>	<u>45.00</u>
Loss	<u>(10,000)</u>	<u>(1.00)</u>

* Overheads are treated as fixed costs.

- (b) Computation of price to be charged in 2006-2007 to yield the same profit as in 2005-2006.

	Rs.	Rs.
Revised total cost	4,50,000	45.00
Profit as in 1999-2000	<u>55,000</u>	<u>5.50</u>
Selling price	<u>5,05,000</u>	<u>50.50</u>

3. (a) (i) Production Budget of Products A and B in Units for the next years.

	Products (in units)	
	A	B
Inventory at the end of the year	1,000	2,000
Add To be sold during the year	<u>8,000</u>	<u>15,000</u>
Total required	9,000	17,000
Less Inventory at the beginning of the year	<u>3,000</u>	<u>5,000</u>
To be produced	<u>6,000</u>	<u>12,000</u>

- (ii) Budget of Requirements of Components P, Q and R.

	Components (in units)		
	P	Q	R
For A: P : 1 × 6000	6,000		
Q : 2 × 6000		12,000	
For B: P : 2 × 12,000	24,000		
Q : 1 × 12,000		12,000	
R : 2 × 12,000			24,000
For R: Q : 1 × 24,000		<u>24,000</u>	
Total Requirements	<u>30,000</u>	<u>48,000</u>	<u>24,000</u>

(b) Economic Order Quantity (EOQ) = $\sqrt{\frac{2AO}{i}}$

Where A = Annual consumption in units

O = Cost of placing an order

i = Inventory carrying cost per unit per annum.

Substituting the values in the above formula :

For P	For Q
$\sqrt{\frac{2 \times 30,000 \times \text{Rs.15}}{0.40^*}}$	$\sqrt{\frac{2 \times 48,000 \times \text{Rs.15}}{0.16^*}}$
= 1,500 units	= 3,000 units

* Rs. 2 × 20% = Re. 0.40

* Rs. 0.80 × 20% = Re. 0.16

- (c) Calculation of savings arising from switching over to the new ordering system.

Existing situation	P	Q
Present order quantity (units)		
(equivalent to 3 months' consumption)	30,000 × 1/4 = 7,500	48,000 × 1/4 = 12,000
Average stock (units)	7,500 × 1/2 = 3,750	12,000 × 1/2 = 6,000
Investment in inventory of P & Q	3,750 × Rs. 2 = Rs. 7,500	6,000 × Rs. 0.80 = Rs. 4,800
Total investment	Rs. 7,500 + Rs. 4,800 = Rs.12,300	

Carrying cost @ 20% p.a. of Average Inventory Investment	Rs. 12,300 × 20% = Rs.2,460
Ordering cost:	P = 4 × Rs. 15 = Rs. 60
	Q = 4 × Rs. 15 = <u>Rs. 60</u>
	<u>Rs. 120</u>
Total Cost	<u>Rs. 2,580</u>

After switching over:

	P	Q
Economic order quantity (units)	1,500	3,000
Average stock (units)	$1,500 \times 1/2 = 750$	$3,000 \times 1/2 = 1,500$
Investment in inventory	$750 \times \text{Rs. } 2 = \text{Rs. } 1,500$	$1,500 \times \text{Rs. } 0.80 = \text{Rs. } 1,200$
Total investment	Rs. 1,500 + Rs. 1,200 = Rs. 2,700	
Carrying cost @ 20% p.a. of Average Inventory Investment:	Rs. 2,700 × 20% = Rs. 540	
Ordering cost:	P 20** × Rs. 15 = Rs. 300	
	Q 16** × Rs. 15 = <u>Rs. 240</u>	<u>Rs. 540</u>
Total cost		<u>Rs. 1,080</u>
Savings in cost :	Rs. 2,580 – Rs. 1,080 = Rs. 1,500	
Reducing in working capital	Rs. 12,300 – Rs. 2,700 = Rs. 9,600	

* Number of orders per year

(in the existing situation)

$$P: \frac{30,000}{7,500} = 4$$

$$Q: \frac{48,000}{12,000} = 4$$

** Number or orders per year

(after switching over)

$$P: \frac{30,000}{1,500} = 20$$

$$Q: \frac{48,000}{3,000} = 16$$

4. (a) ABC Analysis: It is a system of selective inventory control whereby the measure of control over an item of inventory varies with its usage value. It exercises discriminatory control over different items of stores grouped on the basis of the investment involved. Usually the items of material are grouped into three categories viz; A, B and C according to their use value during a period. In other words, the high use value items are controlled more closely than the items of low use value.
- '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 either their high prices or heavy requirement.
 - '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.
 - '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 etc. 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.

- (b) Just in time (JIT) purchases means the purchase of goods or materials such that delivery immediately precedes their use.

Advantage of JIT purchases:

Main advantages of JIT purchases are as follows:

1. The suppliers of goods or materials co-operates with the company and supply requisite quantity of goods or materials for which order is placed before the start of production.
 2. JIT purchases results in cost savings for example, the costs of stock out, inventory carrying materials handling and breakage are reduced.
 3. Due to frequent purchases of raw materials, its issue price is likely to be very close to the replacement price. Consequently the method of pricing to be followed for valuing material issues becomes less important for companies using JIT purchases.
 4. JIT purchasing are now attempting to extend daily deliveries to as many areas as possible so that the goods spend less time in warehouses or on store shelves before they are exhausted.
- (c) Spoilage: It refers to materials which are badly damaged in manufacturing operations and they cannot be rectified economically and hence taken out of the process to be disposed off in some manner without further processing. Spoilage may be normal or abnormal.

Normal spoilage: It arises under efficient operating conditions. It is an inherent result of the particular process and thus uncontrollable in the short run. The normal spoilage costs are included in costs either by charging the loss due to spoilage to the production order or by charging it to production overhead so that it is spread over all the products. Any value realised from spoilage is credited to production order or production overhead account as the case may be.

Abnormal spoilage: Abnormal spoilage is that which arises due to causes not inherent in the manufacturing process. The cost of abnormal spoilage is charged to costing profit and loss account.

5. (a) Output : 10,000 units		Cost Sheet	Period : year ended 31 st December, 2006			
			Total		Per unit	
			Rs.	Rs.	Rs.	Rs.
	Materials			90,000		9.00
	Wages			<u>60,000</u>		<u>6.00</u>
	Prime Cost			1,50,000		15.00

Factory Overheads:

Power and Consumable Stores	12,000	1.20	
Factory Indirect Wages	15,000	1.50	
Lighting of Factory	5,500	0.50	
Defective Work (cost of rectification)	3,000	0.30	
Plant Repairs, Maintenance and Depreciation	<u>11,500</u>	<u>1.15</u>	
	47,000	4.70	
Less : Sale of Scraps	<u>2,000</u>	<u>0.20</u>	
		<u>45,000</u>	<u>4.50</u>
Works Cost	1,95,000		19.50
Office and Selling Expenses:			
Clerical Salaries and Management Expenses	33,500	3.35	
Selling Expenses	<u>5,500</u>	<u>0.55</u>	
		<u>39,000</u>	<u>3.90</u>
Cost of Sales	2,34,000		23.40
Profits (balancing figure)	<u>82,000</u>		<u>8.20</u>
Sales	3,16,000		31.60

Note: The cost of rectification of defective works has been included in factory overheads assuming that the defectives are normal.

(b) Estimated Cost Sheet for 2007

Estimated output 15,000 units

	Total	Per unit
	Rs.	Rs.
Materials : 15,000 × Rs. 9.90	1,48,500	9.90
Wages : 15,000 × Rs. 6.60	99,000	6.60
Prime Cost	2,47,500	16.50
Factory Overheads@ 75% of Wages (see Working Note 1)	74,250	4.95
Works Cost	3,21,750	21.45
Office and Selling Expenses @ 20% of Works Cost (see Working Note 2)	64,350	4.29
Cost of Sales	3,86,100	25.74
Estimated Profit (balancing figure)	78,900	5.26
Sales : 15,000 × Rs. 31	4,65,000	31.00

Working Notes:

$$(1) \text{ Percentage of factory overhead on wages in 2006} = \frac{\text{Rs.45,000}}{\text{Rs.60,000}} \times 100 = 75\%$$

$$(2) \text{ Percentage of office and selling expenses on works cost in 2006} \\ = \frac{\text{Rs.39,000}}{\text{Rs.1,95,000}} \times 100 = 20\%$$

6. (i) No. of working days during month: 20

(ii) Standard production for 20 days @ 10,000 tons per month of 25 days = $\frac{10,000 \times 20}{25} = 8,000$ tons

- (iii) Actual production during month = 11,000 tons
 (iv) Excess production during month = 11,000 – 8,000 = 3,000 tons
 (v) Excess production above 20% of standard = 3,000 – 20% of 8,000 = 3,000 – 1,600 = 1,400 tons

Statement showing Bonus Earned by Each Category of Staff

Category	General Incentive		Special Incentive		Penalty	Bonus
%	Tons	Rs.	Tons	Rs.	Rs.	
(a) Direct Labor	70	2,100	21,000	1,400	7,000	28,000
(b) Inspection Staff	10	300	3,000	—	—	1,200
(c) Maintenance Staff	12	360	3,600	—	—	2,800
(d) Supervisory Staff	8	240	2,400	—	—	2,400
Total	100	3,000	30,000	1,400	7,000	34,400

Note: ¹Penalty for rejection: 90 tons (i.e. 200 tons – 110 tons) @ Rs.20 per ton.

²Penalty for machine breakdown for 40 hours @ Rs.20 per hour.

7.

Rs.

Effective hourly rate under Rowan scheme	37.50
Guaranteed hourly rate	<u>30.00</u>
Increase in hourly rate	7.50

Percentage increase in hourly rate: $\frac{\text{Rs.7.50}}{\text{Rs.30}} \times 100 = 25\%$

Since the hourly rate is increased by 25% due to payment under the Rowan incentive scheme, time saved is equal to 25% of the standard time. Accordingly, time saved is 1 hour (i.e., 25% of 4 hours) and time taken is 3 hours.

Wages under Halsey Scheme:	Rs.
Normal Time Wages: 3 hours @ Rs. 30 per hour	90.00
Bonus: $\frac{50}{100} \times (\text{Time saved} \times \text{Time rate})$ i.e., $\frac{50}{100} \times (1 \times \text{Rs.30})$	<u>15.00</u>
Total Wages Earnings	105.00

Effective hourly rate: $\frac{\text{Rs.105}}{3} = \text{Rs.35}$

8.

