Paper 8 : Cost Accounting and Financial Management

Full Marks: 100   **Time : 3 hours**

This question paper is divided into two sections, Section A- Cost Accounting (60 marks) and Section B - Financial Management (40 marks).
From Section A: Question no. 1 is compulsory and answer any 3 from the rest questions in Group A.
From Section B: Question no. 6 is compulsory and answer any 2 from the rest questions in Group B.

Section A - Cost Accounting
(Full Marks:60)

Question No.1: (Compulsory question)
Answer the followings:
(a) Define Cost Accountancy, Costing and Cost Accounting   **[3]**

Answer.
Cost Accountancy is defined as 'the application of Costing and Cost Accounting principles, methods and techniques to the science, art and practice of cost control and the ascertainment of profitability'.

Costing is defined as the technique and process of ascertaining costs.

Cost Accounting may be defined as "Accounting for costs classification and analysis of expenditure as will enable the total cost of any particular unit of production to be ascertained with reasonable degree of accuracy and at the same time to disclose exactly how such total cost is constituted". Thus Cost Accounting is classifying, recording an appro-priate allocation of expenditure for the determination of the costs of pro-ducts or services, and for the presentation of suitably arranged data for the purpose of control and guidance of management.

(b) Explain Cost Centre, Responsibility Centre and Profit Centre   **[3]**

Answer.
CIMA defines a cost centre as "a location, a person, or an item of equipment (or a group of them) in or connected with an undertaking, in relation to which costs ascertained and used for the purpose of cost control". Cost centres are of two types-Personal and Impersonal Cost Centre. A personal cost centre consists of person or group of persons. An impersonal cost centre consists of a location or item of equipment or group of equipments.

A responsibility centre in Cost Accounting denotes a segment of a business organization for the activities of which responsibility is assigned to a specific person. Thus a factory may be split into a number of centres and a supervisor is assigned with the re-sponsibility of each centre. All costs relating to the centre are collect-ed and the Manager responsible for such a cost centres judged by reference to the activity levels achieved in relation to costs. Even an individual machine may be treated as responsibility centre for cost control and cost reduction.

Profit centre is a segment of a business that is responsible for all the activities involved in the production and sales of products, systems and services. Thus a profit centre encompasses both costs that it incurs and revenue that it generates. Profit centres are created to delegate responsibility to individuals and measure their performance. In the concept of responsibility accounting, profit centres are sometimes also responsible for the investment made for the

centre. The profit is related to the invested capital. Such a profit centre may also be termed as investment centre.

(c) Distinguish between Cost Control and Cost Reduction [4]

Answer.
Both Cost Reduction and Cost Control are efficient tools of management but their concepts and procedure are widely different. The differences are summa-rised below:

Cost Control	Cost Reduction
(a) Cost Control represents efforts made towards achieving target or goal.	(a) Cost Reduction represents the achievement in reduction of cost.
(b) The process of Cost Control is to set up a target, ascertain the actual performance and compare it with the target, investigate the variances, and take remedial measures.	(a) Cost Reduction is not concern with maintenance of performance according to standard.
(c) Cost Control assumes the existence of standards or norms which are not challenged.	(c) Cost Reduction assumes the existence of concealed potential savings in standards or norms which are therefore subjected to a constant challenge with a view to improvement by bringing out savings.
(d) Cost Control is a preventive function. Costs are optimized before they are incurred.	(d) Cost Reduction is a corrective function. It operates even when an efficient cost control system exists. There is room for reduction in the achieved costs under controlled conditions.
(e) Cost Control lacks dynamic approach.	(e) Cost Reduction is a continuous process of analysis by various methods of all the factors affecting costs, efforts and functions in an organization. The main stress is upon the why of a thing and the aim is to have continual economy in costs.

(d) State Perpetual Inventory System. [2]

Answer.
Perpetual Inventory System may be defined as 'a system of records maintained by the controlling department, which reflects the physical movements of stocks and their current balance'. Thus it is a system of ascertaining balance after every receipt and issue of materials through stock records to facilitate regular checking and to avoid closing down the firm for stock taking. To ensure the accuracy of the perpetual inventory records (bin card and Stores ledger), physical verification of stores is made by a programme of continuous stock taking.

The operation of the perpetual inventory system may be as follows :-

(a) The stock records are maintained and up to date posting of transactions are made there in so that current balance may be known at any time.

(b) Different sections of the stores are taken up by rotation for physical checking. Every day some items are checked so that every item may be checked for a number of times during the year.