Rs.

Fixed factory overhead incurred	1,50,000
Less: Fixed overhead absorbed (21,250 hours × Rs.6)	<u>1,27,500</u>
Under-absorbed overheads	<u>22,500</u>

Income Statement showing Gross Profit and Net Profit

Total sales		Rs. 6,00,000
Less: Cost of goods sold	Rs. 3,96,188	
Under-absorbed overheads	<u>22,500</u>	
		<u>4,18,688</u>
Gross profit		1,81,312
Less: Selling and administration expenses		<u>1,00,000</u>
Net profit		<u>81,312</u>

9. (a) Step method: This method gives cognizance to the service rendered by service department to another service deptt., thus sequence of apportionments has to be selected. The sequence here begins with the deptt. that renders service to the max number of other service deptt. After this, the cost of service deptt. serving the next largest number of deptt. is apportioned.

Reciprocal service method: This method recognizes the fact that where there are two or more service deptt. They may render service to each other and, therefore, these inter deptt. services are to be given due weight while re-distributing the expense of service deptt. The methods available for dealing with reciprocal equation method are:

- Simultaneous equation method
- Repeated distribution method
- Trial and error method

(b) Job Costing and batch costing

According to job costing, costs are collected and accumulated according to jobs. Each job or unit of production is treated as a separate entity for the purpose of costing. Job costing may be employed when jobs are executed for different customers according to their specifications.

Batch costing is a form of job costing, a lot of similar units which comprises the batch may be used as a cost unit for ascertaining job. Such a method of costing is used in case of pharmaceutical industry readymade garments, industries manufacturing parts of TV, radio sets etc.

10. Computation of Machine Hour Rate

	Rs.
Depreciation 10% of Rs. 50,000	5,000
Factory Rent (apportioned on area basis) $\frac{3,000}{80,000} \times \text{Rs.} 50,000$	1,875
Heating and Lighting (apportioned on area basis): $\frac{3,000}{80,000} \times \text{Rs.} 40,000$	1,500
Supervision (apportion on machine numbers basis): $\frac{\text{Rs.} 1,50,000}{25}$	6,000
Reserve Equipment	5,000
Total	19,375
Estimated Total Hours	4,000
Cost per Hour	4.84

	Set up Rs.	Operation Rs.
Cost per Hour as above	4.84	4.84
Add: Power	—	0.50
Operator's Wages: Rs. $\frac{24}{8}$	3.00	
Rs. $\frac{24}{8} \times \frac{1}{2}$		1.50
Comprehensive Rate per Machine Hour	<u>7.84</u>	<u>6.84</u>

Statement showing Overhead chargeable to the Jobs

Job 5300		Rs.	Job 5700		Rs.
Set up	80 hours @ Rs. 7.84	627.20	40 hours @ Rs. 7.84		313.60
Operation	130 hours @ Rs. 6.84	<u>889.20</u>	160 hours @ Rs. 6.84		<u>1,094.40</u>
		1,516.40			1,408.00

11. (1)

		Rs.	Rs.
(a)	Materials Control A/c	Dr. 15,500	
	To Accounts Payable A/c		15,500
(b)	Work in Process Control A/c	Dr. 11,390	
	To Materials Control A/c		11,390
	Work in Process Control A/c	Dr. 7,000	
	To Wages Payable A/c		7,000
	Factory Overhead Control A/c	Dr. 1,100	
	To Materials Control A/c		450
	To Wages Payable A/c		650
(c)	Factory Overhead Control A/c	Dr. 2,700	
	To Accounts Payable A/c		2,700
(d)	Factory Overhead Control A/c	Dr. 1,750	
	To Accumulated Depreciation A/c (Machinery)		1,750
(e)	Work in Process Control A/c	Dr. 4,900	
	To Factory Overhead Control A/c		4,900
	(70% of Rs. 7,000)		
(f)	Finished Goods A/c	Dr. 11,548	
	To Work in Process Control A/c		11,548
(g)	Accounts receivable A/c	Dr. 15,400	
	To Sales A/c		15,400
	Cost of Goods sold A/c	Dr. 9,698	
	To Finished Goods A/c		9,698

Computation of the cost of jobs finished:

Job	Direct Materials	Direct Labour	Factory Overhead	Total
	Rs.	Rs.	Rs.	Rs.
Job No. 1000	2,650	1,770	1,239	5,659
Job No. 1001	1,240	650	455	2,345
Job No. 1002	980	420	294	1,694
Job No. 1004	1,000	500	350	<u>1,850</u>
				<u>11,548</u>

Cost of jobs sold computation:

	Rs.
Job No. 1000	5,659
Job No. 1001	2,345
Job No. 1002	<u>1,694</u>
	<u>9,698</u>

(2) Work in Process : Rs. 11,742 (Rs. 11,390 + Rs. 7,000 + Rs. 4,900 – Rs. 11,548)

Finished Goods: Rs. 1,850 (Rs. 11,548 – Rs. 9,698)

(3) Schedule of unfinished jobs

Job	Direct Materials	Direct Labour	Factory Overhead	Total
	Rs.	Rs.	Rs.	Rs.
Job No. 1003	3,420	1,900	1,330	6,650
Job No. 1005	2,100	1,760	1,232	<u>5,092</u>
Balance of work in process, March 31				<u>11,742</u>

(4) Schedule of Completed Jobs

	Rs.
Job No. 1004:	
Direct Materials	1,000
Direct Labour	500
Factory overhead	<u>350</u>
Balance of Finished Goods, March 31	<u>1,850</u>

12. Contract Accounts

				(in Rs.' 000)		
	A	B	C	A	B	C
Material on site b/fwd		20	30	Wages accrued b/fwd	5	10
Plant on site b/fwd		77	374	Material on site c/fwd	20	
Material control a/c	88	220	396	Plant on site c/fwd	150	20
Wages control a/c	45	100	220	Cost of work not certified c/fwd		55
Salaries	15	40	50	Cost of sales – current period	183	497
Plant control a/c	190	35		(balance) c/fwd		840
Apportionment of HO expenses	10	20	50			
Wages accrued c/fwd	5	10	15			
	353	522	1,135		353	522
Cost of sales b/fwd	183	497	840	Attributable sales revenue	183	442
				(current period)*		1,122
Profit taken this period			282	Loss taken		55
	183	497	1,122		183	497
						1,122

Cost of work not certified b/fwd	55	Wages accrued b/fwd	5	10	15
Material on site b/fwd	20				
Plant on site b/fwd	150	20	230		

* Profit taken plus cost of sales for the current period or cost of sales less loss to date

Note:

- Profit/loss on the three contracts are calculated by deducting the cost of sales (both previous years and current year) from the value of work certified

(Rs.' 000)

Contract A	17	(Rs. 200 – Rs. 183)
Contract B	(55)	(Rs. 860 – Rs. 915)
Contract C	446	(Rs. 2,100 – Rs. 1,654)

Recommendation:

Computation of profit taken for Contract C is as follows:

	(Rs. '000)
Cost of work certified(cost of sales to date = 814 + 840)	1,654
Cost of work not certified	55
Estimated costs to complete	305
Estimated cost of contract	2,014
Contract price	2,420
Anticipated profit	406
Profit taken = $\frac{(0.90 \times \text{Rs. } 2,100)}{\text{Rs. } 2,420} \times \text{Rs. } 406$ less profit previously transferred	

$$= \text{Rs. } 3,17,000 - \text{Rs. } 35,000 = \text{Rs. } 2,82,000$$

- No profit has been taken for Contract A as it is in very early stages of completion
- Prudence concept has been utilized for Contract B. All loss has been taken.

13. Calculation of passenger kilometer

No. of Buses × Distance × "To" and "Fro" × Seating capacity × Percentage of seating capacity × No. of days in a month

$$= 5 \times 50 \times 2 \times 50 \times \frac{75}{100} \times 30 = 5,62,500 \text{ kms}$$

Operating cost sheet

Standing charges:-	Rs.	Rs.
Wages of drives, conductors and cleaners	24,000	
Salaries of office staff	10,000	
Taxation, Insurance	16,000	
Interest & other expenses	20,000	
		70,000
Running & Maintenance cost:-		
Repairs and maintenance	8,000	

Diesel and other oil	35,000	
Depreciation	26,000	69,000
		<u>1,39,000</u>

$$\text{Cost per passenger km} = \frac{1,39,000}{5,62,500} = 0.2471.$$

14. Process 1

	Kg.	Rs.		Kg.	Rs.
To WIP b/f	3,000	8,144	By Normal loss	400	—
To Stock control	4,000	22,000	By Process 2	2,400	27,360
To Wages control		12,000	By Abnormal loss	800	9,120
To Overhead control		<u>18,000</u>	By WIP c/f	<u>3,400</u>	<u>23,664</u>
	<u>7,000</u>	<u>60,144</u>		<u>7,000</u>	<u>60,144</u>

Equivalent units:

	Material	Conversion
Process 2 (transferred)	2,400	2,400
Abnormal loss	800	800
CWIP	<u>3,400</u>	<u>1,360</u>
	<u>6,600</u>	<u>4,560</u>

	Rs.	Rs.
Costs	22,000	30,000
OWIP	<u>4,400</u>	<u>3,744</u>
	<u>26,400</u>	<u>33,744</u>
Cost/EU	Rs. 4.00	Rs. 7.40

Valuation	Rs.	Rs.	Rs. (Total)
Process 2	9,600	17,760	27,360
Abnormal loss	3,200	5,920	9,120
CWIP	13,600		23,664
		10,064	

Process 2

	Kg.	Rs.		Kg.	Rs.
WIP b/f	2,250	9,681	Normal loss	240	480
Process 1	2,400	27,360	Finished goods	2,500	55,250
Wages control		15,000	WIP c/f	2,600	34,060
Overhead control		22,500			
Abnormal gain	<u>690</u>	<u>15,249</u>			
	<u>5,340</u>	<u>89,790</u>		<u>5,340</u>	<u>89,790</u>

Equivalent units:

	Process 1	Conversion
Finished goods	2,500	2,500
Abnormal gain	(690)	(690)
CWIP	<u>2,600</u>	<u>1,040</u>
	<u>4,410</u>	<u>2,850</u>

	Rs.	Rs.
Costs:	27,360	37,500
OWIP	<u>4,431</u>	<u>5,250</u>
Total cost	31,791	42,750
Normal loss scrap value	<u>(480)</u>	<u>—</u>
	<u>31,311</u>	<u>42,750</u>
Cost/EU (Rs. 31,311 ÷ 4,410)	Rs. 7.10	Rs. 15.00

Valuation:	Rs.	Rs.	Rs. (total)
Finished goods	17,750	37,500	55,250
Abnormal gain	4,899	10,350	15,249
CWIP	18,460	15,600	34,060

Abnormal Loss A/c

	Rs.		Rs.
To B/f	1,400	By Profit and Loss A/c	10,520
To Process 1 A/c	<u>9,120</u>		<u> </u>
	<u>10,520</u>		<u>10,520</u>

Abnormal Gain A/c

	Rs.		Rs.
To Normal loss A/c	1,380	By Brought forward	300
To Profit and loss A/c	<u>14,169</u>	By Process 2 A/c	<u>15,249</u>
	<u>15,549</u>		<u>15,549</u>

Overhead Control A/c

	Rs.		Rs.
To Bank/expense creditors A/c	54,000	By Brought forward	250
		By Process 1 A/c	18,000
		By Process 2 A/c	22,500
		By Profit and Loss A/c – underabsorbed	13,250
	<u>54,000</u>		<u>54,000</u>

Sales A/c

	Rs.		Rs.
To Profit and loss A/c	6,37,000	By Brought forward	5,85,000
	<u> </u>	By Debtors A/c	<u>52,000</u>
	<u>6,37,000</u>		<u>6,37,000</u>

Finished Goods A/c

	Rs.		Rs.
To Balance b/f	65,000	By Cost of sales A/c	60,250
To Process 2 A/c	<u>55,250</u>	By Carry forward	<u>60,000</u>
	<u>1,20,250</u>		<u>1,20,250</u>

Cost of sales

	Rs.		Rs.
To Balance b/f	4,42,500	By Profit and loss A/c	5,02,750
To Finished goods A/c	<u>60,250</u>	By Balance c/f	<u> </u>
	<u>5,02,750</u>		<u>5,02,750</u>

Profit and Loss Account

	Rs.		Rs.
To Cost of sales A/c	5,02,750	By Sales A/c	6,37,000
To Abnormal loss A/c	10,520	By Abnormal gain A/c	14,169
To Overhead control A/c	13,250		
To Profit	<u>1,24,649</u>		<u> </u>
	<u>6,51,169</u>		<u>6,51,169</u>

15.

	Rs.
Actual overheads	4,26,544
Less: Overhead recovered	3,65,904
Overhead under-absorbed	60,604

(i) Write off to profit and loss account.

(ii) Adjustment to cost of sales and inventories of WIP and finished goods.

Under the Write off to profit and loss account. Rs. 60,640 will be debited to Costing Profit and Loss Account resulting in the reduction of figure of profit for the year by Rs.60,640.

Under the 'Adjustment to cost of sales and inventories of WIP and finished goods method' under-absorbed overhead should be distributed to three Control Accounts i.e. Work-in-Progress, Finished Goods Stock Account, and Cost of Goods Sold Account. This distribution can be attempted as follows:

	Balances	Additional Overhead (under-absorbed)	Total
	Rs.	Rs.	Rs.
Work-in-Progress	1,41,480	7,074*	1,48,554
Finished Goods A/c	2,30,732	11,537**	2,42,269
Cost of Sales A/c	<u>8,40,588</u>	<u>42,029***</u>	<u>8,82,617</u>
	<u>12,12,800</u>	<u>60,640</u>	<u>12,73,440</u>

Working Notes:

	Rs.
$480 \div 12,12,800) \times 60,640$	7,074
$,732 \div 12,12,800) \times 60,640$	11,537
$588 + 12,12,800) \times 60,640$	42,029

By using this method, profit for the year will be reduced by Rs. 23,418 i.e. Rs. 42,029 – (7,074 + 11,537). Amount of Rs. 42,029 will be debited to Profit and Loss Account with cost of sales. Amount of Rs. 18,611 i.e. Rs. 7,074 + Rs. 11,537 will get credited to Profit and Loss Account as value of closing stock. The amount of Rs. 18,611 will again get debited to Profit and Loss Account next year as value of opening stock.

16.

Estimate of cost

	Rs.	Rs.
Unit level expenses		
Direct materials (500 × Rs 22)	11,000	
Direct labour (500 × 2 hours × Rs 10)	10,000	
Machining (500 × 1 hour × Rs 30)	15,000	36,000
Batch level expenses		
Purchasing and receiving materials and components(6× Rs 100)	600	
Scheduling production (4 production runs × Rs 250)	1,000	
Setting up machines (4 production runs × 3 hours × Rs 120)	1,440	
Packaging and delivering(1 delivery at Rs 400)	400	3,440
Product sustaining expenses		
Engineering design and support(50 hours × Rs 80)		4,000
Customer sustaining expenses		
Marketing and order negotiating (2 visits × Rs 300 per visit)	600	
Customer support (50 support hours × Rs 50)	2,500	3,100
Estimated Cost		46,540

17.

Statement of Equivalent Production

Details	Input	Output	Materials		Labour and Overhead	
	Units	Units	% Completion	Equivalent Units	% Completion	Equivalent Units
Opening Work-in-Progress	800	800			40%	320
Introduced and Finished in the period	9,200	<u>7,100</u>	100%	7,100	100%	7,100
Transferred to next process		7,900				
Normal Loss (8% of 10,000)		800	—	—	—	—
Abnormal Loss (balancing figure)		400	100%	400	80%	320
Closing Work-in-Progress		900	100%	900	70%	630
	10,000	10,000		8,400		8,370

Statement of cost

Cost Elements	Period Cost Rs.	Equivalent Units	Cost per unit Rs.
Materials	36,800		
Less : Scrap realization from Normal Loss 800 units @ Rs.4	— 3,200		
	33,600	8,400	4.00
Labour	16,740	8,370	2.00
Overhead	8,370	8,370	1.00
	58,710		7.00

Statement showing value of Finished Goods and Closing Work-in-Progress

	Rs.	Rs.	Rs.
Value of opening Work-in-Progress 800 units		4,000	
Costs incurred on Opening Work-in-Progress:			
Material	Nil		
Labour 320 equivalent units @ Rs. 2	640		
Overhead 320 equivalent units @ Rs. 1	<u>320</u>	<u>960</u>	
		<u>4,960</u>	
Value of units introduced and completed 7,100 units @ Rs. 7		<u>49,700</u>	
Value of Finished Goods (7,900 units)			54,660
Value of Abnormal Loss (400 units)			
Materials 400 equivalent units @ Rs. 4		1,600	
Labour 320 equivalent units @ Rs. 2		640	
Overhead 320 equivalent units @ Re. 1		<u>320</u>	2,560
Value of Closing Work-in-Progress (900 units):			
Materials 900 equivalent units @ Rs. 4		3,600	
Labour 630 equivalent units @ Rs. 2		1,260	
Overhead 630 equivalent units @ Re. 1		<u>630</u>	<u>5,490</u>
			<u>62,710</u>

Dr.	Process A Account		Period : February, 2007		Cr.	
Particulars	Units	Rs.	Particulars	Units	Rs.	
To Opening Work-in-Progress b/f	800	4,000	By Normal Loss A/c @ Rs. 4	800	3,200	
To Materials	9,200	36,800	By Abnormal Loss A/c	400	2,560	
To Labour		16,740	By Transfer to Finished Goods A/c	7,900	54,660	
To Overhead		8,370	By Closing Work-in-Progress c/f	900	5,490	
	<u>10,000</u>	<u>65,910</u>		<u>10,000</u>	<u>65,910</u>	

Dr.		Abnormal Loss Account				Cr.
Particulars	Units	Rs.	Particulars	Units	Rs.	
To Process A A/c	400	2,560	By Scrap Sales Sales @ 4	400	1,600	
			By Costing Profit and Loss A/c		960	
		<u>2,560</u>			<u>2,560</u>	

18. (i) Optimum run size

$$= \sqrt{\frac{2 \cdot U \cdot S}{C_c}}$$

$$= \sqrt{\frac{2 \times 24,000 \times 324}{1.20}} = 3,600 \text{ units}$$

Where U = units to be produced in a year

S = Set-up cost

C_c = carrying cost per unit for one year ($12 \times 0.10 = \text{Rs. } 1.20$)

$$\text{No. of runs} = \frac{24,000}{3,600} = 6.67$$

(ii) Interval between two consecutive optimum runs:

$$\frac{365}{\text{No. of set-up per annum}} = \frac{365}{\frac{20}{3}} = 54.75 \text{ or } 55 \text{ calendar days.}$$

Note: (1) A year has been taken of 365 days. A different result will come, if calculations are made on the basis of actual number of working days in a year.

$$(2) \text{ No. of set-up per annum} = \frac{\text{Annum producion}}{\text{Economic run size}} = \frac{24,000}{3,600} = \frac{20}{3}$$

(iii) Extra cost incurred when the policy of 6,000 run size is applied:

Total set-up cost = No. of production runs $\times$ set-up cot per production run.

$$\text{For 3,600 production run size} = \frac{24,000}{3,600} \times \text{Rs. } 324 = \text{Rs. } 2,160.$$

$$\text{For 6,000 production run size} = \frac{24,000}{6,000} \times \text{Rs. } 324 = \text{Rs. } 1,296$$

Total carrying cost = average inventory $\times$ carrying cost of one unit for one year

$$\text{Fro 3,600 production run size} = \frac{1}{2} \times 3,600 \times \text{Re.}(0.10 \times 12) = \text{Rs. } 2,160$$

$$\text{Fro 6,000 production run size} = \frac{1}{2} \times 6,000 \times \text{Re.}(0.10 \times 12) = \text{Rs. } 3,600$$

Total cost of maintaining inventory = Total set-up cost + Total carrying cost.

$$\text{For 3,600 production run size} = \text{Rs. } 2,160 + \text{Rs. } 2,160 = \text{Rs. } 4,320$$

$$\text{For 6,000 production run size} = \text{Rs. } 1,296 + \text{Rs. } 3,600 = \text{Rs. } \underline{4,896}$$

$$\text{Extra cost incurred} \quad \quad \quad \text{Rs. } 576$$

- (iv) Minimum inventory holding cost per annum (when run size is 3,600 units):

$$\text{Average inventory } \frac{3,600}{2} \text{ or } 1,800 \text{ bearings@ Rs. } 1.20$$

$$= \text{Rs. } 2,160.$$

Note: Inventory holding cost will be the minimum when the optimum run size (i.e., 3,600 units) is applied.