(c) Stores received but awaiting quality inspection are not mixed up with the regular stores at the time of physical verification, because entries relating to such stores have not yet been made in the stock records.

d) The physical stock available in the store, after counting, weighing, measuring or listing as the case may be, is properly recorded in the bin cards / Inventory tags and stock verification sheets.

Perpetual inventory system should not be confused with continuous stock taking; Continuous stock taking is an essential feature of perpetual inventory system. Perpetual inventory means the system of stock records and continuous stock taking, where as continuous stock taking means only the physical verification of the stock records with actual stocks.

In continuous stock taking, physical verification is spread throughout the year. Everyday 10 to 15 items are taken at random by rotation and checked so that the surprise element in stock verification may be maintained and each item may be checked for a number of times each year. On the other hand the surprise element is missing in case of periodical checking, because checking is usually done at the end of year.

Question No.2:
(a) State the advantages of Just-in-Time. [4]

Answer.
The advantages of Just-in-Time system are as follows :-

(i) Increased emphasis on supplier relationships. A company without inventory does not want a supply system problem that creates a part shortage. This makes supplier relationships extremely important.
(ii) Supplies come in at regular intervals throughout the production day. Supply is synchronized with production demand and the optimal amount of inventory is on hand at any time. When parts move directly from the truck to the point of assembly, the need for storage facilities is reduced.
(iii) Reduces the working capital requirements, as very little inventory is maintained.
(iv) Minimizes storage space.
(v) Reduces the chance of inventory obsolescence or damage.

(b) Explain Bill of Material (BoM) and its relevance. [3]

Answer.
A bill of materials is the record of the materials used to construct a product. It can include raw materials, sub-assemblies and supplies. A bill of materials may include not only the unit quantity required to construct the finished product, but also an estimate of scrap that will occur during the production process.

The bill of materials is used to calculate the cost of a product, as well as to order parts from suppliers.

It is prepared by the engineering or planning department for submission of quotation and after the receipt of work order. It is a method of documenting materials required for execution of the specified job work. Bill of Material acts as an authorization to the Stores Department in procuring the materials and the concerned department in material requisition from the stores. It is an advance intimation to the concerned departments of the job, work order to be completed.

(c) A company has the option to procure a particular material from two sources:
Source I assures that defective will not be more than 2% of supplied quantity.
Source II does not give any assurance, but on the basis of past experience of supplies received from it, it is observed that defective percentage is 2.8%. The material is supplied in lots of 1,000 units. Source II supplies the lot at a price, which is lower by ₹ 100 as compared to Source I. The defective units of material can be rectified for use at a cost of ₹ 5 per unit. You are required to find out which of the two sources is more economical. **[7]**

Answer.

Comparative Statement of procuring material from two sources

	Material source I	Material source II
Defective (in %)	2 (Future estimate)	2.8 (Past experience)
Units supplied (in one lot)	1,000	1,000
Total defective units in a lot	20 (1,000 units×2%)	28 (1,000 units ×2.8%)
Additional price paid per lot (₹) (A)	100	–
Rectification cost of defect (₹) (B)	100 (20 units x ₹ 5)	140 (28 units × ₹ 5)
Total additional cost per lot (₹): [(A)+(B)]	200	140

Decision: On comparing the total additional cost incurred per lot of 1,000 units, we observe that it is more economical, if the required material units are procured from material source II.

(d) Average lead time - 10 days; maximum lead time - 15 days, minimum lead time - 6 days and for emergency purchases - 4 days. Average consumption - 15 units per day and maximum consumption - 20 units per day. Calculate Danger Level. **[2]**

Answer.
Danger Level = Normal Rate of Consumption × Maximum Re-Order Period for emergency purchases

= (15 x 2) – 20] x 15 = 150 units

Question No.3:
(a) A fire occurred in the factory premises on September 30,2013. Majority of the accounting records have been destroyed. Certain accounting records were kept in another building. They reveal the following for the period September 1,2013 to September 30, 2013.
(i) Direct materials purchased ₹ 2,50,000 ;
(ii) Work-in-process as on 01-09-2013 - ₹ 40,000 ;
(iii) Direct Materials inventory as on 01-09-2013 - ₹ 20,000;

(iv) Finished goods inventory as on 01-09-2013 - ₹ 37,750;
(v) Indirect manufacturing costs - 40% of conversion cost;
(vi) Sales Revenues - ₹ 7,50,000;
(vii) Direct manufacturing labour - ₹ 2,22,250;
(viii) Prime Costs - ₹ 3,97,750;
(ix) Gross margin percentage based on revenues - 30%;
(x) Cost of goods available for sale - ₹ 5,55,775
The loss is fully covered by insurance company. The insurance company wants to know the historical cost of inventories as a basis for negotiating a settlement, although the settlement is actually to be based on replacement cost, not historical cost.
Calculate :
    (i)   Finished goods inventory as on 30-09-2013;
    (ii)   Work-in-progress as on 30-09-2013 and
    (iii)   Direct Materials inventory as on 30-09-2013.   **[8]**