19. (a) Treatment of Overtime Premium in Cost Accounting

If overtime is restored to at the desire of the customer, then overtime premium may be charged to the job directly.

If overtime is required to cope with general production programme or for meeting urgent orders, the overtime premium should be treated as overhead cost of the particular department or cost center, which works overtime.

If overtime is worked in a dep't. Due to the fault of another dep't, the overtime premium should be charged to the latter dep't.

Overtime worked on account of abnormal conditions such as flood, earthquake etc should not be charged to cost but to costing P/L A/C.

(b) Gantt Task and Bonus System

This system is a combination of time and piecework system. According to this system a high standard or task is set and payment is made at time rate to a worker for production below the set standard.

Wages payable to workers under the plan are calculated as under:

Output	Payment
(i) Output below standard	Guaranteed time rate
(ii) Output at standard	Time rate plus bonus of 20% (usually of time rate)
(iii) Output over standard	High price rate on worker's output. It is so fixed, so as to include a bonus of 20% of time rate.

20. (a) Uniform Costing: Uniform costing is not a distinct method of costing. In fact, when several undertakings start using the same costing principles and/or practices they are said to be following uniform costing. The basic idea behind uniform costing is that the different concerns in an industry should adopt a common method of costing and apply uniformly the same principles and techniques for better cost comparison and common good. The principles and methods of completion, analysis, apportionment and absorption of overheads differ from one concern to the other in the same industry; but if a common or uniform pattern is adopted by all, it helps mutually in cost control and cost reduction. Therefore, it is necessary that a uniform method of costing should be adopted by the member unit of an industry.

Limitations of uniform costing: For the answer of this question refer to Chapter 11 of Cost Accounting book of the Institute.

- (b) Requisites of Inter- firm comparison: For the answer of this question refer to Chapter 11 of Cost Accounting book of the Institute.

21. (a) Opportunity cost is primarily an economic concept. In Economics, the opportunity cost of a designated alternative is the greatest 'net benefit lost by selecting an alternative. It is the benefit given by rejecting one alternative and, selecting another.'

Accounting takes the same view and defines it as the benefits forgone by rejecting the second best alternative in favour of the best. Opportunity costs represent the measurable value of opportunity bypassed by rejecting an alternative use of resources. It is the value in its best alternative use - the profit that is lost by the diversion of an input factor from one use

to another. It is defined as the maximum contribution that is forgone by using limited resources for a particular purpose.

Opportunity cost concept is helpful to the management in making profitability calculations when one or more of the inputs required by one or more of the alternative courses of action is already available.

(b) The main points of distinction between "Cost control" and 'Cost reduction' are as follows:

Cost Control	Cost Reduction
1. It aims at achieving the established cost standards	It aims at achieving a reduction in cost by using any suitable technique like value analysis engineering; work study; standardisation; simplification etc.,
2. It is 'operated through targets or established standards and comparing them with actual performance. Identifying deviations from standards and taking corrective actions. Thus it lacks dynamic approach.	It is a continuous process of critical. cost examination,' analysis and challenging of established standards. Each aspect of the business. viz., products, process, procedures, methods, organisation, personnel, etc.-, is critically. examined and reviewed, with a view to improving- the efficiency and effectiveness and reducing the costs.
3. It assumes existence of norms or standards which are not challenged.	It assumes the existence of concealed potential savings in norms or standards.
4. It is a preventive function.	It is a corrective action.

PAPER – 4B : FINANCIAL MANAGEMENT

1. The following data applies to Shiv Company (Rs. in crores):

	Rs.
Cash and marketable securities	10.00
Fixed Assets	28.35
Sales	100.00
Net income	5.00
Current liabilities	10.55
Current ratio	3.0 ×
DSO*	40.55 days
ROE	12%

*Calculation is based on a 365 days year.

The company has no preference shares – only equity shares, current liabilities, and long-term debt.

- You are required to calculate Shiv Company's (i) Accounts receivable (A/R), (ii) Current assets, (iii) Total assets, (iv) ROA, (v) Common equity, and (vi) Long-term debt.
 - In part (a), Shiv Company's accounts receivable (A/R) = Rs. 11.10 crores. If the company could reduce its DSO from 40.55 days to 30.4 days while holding other things constant, how much cash would it generate? If this cash were used to buy back equity shares (at book value), thus reducing the amount of common equity, how would this affect (i) the ROE, (ii) the ROA, and (iii) the total debt/total assets ratio?
2. Assume that it is now January 1, 2007. On January 1, 2008, Ram will deposit Rs. 1,000 into a savings account that pays 8 per cent.
- If the bank compounds interest annually, how much will he have in his account on January 1, 2011?
 - What would his January 1, 2011, balance be if the bank used quarterly compounding rather than annual compounding?
 - Suppose he deposited the Rs. 1,000 in 4 payments of Rs. 250 each on January 1 of 2008, 2009, 2010, and 2011. How much would he have in his account on January 1, 2011, based on 8 per cent annual compounding?
 - Suppose he deposited 4 equal payments in his account on January 1 of 2008, 2009, 2010 and 2011. Assuming an 8 per cent interest rate, how large would each of his payments have to be for him to obtain the same ending balance as calculated in part (a)?
3. There are two firms Company A and B having Net Operating Income of Rs. 15,00,000 each. Company B is a levered company whereas company A is all equity company. Debt employed by Company B is of Rs. 7,00,000 @ 11%. The tax rate applicable to both the companies is 25%. Calculate:
- Earnings available for equity and debt for both the firms.
 - Value of the two firms, assume K_0 for Company A is 15%.
 - Present value of tax shield.
4. Xansa Engineering Ltd. has the following capital structure, which it considers to be optimal:

Debt	25%
Preferred stock	15%
Common equity	60%
	<u>100%</u>

The Company's expected net income this year is Rs. 34,285.72, its established dividend payout ratio is 30 per cent, its tax rate is 40 per cent, and investors expect earnings and dividends to grow at a constant rate of 9 per cent in the future. The Company paid a dividend of Rs. 3.60 per share last year, and its shares currently sell at a price of Rs. 54 per share.

It can obtain new capital in the following ways:

- Preferred: New preference shares with a dividend of Rs. 11 can be sold to the public at a price of Rs. 95 per share.
 - Debt: Debt can be sold at an interest rate of 12 per cent.
- (a) Determine the cost of each capital structure component.
 - (b) Calculate the weighted average cost of capital.
 - (c) The company has the following investment opportunities that are typical average-risk projects for the firm:

Project	Cost at $t = 0$	Rate of Return
	Rs.	%
A	10,000	17.4
B	20,000	16.0
C	10,000	14.2
D	20,000	13.7
E	10,000	12.0

Which projects should it accept and why?

5. You are a financial analyst for Shell Electricals Ltd. The director of finance has asked you to analyse two proposed capital investments, Projects X and Y. Each project has a cost of Rs. 10,000, and the cost of capital for each project is 12 per cent. The project's expected net cash flows are as follows:

	Expected net cash flows	
Year	Project X	Project Y
	Rs.	Rs.
0	(10,000)	(10,000)
1	6,500	3,500
2	3,000	3,500
3	3,000	3,500
4	1,000	3,500

- (a) Calculate each project's payback period, net present value (NPV), internal rate of return (IRR), and modified internal rate of return (MIRR).
 - (b) Which project or projects should be accepted if they are independent?
 - (c) Which project should be accepted if they are mutually exclusive?
 - (d) How might a change in the cost of capital produce a conflict between the NPV and IRR rankings of these two projects? Would this conflict exist if k were 5 per cent?
 - (e) Why does the conflict exist?
6. XYZ Company's financial condition is as follows:

EBIT = Rs. 40 lakhs; tax rate = $T = 35\%$; debt outstanding = $D = \text{Rs. } 20 \text{ lakhs}$; $k_d = 10\%$; $K_s = 15\%$; shares of stock outstanding = $N_0 = 6,00,000$; and book value per share = Rs. 10. Since the

Company's market is stable and the company expects no growth, all earnings are paid out as dividends. The debt consists of perpetual bonds.

- (a) What are XYZ Company's earnings per share (EPS) and its price per share (P_0)?
 - (b) What is its weighted average cost of capital (WACC)?
 - (c) It can increase its debt by Rs. 80 lakhs, to a total of Rs. 100 lakhs, using the new debt to buy back and retire some of its shares at the current price. Its interest rate on debt will be 12 per cent (it will have to call and refund the old debt), and its cost of equity will rise from 15 per cent to 17 per cent. EBIT will remain constant. Should the Company change its capital structure?
 - (d) If it did not have to refund the Rs. 20 lakhs of old debt, how would this affect things? Assume that the new and the still outstanding debt are equally risky, with $K_d = 12\%$, but that the coupon rate on the old debt is 10 per cent.
 - (e) What is its TIE coverage ratio under the original situation and under the conditions in Part (c) of this question?
7. Onida Electronics Ltd. produces television parts that sell for $P = \text{Rs. } 100$. Onida's fixed costs are Rs. 2,00,000; 5,000 parts are produced and sold each year; EBIT is currently Rs. 50,000; and Onida's assets (all equity financed) are Rs. 5,00,000. Onida estimates that it can change its production process, adding Rs. 4,00,000 to investment and Rs. 50,000 to fixed operating costs. This change will (i) reduce variable costs per unit by Rs. 10 and (ii) increase output by 2,000 units, but (iii) the sales price on all units will have to be lowered to Rs. 95 to permit sales of the additional output. Onida's tax rate is zero. Onida uses no debt, and its average cost of capital is 10 per cent.
- (a) Should Onida make the change?
 - (b) Would Onida's breakeven point increase or decrease if it made the change?
 - (c) Suppose Onida were unable to raise additional equity financing and had to borrow the Rs. 4,00,000 to make the investment at an interest rate of 10 per cent. Use the Du Pont Equation to find the expected ROA of the investment. Should Onida make the change if debt financing must be used?
8. Sai Company is attempting to establish a current assets policy. Fixed assets are Rs. 6,00,000 and the firm plans to maintain a 50 per cent debt-to-assets ratio. The interest rate is 10 per cent on all debt. Three alternative current asset policies are under consideration: 40, 50, and 60 per cent of projected sales. The company expects to earn 15 per cent before interest and taxes on sales of Rs. 30 lakhs. The Company's effective tax rate is 40 per cent. What is the expected return on equity under each alternative?
9. New India Press and the Delhi Publishing Company had the following balance sheets as of December 31, 2006 (thousands of Rupees):

	New India Press	Delhi Publishing Company
	Rs.	Rs.
Current assets	1,00,000	80,000
Fixed assets (net)	<u>1,00,000</u>	<u>1,20,000</u>
Total assets	<u>2,00,000</u>	<u>2,00,000</u>
Current liabilities	20,000	80,000
Long-term debt	80,000	20,000
Common stock	50,000	50,000
Retained earnings	<u>50,000</u>	<u>50,000</u>
Total liabilities and equity	<u>2,00,000</u>	<u>2,00,000</u>

Earnings before interest and taxes for both companies are Rs. 3 crores, and the effective tax rate is 40 per cent.