Answer.
Working Note :
    I.   Direct Material Inventory Cost (used during the month)
             = Prime Cost – Direct Manufacturing Labour Cost
             = ₹ (3,97,750 – 2,22,250) = ₹ 1,75,500

    II.   Conversion and Indirect Manufacturing Cost

Conversion cost	= Direct mfg. cost + Indirect mfg. cost	
Indirect mfg. cost	= 40% of conversion cost	
Conversion cost	= Direct mfg. cost + 40% of conversion cost	
0.60 Conversion cost	= Direct mfg. cost	
Conversion cost	= Direct mfg. cost/0.60	= ₹ 2,22,250/0.60 = ₹ 3,70,417
Indirect mfg. cost	= 40% x ₹ 3,70,417	= ₹ 1,48,167

    III.   Cost of goods manufactured

	₹
Cost of goods available for sale	5,55,775
Less : Finished goods 1.9.2013	37,750
Cost of goods manufactured	5,18,025

    (i)   Finished goods inventory on 30.09.2013

		₹
Sales revenue (30% of revenue)		7,50,000
Less : Gross revenue (30% of revenue)		2,25,000
Cost of goods sold	A	5,25,000
Cost of goods available for sale	B	5,55,775
Finished goods inventory on 30.09.2013	B – A	30,775

    (ii)   Work-in-progress as on 30-09-2013

Prime cost	3,97,750
Add : Indirect mfg. cost	1,48,167
Add : Opening work-in-process on 1.9.2013	40,000
Manufacturing cost to account for	5,85,917
Less : Cost of goods manufactured	5,18,025
Work-in-process inventory on 30.09.2013	67,892

    (iii)   **Direct Materials inventory as on 30-09-2013**

Direct materials inventory on 1.9.2013	20,000
Add : Direct materials purchased	2,50,000
	2,70,000
Less : Direct inventory used during the month	1,75,500
Direct material inventory on 30.09.2013	94,500

(b) Raw materials "X" costing ₹ 150 per kg, and "Y" costing ₹ 90 per kg are mixed in equal proportions for making Product P1. The loss of material in processing works out to 25% of the product. The production expenses are allocated at 40% of direct material cost. The end product is priced with a margin of 20% over the total cost.
Material "Y" is not easily available and substitute raw material "Z" has been found for "Y" costing ₹ 75 per kg. It is required to keep the proportion of this substitute material in the mixture as low as possible and at the same time maintain the selling price of the end product at existing level and ensure the same quantum of profit as at present.
You are required to compute the ratio of the mix of the raw materials "X" and "Z'. [8]

Answer.

Working Note:

(i) Percentage of loss on output: 25

   Let 1 kg. be the output of product A,

   then, 1.25 kg. will be the input of material X and Y.

   Proportion of material X and Y in the output 1 kg. of product A is:

   X: 1.25 kg./2   = 0.625 kg.

   Y:1.25kg./2   = 0.625kg.

(ii) Cost structure and price:

(for 1 kg. of product A)	₹
Material X:	93.75
(0.625 kg. x ₹ 150)	
Material Y:	56.25
(0.625 kg. x ₹ 90)	
Total Material Cost	150.00
Add: Production expenses	
(40% of material cost)	60.00
Total cost	210.00
Add: Profit 20% of total cost	42.00
Selling price	252.00

Proportion of Materials X and Z in the Product A

Assume the minimum quantity of material Z in the product A as S kg. It means that (1.25-S) kg, of material X is required to be used for producing 1 kg. of Product A.

[Refer to Working Note (i)]

To maintain the level of profit and the selling price has shown by the Working Note (ii) it is necessary that the total cost of material in 1 kg. of product A should not exceed ₹ 150; i.e., S kg. x ₹ 75 + (1.250 - S) kg. x ₹ 150 = ₹ 150 or S = 0.5

Hence the quantity of material X = 1.25 kg. - 0.50 kg. = 0.75 kg.

Proportion of materials X and Z is: 0.75: 0.50 = 3:2.

Question No.4:
(a) A machinery was purchased from a manufacturer who claimed that his machine could produce 36.5 tons in a year consisting of 365 days. Holidays, breakdown, etc, were normally allowed in the factory for 65 days. Sales were expected to be 25 tons during the year and the plant actually produced 25.2 tons during the year.
You are required to state the following figures :(i) rated capacity; (ii) practical capacity (iii) normal capacity (iv) actual capacity. **[4]**

Answer.
    (i)   Rated Capacity (Refers to the capacity of a machine or a plant as indicated by its manufacturer) = 36.5 tonnes
    (ii)   Practical Capacity (Defined as actually utilized capacity of a plant)
             $= \text{i.e. } \dfrac{36.5}{365} \times (365 - 65) \text{ tones} = 30 \text{ tonnes}$
    (iii)   Normal Capacity (It is the capacity of a plant utilized based on sales expectancy) = 25 tonnes
    (iv)   Actual Capacity (Refers to the capacity actually achieved) = 25.2 tonnes

(b) "The more kilometers you travel with your own vehicle, the cheaper it becomes." Comment briefly on this statement. **[2]**

Answer.
The cost per kilometre, (if one travels in his own vehicle) will decline when he travels more kilometers. This is because the majority of costs for running and maintaining vehicles are of fixed nature and the component of fixed cost per kilometre goes on decreasing with an increase in kilometre travel. Hence, the given statement is true.

(c) The capacity usage ratio and the capacity utilization ratio in respect of machine for a particular month is 80% and 90% respectively. The available working hours in a month is 200 hours. The break-up of idle time is as follows:
Waiting time for job - 5 hours; breakdown - 4 hours; waiting time for tools - 3 hours. Calculate the cost and present the same in a tabular form when the hourly fixed cost of running the machine is ₹ 8.00 [5]

Answer.

	Hours
Available working hours in a month	200
Capacity usage @ 80%	160
Idle time unavoidable	40

Capacity utilization ratio = 90%

Actual hours worked = 160 hrs. x 90/100 = 144 hrs.
Idle time = 160 hrs. – 144 hrs. = 16 hrs.

Breakup of Idle Time	Hrs.
Waiting for job	5
Breakdown	4
Waiting for tools	3
Miscellaneous causes	4
Total idle time	16

Calculation of Idle Time Cost

Particulars	Hours	Rate per hr. (₹)	Amount (₹)
Cost of unavoidable idle time	40	8	320
Cost of avoidable idle time:			
Waiting for job	5	8	40
Breakdown	4	8	32
Waiting for tools	3	8	24
Other reasons	4	8	32
Total cost of idle time	16		128
	56		448

(d) The Cost Accountant of Y Ltd. has computed labour turnover rates for the quarter ended 31st March,2013, as 10%, 5% and 3% respectively under flux method, replacement method and separation method. If the number of workers replaced during the quarter is 30, find out the number of workers (i) recruited and joined and (ii) workers left and discharged. **[5]**

Answer.
Working Note:
Average number of workers on roll:

$$\text{Labour turnover rate (under Replacement method)} = \frac{\text{No. of replacements}}{\text{Average number of workers on roll}} \times 100$$

$$\text{Or} = \frac{5}{10} = \frac{30}{\text{Average number of workers on roll}}$$

$$\text{Average number of workers on roll} = \frac{30 \times 100}{5} = 600$$

(i) Number of workers recruited and joined:

$$\text{Labour turnover rate (Flux method)} = \frac{\text{No. of separations (S) + No. of accessions (A)}}{\text{Av. number of workers on roll}} \times 100$$

(Refer to Working Note)

$$\text{Or} \; \frac{10}{100} = \frac{18 + A}{600}$$

$$\text{Or} \; A = \left[\frac{6000}{100} - 18 \right] = 42$$

No. of workers recruited and joined 42.

(ii) Number of workers left and discharged:

$$\text{Labour turnover rate (Separation method)} = \frac{\text{No. of separations (S)}}{\text{Av. number of workers on roll}} \times 100$$

(Refer to working note)

$$\frac{3}{100} = \frac{S}{600}$$

Or S = 18

Hence, number of workers left and discharged comes to 18.

Question No.5:
   (a) Distinguish between cost allocation and cost absorption. [2]

Answer.
Cost allocation is the allotment of whole item of cost to a cost centre or a cost unit. It is the process of identifying, assigning or allowing cost to a cost centre or a cost unit

Whereas Cost absorption Is the process of absorbing all indirect costs or overhead costs allocated to or apportioned over particular cost centre or production department by the number of units produced

(b) In a factory bonus to workman is paid according to Rowan Plan. Time allotted for a job is 40 hours and the normal rate of wages is ₹ 1.25 per hour. The factory overhead charges are 50 paise per hour for the hours taken. The factory cost of a work order, executed by a worker is ₹ 161.875. The cost of material in each case is ₹ 100. Calculate the hours of time taken by the workman to complete the work order. [6]

Answer.
Let 'T' be the time taken by worker.