- (a) What is the return on equity for each company if the interest rate on current liabilities is 10 per cent and the rate on long-term debt is 13 per cent?
 - (b) Assume that the short-term rate rises to 20 per cent. While the rate on new long-term debt rises to 16 per cent, the rate on existing long-term debt remains unchanged. What would be the return on equity for New India Press and Delhi Publishing Company under these conditions?
 - (c) Which company is in a riskier position and why?
10. The Balance Sheet of Theta Limited as on 31st March, 2006 and 31st March, 2007 are given below:

Balance Sheet as on				(Rs. '000)	
Liabilities	31.03.06	31.03.07	Assets	31.03.06	31.03.07
Share Capital	1,440	1,920	Fixed Assets	3,840	4,560
Capital Reserve	—	48	Less: Depreciation	<u>1,104</u>	<u>1,392</u>
General Reserve	816	960		2,736	3,168
Profit and Loss Account	288	360	Investment	480	384
9% Debenture	960	672	Cash	210	312
Current Liabilities	576	624	Other Current Assets		
Proposed Dividend	144	174	(including Stock)	1,134	1,272
Provision for Tax	432	408	Preliminary Expenses	96	48
Unpaid Dividend	<u>—</u>	<u>18</u>		<u>—</u>	<u>—</u>
	<u>4,656</u>	<u>5,184</u>		<u>4,656</u>	<u>5,184</u>

Additional Informations:

- (i) During the year 2006-2007, Fixed Assets with a book value of Rs. 2,40,000 (accumulated depreciation Rs. 84,000) was sold for Rs. 1,20,000.
 - (ii) Provided Rs. 4,20,000 as depreciation.
 - (iii) Some investments are sold at a profit of Rs. 48,000 and Profit was credited to Capital Reserve.
 - (iv) It decided that stocks be valued at cost, whereas previously the practice was to value stock at cost less 10 per cent. The stock was Rs. 2,59,200 as on 31.03.06. The stock as on 31.03.07 was correctly valued at Rs. 3,60,000.
 - (v) It decided to write off Fixed Assets costing Rs. 60,000 on which depreciation amounting to Rs. 48,000 has been provided.
 - (vi) Debentures are redeemed at Rs. 105.
- You are required to prepare a Cash Flow Statement.
11. The following details of Gamma Electronics for the year ended 31st March, 2007 are given below:
- | | |
|---------------------------------|-----------------|
| Operating leverage | 1.4 |
| Combined leverage | 2.8 |
| Fixed Cost (Excluding interest) | Rs. 2.04 lakhs |
| Sales | Rs. 30.00 lakhs |
| 12% Debentures of Rs. 100 each | Rs. 21.25 lakhs |

Equity Share Capital of Rs. 10 each

Rs. 17.00 lakhs

Income tax rate

30 per cent

Required:

- (i) Calculate Financial leverage
 - (ii) Calculate P/V ratio and Earning per Share (EPS)
 - (iii) If the company belongs to an industry, whose assets turnover is 1.5, does it have a high or low assets leverage?
 - (iv) At what level of sales the Earning before Tax (EBT) of the company will be equal to zero?
12. The turnover of Sakshi Forgings is Rs. 120 lakhs of which 75 per cent is on credit. The variable cost ratio is 80 per cent. The credit terms are 2/10, net 30. On the current level of sales, the bad debts are 1 per cent. The company spends Rs. 1,20,000 per annum on administering its credit sales. The cost includes salaries of staff who handle credit checking, collection etc. These are avoidable costs. The past experience indicates that 60 per cent of the customers avail of the cash discount, the remaining customers pay on an average 60 days after the date of sale.

The Book debts (receivable) of the company are presently being financed in the ratio of 1 : 1 by a mix of bank borrowings and owned funds which cost per annum 15 per cent and 14 per cent respectively.

A factoring firm has offered to buy the firm's receivables. The main elements of such deal structured by the factor are:

- (i) Factor reserve, 12 per cent
- (ii) Guaranteed payment, 25 days
- (iii) Interest charges, 15 per cent, and
- (iv) Commission 4 per cent of the value of receivables.

Assume 360 days in a year.

What advise would you give to Sakshi Forgings - whether to continue with the in house management of receivables or accept the factoring firm's offer?

13. A proforma cost sheet of a Company provides the following particulars:

	Amount per unit (Rs.)
Raw materials cost	100
Direct labour cost	37.50
Overheads cost	75
Total cost	212.50
Profit	37.50
Selling Price	250

The Company keeps raw material in stock, on an average for one month; work-in-progress, on an average for one week; and finished goods in stock, on an average for two weeks.

The credit allowed by suppliers is three weeks and company allows four weeks credit to its debtors. The lag in payment of wages is one week and lag in payment of overhead expenses is two weeks.

The Company sells one-fifth of the output against cash and maintains cash-in-hand and at bank put together at Rs.37,500.

You are required to prepare a statement showing estimate of Working Capital needed to finance an activity level of 1,30,000 units of production. Assume that production is carried on evenly throughout the year, and wages and overheads accrue similarly. Work-in-progress stock is 80% complete in all respects.

14. Differentiate between the following:
- (a) Deep Discount Bonds and Zero Coupon Bonds
 - (b) Investment Decision and Financing Decision
 - (c) Operating Leverage and Financial Leverage.
15. Write short notes on the following:
- (a) Seed Capital Assistance
 - (b) American Depository Receipts
 - (c) Propositions made by Modigliani and Miller on Cost of Capital
 - (d) Euro Convertible Bonds.

SUGGESTED ANSWERS/HINTS

1. (a) (i) $DSO = \frac{\text{Accounts receivable}}{\text{Sales} / 365}$
- $$40.55 = \frac{\text{Accounts Receivable}}{\text{Sales} / 365}$$
- Accounts Receivable = 40.55 (Rs. 0.27397) = Rs. 11.11 crores.
- (ii) $\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}} = 3.0$
- $$= \frac{\text{Current assets}}{\text{Rs. 10.55}} = 3.0$$
- Current Assets = 3.0 (Rs. 10.55) = Rs. 31.65 crores.
- (iii) Total assets = Current assets + Fixed assets
- $$= \text{Rs. 31.65} + \text{Rs. 28.35} = \text{Rs. 60 crores.}$$
- (iv) $ROA = \text{Profit margin} \times \text{Total assets turnover}$
- $$\frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}}$$
- $$\frac{\text{Rs. 5}}{\text{Rs. 100}} \times \frac{\text{Rs. 100}}{\text{Rs. 60}}$$
- $$= 0.05 \times 1.667 = 0.083333 = 8.3333\%.$$
- (v) $ROE = ROA \times \frac{\text{Assets}}{\text{Equity}}$
- $$12\% = 8.3333\% \times \frac{\text{Rs. 60}}{\text{Equity}}$$
- $$\text{Equity} = \frac{(8.3333\%) (\text{Rs. 60})}{12.0\%}$$
- $$= \text{Rs. 41.67 crores.}$$
- Or, we can also find equity as follows:
- $$ROE = \frac{\text{Net income}}{\text{Equity}}$$

$$12.0\% = \frac{\text{Rs. 5}}{\text{Equity}}$$

$$\text{Equity} = \frac{\text{Rs. 5}}{0.12}$$

$$= \text{Rs. 41.67 crores.}$$

Then, we could have gone on to find long-term debt.

(vi) Total assets = Total claims = Rs. 60 crores

Current liabilities + Long-term debt + Equity = Rs. 60 crores

Rs. 10.55 + Long-term debt + Rs. 41.67 = Rs. 60 crores

Long-term debt = Rs. 60 – Rs. 10.55 – Rs. 41.67 = Rs. 7.78 crores.

(b) Shiv Company's average sales per day was Rs. 100/365 = Rs. 0.274 crore. Its DSO was 40.55, so A/R = 40.55 (Rs. 0.274 crore) = Rs. 11.11 crores. Its new DSO of 30.4 would cause A/R = 30.4 (Rs. 0.274 crore) = Rs. 8.33 crores. The reduction in receivables would be Rs. 11.11 – Rs. 8.33 crores = Rs. 2.78 crores, which would equal the amount of cash generated.

(i) New equity = Old equity – Shares bought back

$$= \text{Rs. 41.67} - \text{Rs. 2.78}$$

$$= \text{Rs. 38.89 crores.}$$

Thus,

$$\text{New ROE} = \frac{\text{Net income}}{\text{New equity}}$$

$$= \frac{\text{Rs. 5}}{\text{Rs. 38.89}}$$

$$= 12.86\% \text{ (versus old ROE of 12.0\%).}$$

(ii)
$$\text{New ROE} = \frac{\text{Net income}}{\text{Total assets} - \text{Reduction in A/R}}$$

$$= \frac{\text{Rs. 5}}{\text{Rs. 60} - \text{Rs. 2.78}}$$

$$= 8.74\% \text{ (versus old ROA of 8.33\%).}$$

(iii) The old debt is the same as the new debt:

Debt = Total claims – Equity

Rs. 60 – Rs. 41.67 = Rs. 18.33 crores.

Old total assets = Rs. 60 crores.

New total assets = Old total assets – Reduction in A/R

$$= \text{Rs. 60} - \text{Rs. 2.78}$$

$$= \text{Rs. 57.22 crores.}$$

Therefore,

$$\frac{\text{Debt}}{\text{Old total assets}} = \frac{\text{Rs. 18.33}}{\text{Rs. 60}} = 30.6\%,$$

While,

$$\frac{\text{New debt}}{\text{New total assets}} = \frac{\text{Rs.18.33}}{\text{Rs. 57.22}} = 32.0\%.$$

2. (a) Rs. 1,000 is being compounded for 3 years, so Ram's balance on January 1, 2011:

$$FV_n = PV (1 + i)^n = \text{Rs. 1,000} (1 + 0.08)^3 = \text{Rs. 1,259.71}.$$

$$(b) \quad FV_n = PV \left(1 + \frac{i_{\text{Nom}}}{m} \right)^{mn} = FV_{12} = \text{Rs.1,000} (1.02)^{12} = \text{Rs.1,268.24}.$$

$$(c) \quad FV = \text{Rs. 1,126.53}.$$

- (d) If $N=4$, $I=8$, $PV= 0$, $FV= 1259.71$, then $PMT = \text{Rs. 279.56}$. Therefore, he would have to make 4 payments of Rs. 279.56 each to have a balance of Rs. 1,259.71 on January 1, 2011.

3. (a) Statement of Calculation of Earnings Available to Equity holders and Debt holders

	Company A	Company B
Net operating income	15,00,000	15,00,000
Less: Interest on Debt (11% of Rs. 7,00,000)	<u>–</u>	<u>77,000</u>
Profit before taxes	15,00,000	14,23,000
Less: Tax @ 25%	<u>3,75,000</u>	<u>3,55,750</u>
Profit after tax/Earnings available in Equity holders	<u>11,25,000</u>	<u>10,67,250</u>
Total earnings available to Equity holders + Debt holders	11,25,000	10,67,250 + 77,000 = 11,44,250

As we can see that the earnings in case of Company B is more than the earnings of Company A because of tax shield available to shareholders of Company B due to the presence of Debt structure in Company B. The interest is deducted from EBIT without tax deduction at the corporate level; equity holders also get their income after tax deduction. Due to which income of both the investors increase to the extent of tax saving on the interest paid i.e. tax shield i.e. $25\% \times 77,000 = 19,250$.

i.e. difference in the income of two Companies' earnings i.e. $11,44,250 - 11,25,000$
= Rs. 19,250.

$$(b) \quad \text{Value of Company A (which is unlevered company)} = \frac{\text{EBIT} (1-t)}{K_0}$$

$$= \frac{11,25,000}{0.15}$$

$$= \text{Rs. 75,00,000}$$

$$V_{\text{unlevered firm}} = \text{Rs. 75,00,000}$$

$$\begin{aligned} \text{And } V_{\text{levered firm}} &= V_{\text{unlevered firm}} + \text{Debt} (t) \\ &= 75,00,000 + 7,00,000 \times 0.25 \\ &= 75,00,000 + 1,75,000 \\ &= \text{Rs. 76,75,000} \end{aligned}$$

$$(c) \quad \begin{aligned} \text{Present value of tax shield} &= \text{Tax rate} \times \text{Debt} \\ &= 0.25 \times 7,00,000 \\ &= \text{Rs. 1,75,000}. \end{aligned}$$

4. (a) The Costs of Different Components of Capital are as follows:

Equity Shares

$$K_s = \frac{D_1}{P_0} + g = \frac{D_0(1+g)}{P_0} + g$$

$$= \frac{\text{Rs. } 3.60(1.09)}{\text{Rs. } 54} + 0.09$$

$$= 0.0727 + 0.09$$

$$= 16.27\%.$$

Preference Shares

$$K_p = \frac{\text{Preferred Dividend}}{P_p} = \frac{\text{Rs. } 11}{\text{Rs. } 95}$$

$$= 11.58\%.$$

Debt at $K_d = 12\%$

$$K_d(1 - T) = 12(1 - 0.4) = 12\%(0.6)$$

$$= 7.20\%.$$

- (b) Weighted Average Cost of Capital (WACC)

$$WACC = w_d k_d(1 - T) + w_p k_p + w_c k_s$$

$$WACC = 0.25(7.2\%) + 0.15(11.58\%) + 0.60(16.27\%)$$

$$= 1.8 + 1.737 + 9.762 = 13.30\%.$$

- (c) Analysis: Xansa Engineering Ltd. should accept Projects A, B, C and D. It should reject Project E because its rate of return does not exceed the marginal cost of funds needed to finance it.

5. (a) Payback Period Method

The cumulative cash flows for each project are as follows:

Cumulative Cash Flows		
Year	Project X	Project Y
	Rs.	Rs.
0	(10,000)	(10,000)
1	(3,500)	(6,500)
2	(500)	(3,000)
3	2,500	500
4	3,500	4,000

$$\text{Payback}_x = 2 + \frac{\text{Rs. } 500}{\text{Rs. } 3,000} = 2.17 \text{ years.}$$

$$\text{Payback}_y = 2 + \frac{\text{Rs. } 3,000}{\text{Rs. } 3,500} = 2.86 \text{ years.}$$

Net Present Value (NPV)

$$\text{NPV}_x = -\text{Rs. } 10,000 + \frac{\text{Rs. } 6,500}{(1.12)^1} + \frac{\text{Rs. } 3,000}{(1.12)^2} + \frac{\text{Rs. } 3,000}{(1.12)^3} + \frac{\text{Rs. } 1,000}{(1.12)^4}$$

$$= \text{Rs. } 966.01.$$

$$NPV_y = -Rs.10,000 + \frac{Rs.3,500}{(1.12)^1} + \frac{Rs.3,500}{(1.12)^2} + \frac{Rs.3,500}{(1.12)^3} + \frac{Rs.3,500}{(1.12)^4}$$

$$= Rs.630.72.$$

Internal Rate of Return (IRR)

To solve for each project's IRR, find the discount rates that equate each NPV to zero:

$IRR_x = 18.0\%.$

$IRR_y = 15.0\%.$

Modified Internal Rate of Return (MIRR)

To obtain each project's MIRR, begin by finding each project's terminal value (TV) of cash inflows:

$TV_x = Rs.6,500(1.12)^3 + Rs.3,000(1.12)^2 + Rs.3,000(1.12)^1 + Rs.1,000 = Rs.17,255.23.$

$TV_y = Rs.3,500(1.12)^3 + Rs.3,500(1.12)^2 + Rs.3,500(1.12)^1 + Rs.3,500 = Rs.16,727.65.$

Now, each project's MIRR is that discount rate that equates the PV of the TV to each project's cost, Rs. 10,000:

$MIRR_x = 14.61\%.$

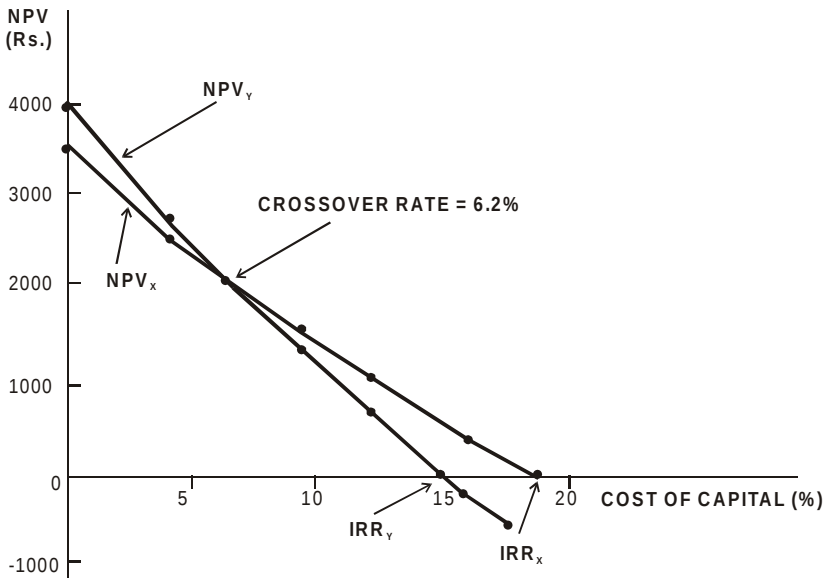
$MIRR_y = 13.73\%.$

(b) The following table summarizes the project rankings by each method:

	Project that ranks higher
Payback	X
NPV	X
IRR	X
MIRR	X

Analysis: All methods rank Project X over Project Y. In addition, both projects are acceptable under the NPV, IRR, and MIRR criteria. Thus, both projects should be accepted if they are independent.

- (c) If the projects are mutually exclusive, then the project with the higher NPV at $k = 12\%$, or Project X would be accepted.
- (d) To determine the effects of changing the cost of capital, plot the NPV profiles of each project. The crossover rate occurs at about 6 to 7 per cent (6.2%). See the graph below:



Cost of capital	NPV _x	NPV _y
%	Rs.	Rs.
0	3,500	4,000
4	2,545	2,705
8	1,707	1,592
12	966	631
16	307	(206)
18	5	(585)

If the firm's cost of capital is less than 6.2 per cent, a conflict exists because $NPV_y > NPV_x$, but $IRR_x > IRR_y$. Therefore, if k were 5 per cent, a conflict would exist. However, when $k = 5.0\%$, $MIRR_x = 10.64\%$ and $MIRR_y = 10.83\%$; hence, the modified IRR ranks the projects correctly, even if k is to the left of the crossover point.

- (e) The basic cause of the conflict is differing reinvestment rate assumptions between NPV and IRR. NPV assumes that cash flows can be reinvested at the cost of capital, while IRR assumes reinvestment at the (generally) higher IRR. The high reinvestment rate assumption under IRR makes early cash flows especially valuable, and hence short-term projects look better under IRR.

6. (a) Earnings per share (EPS) and Price per share (P_0)

	Rs.
EBIT	40,00,000
Interest (Rs. 20,00,000 $\times$ 0.10)	<u>2,00,000</u>
Earning before taxes (EBT)	38,00,000
Taxes (35%)	<u>13,30,000</u>
Net income	<u>24,70,000</u>

$$EPS = \frac{\text{Rs. } 24,70,000}{6,00,000} = \text{Rs. } 4.12.$$

$$P_0 = \frac{\text{Rs. } 4.12}{0.15} = \text{Rs. } 27.47.$$

(b) Weighted Average Cost of Capital

$$\text{Equity} = 6,00,000 \times \text{Rs. } 10 = \text{Rs. } 60,00,000.$$

$$\text{Debt} = \text{Rs. } 20,00,000.$$

$$\text{Total capital} = \text{Rs. } 80,00,000.$$

$$\begin{aligned} \text{WACC} &= w_d k_d (1 - T) + w_c k_s \\ &= (2/8) (10\%) (1 - 0.35) + (6/8) (15\%) \\ &= 1.63\% + 11.25\% \\ &= 12.88\%. \end{aligned}$$

(c)	Rs.
EBIT	40,00,000
Interest (Rs. 1,00,00,000 × 0.12)	<u>12,00,000</u>
Earnings before taxes (EBT)	28,00,000
Taxes (35%)	<u>9,80,000</u>
Net income	<u>18,20,000</u>

Shares bought and retired

$$\Delta N = \frac{\Delta \text{Debt}}{P_0} = \frac{\text{Rs. } 80,00,000}{\text{Rs. } 27.47} = 2,91,227.$$

New outstanding shares

$$N_1 = N_0 - \Delta N = 6,00,000 - 2,91,227 = 3,08,773.$$

New EPS

$$\text{EPS} = \frac{\text{Rs. } 18,20,000}{3,08,773} = \text{Rs. } 5.89.$$

New price per share

$$P_0 = \frac{\text{Rs. } 5.89}{0.17} = \text{Rs. } 34.65 \text{ versus Rs. } 27.47.$$

Therefore, XYZ Company should change its capital structure.

- (d) In this case, the company's net income would be higher by $(0.12 - 0.10)$ (Rs. 20,00,000) $(1 - 0.35) = \text{Rs. } 26,000$ because its interest charges would be lower. The new price would be:

$$P_0 = \frac{(\text{Rs. } 18,20,000 + \text{Rs. } 26,000) / 3,08,773}{0.17} = \text{Rs. } 35.18.$$

In the first case, in which debt had to be refunded, the bondholders were compensated for the increased risk of the higher debt position. In the second case, the old bondholders were not compensated; their 10 per cent coupon perpetual bonds would now be worth

$$\frac{\text{Rs. } 100}{0.12} = \text{Rs. } 833.33,$$

Or, Rs. 16,66,667 in total, down from the old Rs. 20 lakhs, or a loss of Rs. 3,33,333. The stockholders would have a gain of

$$(\text{Rs. } 35.18 - \text{Rs. } 34.65) (3,08,773) = \text{Rs. } 1,63,650.$$

The gain would, of course, be at the expense of the old bondholders. (There is no reason to think that bondholders' losses would exactly offset stockholders' gains).

(e) $\text{TIE} = \frac{\text{EBIT}}{I}$

$$\text{Original TIE} = \frac{\text{Rs. } 40,00,000}{\text{Rs. } 2,00,000} = 20 \text{ times.}$$

$$\text{New TIE} = \frac{\text{Rs. } 40,00,000}{\text{Rs. } 12,00,000} = 3.33 \text{ times.}$$

7. (a) (i) Variable cost per unit at present
 $\text{EBIT} = P(Q) - F - V(Q)$

Where,

Q = units of output (sales) = 5,000.

P = Average sales price per unit of output = Rs. 100.

F = Fixed operating costs = Rs. 2,00,000.

V = Variable costs per unit.

$$EBIT = P(Q) - F - V(Q).$$

$$Rs. 50,000 = Rs. 100 (5,000) - Rs. 2,00,000 - V(5,000)$$

$$5,000V = Rs. 2,50,000.$$

$$V = Rs. 50.$$

(ii) New EBIT level if the change is made

$$\text{New EBIT} = P_2(Q_2) - F_2 - V_2(Q_2)$$

$$= Rs. 95 (7,000) - Rs. 2,50,000 - Rs. 40(7,000)$$

$$= Rs. 1,35,000.$$

(iii) Incremental EBIT

$$\Delta EBIT = Rs. 1,35,000 - Rs. 50,000 = Rs. 85,000.$$

(iv) The Approximate Rate of Return on the New Investment

$$\Delta ROA = \frac{\Delta EBIT}{\text{Investment}} = \frac{Rs. 85,000}{Rs. 4,00,000} = 21.25\%.$$

Analysis: Since the ROA exceeds Onida's average cost of capital, this analysis suggests that Onida should go ahead and make the investment.

(b) The change would increase the breakeven point. Still, with a lower sales price, it might be easier to achieve the higher new breakeven volume.

$$\text{Old : } Q_{BE} = \frac{F}{P - V} = \frac{Rs. 2,00,000}{Rs. 100 - Rs. 50} = 4,000 \text{ units.}$$

$$\text{New : } Q_{BE} = \frac{F}{P_2 - V_2} = \frac{Rs. 2,50,000}{Rs. 95 - Rs. 40} = 4,545 \text{ units.}$$

(c) The incremental ROA is:

$$ROA = \frac{\Delta \text{Profit}}{\Delta \text{Sales}} \times \frac{\Delta \text{Sales}}{\Delta \text{Assets}}$$

Using debt financing, the incremental profit associated with the investment is equal to the incremental profit found in part (a) minus the interest expense incurred as a result of the investment:

$$\begin{aligned} \Delta \text{Profit} &= \text{New profit} - \text{Old profit} - \text{Interest} \\ &= Rs. 1,35,000 - Rs. 50,000 - 0.10 (Rs. 4,00,000) \\ &= Rs. 45,000. \end{aligned}$$

$$\begin{aligned} \Delta \text{Sales} &= P_2 Q_2 - P_1 Q_1 \\ &= Rs. 95 (7,000) - Rs. 100 (5,000) \\ &= Rs. 6,65,000 - Rs. 5,00,000 \\ &= Rs. 1,65,000. \end{aligned}$$

$$ROA = \frac{Rs. 45,000}{Rs. 1,65,000} \times \frac{Rs. 1,65,000}{Rs. 4,00,000} = 11.25\%.$$

The return on the new equity investment still exceeds the average cost of capital, so Onida should make the investment.

8. Alternative Balance Sheets for Sai Company

	Restricted (40%)	Moderate (50%)	Relaxed (60%)
	Rs.	Rs.	Rs.
Current assets	12,00,000	15,00,000	18,00,000
Fixed assets	<u>6,00,000</u>	<u>6,00,000</u>	<u>6,00,000</u>
Total assets	<u>18,00,000</u>	<u>21,00,000</u>	<u>24,00,000</u>
Debt	9,00,000	10,50,000	12,00,000
Equity	<u>9,00,000</u>	<u>10,50,000</u>	<u>12,00,000</u>
Total liabilities and equity	<u>18,00,000</u>	<u>21,00,000</u>	<u>24,00,000</u>

Alternative Income Statements for Sai Company

	Restricted (40%)	Moderate (50%)	Relaxed (60%)
	Rs.	Rs.	Rs.
Sales	30,00,000	30,00,000	30,00,000
EBIT	4,50,000	4,50,000	4,50,000
Interest (10%)	<u>90,000</u>	<u>1,05,000</u>	<u>1,20,000</u>
Earnings before taxes	3,60,000	3,45,000	3,30,000
Taxes (40%)	<u>1,44,000</u>	<u>1,38,000</u>	<u>1,32,000</u>
Net income	<u>2,16,000</u>	<u>2,07,000</u>	<u>1,98,000</u>
ROE	<u>24.0%</u>	<u>19.7%</u>	<u>16.5%</u>

9. (a) and (b)

Income Statements for Year ended December 31, 2006 (thousands of Rupees)

	New India Press		Delhi Publishing	
	A	B	C	D
	Rs.	Rs.	Rs.	Rs.
EBIT	30,000	30,000	30,000	30,000
Interest	<u>12,400</u>	<u>14,400</u>	<u>10,600</u>	<u>18,600</u>
Taxable income	17,600	15,600	19,400	11,400
Taxes (40%)	<u>7,040</u>	<u>6,240</u>	<u>7,760</u>	<u>4,560</u>
Net income	<u>10,560</u>	<u>9,360</u>	<u>11,640</u>	<u>6,840</u>
Equity	1,00,000	1,00,000	1,00,000	1,00,000
Return on Equity	<u>10.56%</u>	<u>9.36%</u>	<u>11.64%</u>	<u>6.84%</u>

The New India Press has a higher ROE when short-term interest rates are high, whereas Delhi Publishing does better when rates are lower.

- (c) Analysis: Delhi Publishing Company's position is riskier. Firstly, its profits and return on equity are much more volatile than New India Press. Secondly, Delhi Publishing must renew its large short-term loan every year, and if the renewal comes up at a time when money is very tight, when its business is depressed, or both, then Delhi Publishing could be denied credit, which could put it out of business.

10. Cash flow Statement (31st March, 2007)

(A) Cashflows from Operating Activities

Profit and Loss A/c

(3,60,000 – (2,88,000 + 28,800) 43,200

Adjustments:

Increase in General Reserve	1,44,000	
Depreciation	4,20,000	
Provision for Tax	4,08,000	
Loss on Sale of Machine	36,000	
Premium on Redemption of Debenture	14,400	
Proposed Dividend	1,74,000	
Preliminary Exp. w/o	48,000	
Fixed Assets w/o	<u>12,000</u>	<u>12,56,400</u>

Funds from Operation 12,99,600

Increase in Sundry Current Liabilities 48,000

Increase in Current Assets

12,72,000 – (11,34,000 + 28,800) (1,09,200)

Cash before Tax 12,38,400

Tax paid 4,32,000

Cash from Operating Activities 8,06,400

(B) Cash from Investing Activities

Purchases of fixed assets	(10,20,000)	
Sale of Investment	1,44,000	
Sale of Fixed Assets	<u>1,20,000</u>	<u>(7,56,000)</u>

(C) Cash from Financing Activities

Issue of Share Capital	4,80,000	
Redemption of Debenture	(3,02,400)	
Dividend paid	<u>(1,26,000)</u>	<u>51,600</u>

Net increase in Cash and Cash equivalents 1,02,000

Opening Cash and Cash equivalents 2,10,000

Closing Cash 3,12,000

Fixed Assets Account

To	Particulars	Rs.	By	Particulars	Rs.
To	Balance b/d	27,36,000	By	Cash	1,20,000
To	Purchases (Balance)	10,20,000	By	Loss on sales	36,000
			By	Depreciation	4,20,000
			By	Assets w/o	12,000
			By	Balance	<u>31,68,000</u>
		<u>37,56,000</u>			<u>37,56,000</u>

Depreciation Account

	Particulars	Rs.		Particulars	Rs.
To	Fixed Assets (on sales)	84,000	By	Balance b/d	11,04,000
To	Fixed Assets w/o	48,000	By	Profit and Loss a/c	4,20,000
To	Balance	<u>13,92,000</u>			
		<u>15,24,000</u>			<u>15,24,000</u>

11. (i) Financial leverage

Combined Leverage = Operating Leverage (OL) $\times$ Financial Leverage (FL)

$$2.8 = 1.4 \times FL$$

$$FL = 2$$

$$\text{Financial Leverage} = 2$$

(ii) P/V Ratio and EPS

$$\text{P/V ratio} = \frac{C}{S} \times 100$$

$$\text{Operating leverage} = \frac{C}{C - F} \times 100$$

$$1.4 = \frac{C}{C - 2,04,000}$$

$$1.4 (C - 2,04,000) = C$$

$$1.4 C - 2,85,600 = C$$

$$C = \frac{2,85,600}{0.4}$$

$$C = 7,14,000$$

$$\text{P/V} = \frac{7,14,000}{30,00,000} \times 100 = 23.8\%$$

Therefore, P/V Ratio = 23.8%

$$\text{EPS} = \frac{\text{Profit after tax}}{\text{No. of equity shares}}$$

$$\text{EBT} = \text{Sales} - V - \text{FC} - \text{Interest}$$

$$= 30,00,000 - 22,86,000 - 2,04,000 - 2,55,000$$

$$= 2,55,000$$

$$\text{PAT} = \text{EBT} - \text{Tax}$$

$$= 2,55,000 - 76,500 = 1,78,500$$

$$\text{EPS} = \frac{1,78,500}{1,70,000} = 1.05$$

(iii) Assets turnover

$$\text{Assets turnover} = \frac{\text{Sales}}{\text{Total Assets}} = \frac{30,00,000}{38,25,000} = 0.784$$

0.784 < 1.5 means lower than industry turnover.

- (iv) EBT zero means 100% reduction in EBT. Since combined leverage is 2.8, sales have to be dropped by $100/2.8 = 35.71\%$. Hence new sales will be

$$30,00,000 \times (100 - 35.71) = 19,28,700.$$

Therefore, at 19,28,700 level of sales, the Earnings before Tax of the company will be equal to zero.

12. In-house Decision

	Rs.
Cash discount (Rs. 90 lakhs $\times$.60 $\times$.02)	1,08,000
Bad debts losses (90,00,000 $\times$.01)	90,000
Administration cost	1,20,000
Cost of funds in receivables*	<u>1,08,750</u>
	<u>4,26,750</u>
*Average collection period $(10 \times .6) + (60 \text{ days} \times .40) = 30 \text{ days}$	
Average investments in debtors = $\frac{90}{12} = 7.5 \text{ lakhs}$	
Cost of Bank funds $\left(\text{Rs. } 7.5 \times \frac{1}{2} \times .15 \right)$	56,250
Cost of Owned funds $\left(\text{Rs. } 7.5 \times \frac{1}{2} \times .14 \right)$	<u>52,500</u>
	<u>1,08,750</u>
Offer Alternative	
Factoring commission (Rs. 90 lakhs $\times$.04)	3,60,000
Interest charges $.88(90 \text{ lakhs} - 3,60,000) = 76,03,200 \times .15 \times \frac{25}{360}$	79,200
Cost of owned funds invested in receivables $(90,00,000 - 76,03,200) \times .14 \times \frac{25}{360}$	13,580
	<u>4,52,780</u>

Decision: Sakshi Forgings should not go for the factoring alternative as the cost of factoring is more.

Cost of In-house Decision	4,26,750
Cost of Factoring Firm	<u>4,52,780</u>
Net loss	(26,030)

13. (a) Activity level: 1,30,000 units

Statement showing Estimate of Working Capital Needs

A. Investment in Inventory:

Raw material inventory: 1 month 10,00,000

$$\left(1,30,000 \times \frac{4}{52} \times \text{Rs. } 100 \right)^*$$

WIP Inventory : 1 week	$\left(1,30,000 \times \frac{1}{52} \times 0.80 \times 212.50\right)$	4,25,000
Finished goods inventory: 2 weeks	$\left(1,30,000 \times \frac{2}{52} \times 212.50\right)$	10,62,500
B. Investment in Debtors: 4 weeks at cost	$\left(1,30,000 \times \frac{4}{5} \times \frac{4}{52} \times 212.50\right)$	17,00,000
C. Cash balance		<u>37,500</u>
D. Investment in Current Assets (A + B + C)		42,25,000
E. Current Liabilities:		
Creditors : 3 weeks	$\left(1,30,000 \times \frac{3}{52} \times 100\right)$	7,50,000
Deferred wages : 1 week	$\left(1,30,000 \times \frac{1}{52} \times 37.50\right)$	93,750
Deferred overheads : 2 weeks	$\left(1,30,000 \times \frac{2}{52} \times 75\right)$	<u>3,75,000</u>
Net Working Capital Needs		<u>30,06,250</u>

* For calculation purposes, 4 weeks has been considered as equivalent to a month.

14. (a) **Deep Discount Bonds and Zero Coupon Bonds :** Deep Discount Bonds (DDBs) are in the form of zero interest bonds. These bonds are sold at a discounted value and on maturity face value is paid to the investors. In such bonds, there is no interest payout during lock-in period.

IDBI was first to issue a Deep Discount Bonds (DDBs) in India in January 1992. The bond of a face value of Rs.1 lakh was sold for Rs. 2,700 with a maturity period of 25 years.

A zero coupon bond (ZCB) does not carry any interest but it is sold by the issuing company at a discount. The difference between discounted value and maturing or face value represents the interest to be earned by the investor on such bonds.

- (b) **Investment Decision and Financing Decision:** The investment of long term funds is made after a careful assessment of the various projects through capital budgeting and uncertainty analysis. However, only that investment proposal is to be accepted which is expected to yield at least so much return as is adequate to meet its cost of financing. This have an influence on the profitability of the company and ultimately on its wealth. Such types of decisions are known as investment decisions.

On the other hand, Financing Decisions relate to raising of funds from various sources. Each source of funds involves different issues. The finance manager has to maintain a proper balance between long-term and short-term funds. With the total volume of long-term funds, he has to ensure a proper mix of loan funds and owner's funds. The optimum financing mix will increase return to equity shareholders and thus maximise their wealth.

- (c) **Operating Leverage and Financial Leverage:** Operating leverage is defined as the "firm's ability to use fixed operating costs to magnify effects of changes in sales on its earnings

before interest and taxes.” When there is an increase or decrease in sales level the E.B.I.T. also changes. The effect of change in sales on the level of E.B.I.T. is measured by operating leverage. Operating leverage occurs—when a firm has fixed costs which must be met regardless of volume of sales. When the firm has fixed costs, the % change in profits due to change in sales level is greater than the % change in sales.

Whereas, Financial leverage is defined as the ability of a firm to use fixed financial charges to magnify the effects of changes in E.B.I.T./Operating profits, on the firm's earnings per share. The financial leverage occurs when a firm's capital structure contains obligation of fixed financial charges e.g. interest on debentures, dividend on preference shares etc. along with owner's equity to enhance earnings of equity shareholders. The fixed financial charges do not vary with the operating profits or E.B.I.T. They are fixed and are to be paid irrespective of level of operating profits or E.B.I.T.

15. (a) Seed Capital Assistance: The seed capital assistance has been designed by IDBI for professionally or technically qualified entrepreneurs. All the projects eligible for financial assistance from IDBI, directly or indirectly through refinance are eligible under the scheme. The project cost should not exceed Rs. 2 crores and the maximum assistance under the project will be restricted to 50% of the required promoters contribution or Rs 15 lacs whichever is lower.

The seed capital assistance is interest free but carries a security charge of one percent per annum for the first five years and an increasing rate thereafter.

- (b) American Depository Receipts: Depository Receipts issued by Indian company in the USA are known as American Depository Receipts (ADRs). Such receipts have to be issued in accordance with the provisions stipulated by the Securities and Exchange Commission (SEC), USA, which are very stringent.

These are securities offered by non-US companies who want to list on any of the US exchange. Each ADR represents a certain number of a company's regular shares. ADRs allow US investors to buy shares of these companies without the costs of investing directly in a foreign stock exchange. ADRs are issued by an approved New York bank or trust company against the deposit of the original shares. These are deposited in a custodial account in the US. Such receipts have to be issued in accordance with the provisions stipulated by the SEC, USA which are very stringent.

ADRs can be traded either by trading existing ADRs or purchasing the shares in the issuer's home market and having new ADRs created, based upon availability and market conditions. When trading in existing ADRs, the trade is executed on the secondary market on the New York Stock Exchange (NYSE) through Depository Trust Company (DTC) without involvement from foreign brokers or custodians. The process of buying new, issued ADRs goes through US brokers, Helsinki Exchanges and DTC as well as Deutsche Bank. When transactions are made, the ADRs change hands, not the certificates. This eliminates the actual transfer of stock certificates between the US and foreign countries.

- (c) Propositions made by Modigliani and Miller on Cost of Capital: The propositions made by Modigliani and Miller on cost of capital are:
 - (i) The total market value of a firm and its cost of capital are independent of its capital structure. The total market value of the firm is given by capitalising the expected stream of operating earnings at a discount rate considered appropriate for its risk class.
 - (ii) The cost of equity (K_e) is equal to capitalisation rate of pure equity stream plus a premium for financial risk. The financial risk increases with more debt content in the capital structure. As a result, K_e increases in a manner to offset exactly the use of less expensive source of funds.
 - (iii) The cut-off rate for investment purposes is completely independent of the way in which the investment is financed.

- (d) **Euro Convertible Bonds:** Euro Convertible bonds are quasi-debt securities (unsecured) which can be converted into depository receipts or local shares. ECBs offer the investor an option to convert the bond into equity at a fixed price after the minimum lock in period. The price of equity shares at the time of conversion will have a premium element. The bonds carry a fixed rate of interest. These are bearer securities and generally the issue of such bonds may carry two options viz. call option and put option. A call option allows the company to force conversion if the market prices of the shares exceed a particular percentage of the conversion price. A put option allows the investors to get his money back before maturity. In the case of ECBs, the payment of interest and the redemption of the bonds will be made by the issuer company in US dollars. ECBs issues are listed at London or Luxemburg stock exchanges.