Earnings = 1.25 T + [(40-T) / 40] x [1.25 T]

= 1.25 T + [(50T – 1.25 T^2) / 40]

= [50T + 50 T – 1.25T^2] / 40

= [100 T – 1.25T^2] / 40

Materials + Wages + Factory Overheads = Factory Cost

$\Rightarrow$ 100 + [100 T – 1.25T^2] / 40 + 0.5 T = 161.875

$\Rightarrow$ 4000 + 100 T – 1.25T^2 + 20T = 6475

$\Rightarrow$ 1.25T^2 – 120 T + 2475 = 0

$\Rightarrow$ 5T^2 – 480 T + 9900 = 0

$\Rightarrow$ T^2 – 96T + 1980 = 0

T =

T =

T = 66 (or) 30

T = 30 hours (because actual time should not be more than standard time).

(c) A manufacturing unit produces two products X and Y. The following information is furnished:

Particulars	Product X	Product Y
Units produced (Qty)	20,000	15,000
Units Sold (Qty)	15,000	12,000
Machine Hours utilised	10,000	5,000
Design charges	15,000	18,000
Software development charges	24,000	36,000

Royalty paid on sales ₹ 54,000 [@ ₹ 2 per unit sold, for both the products]; Royalty paid on units produced ₹ 35,000 [@ Re.1 per unit purchased, for both the products], Hire charges of equipment used in manufacturing process of Product X only ₹ 5,000, Compute the Direct Expenses as per CAS-10. **[8]**

Answer.
Computation of Direct Expenses

	Particulars	Product X	Product Y
	Royalty paid on Sales	30,000	24,000
Add	Royalty paid on units produced	20,000	15,000
Add	Hire charges of equipment used in manufacturing process of Product X only	5,000	----
Add	Design Charges	15,000	18,000
Add	Software development charges related to production	24,000	36,000
	Direct Expenses	**94,000**	**93,000**

Note:

(i)   Royalty on production and royalty on sales are allocated on the basis of units produced and units sold respectively. These are directly identifiable and traceable to the number of units produced and units sold respectively. Hence, this is not an apportionment.

(ii)   No adjustments are made related to units held, i.e. closing stock.

Section B – Financial Management
(Full Marks: 40)

Answer Question no.1 which is compulsory and any two from the rest in this section.

1.   **Choose the most appropriate one from the stated options.**
   a) Durga Farm Supplies has an 8 per cent return on total assets of ₹ 3, 00,000 and a net profit margin of 5 per cent. Its sales are then
   i)   ₹37,50,000

ii)   ₹4,80,000
iii)   ₹3,00,000
iv)   ₹15,00,000

b) A company issues a new 15 per cent debentures of ₹1,000 face value to be redeemed after 10 years. The debenture is expected to be sold at 5 per cent discount. It will involve floatation costs of 2·5 per cent of face value. The company's tax rate is 35 per cent. The cost of debt using short-cut method would be
i)   10·9%;
ii)   10·21 %;
iii)   10.44%;
iv)   10·76%.

c) The capital structure of a company is as under :

3, 00,000 Equity Shares of ₹ 10 each,
32,000, 12% Preference Shares of ₹100 each,
General Reserve ₹15, 00,000,
Securities Premium Account ₹ 5, 00,000,
25,000, 14% Fully Secured Debentures of ₹100 each,
Term Loan of ₹13,00,000.
Based on these, the leverage of the company is
i)   60.22%;
ii)   58.33%;
iii)   55·21%;
iv)   62·10%.

d) From the following, what is the amount of sales of A Ltd? Financial Leverage – 3:1; interest - ₹200; Operating Leverage -4:1; Variable Cost as a % of sales- 66.67%.
i)   ₹3,600
ii)   ₹6,300
iii)   ₹6,030
iv)   ₹3,060

[2×4=8]

Solution:

a) ii)₹4,80,000

$$\underline{8\% \text{ on } ₹ 3,00,000} = ₹4,80,000$$
$$\qquad\quad 0.05$$

b) i) 10.9%

$$K_d = \frac{150\left(1-0.35\right)+\left(50+25\right)\big/10}{\left(25+1000\right)\big/2} = 10.90\%$$

c) ii)58.33%
Fixed Income Funds = ₹ (32, 00,000 + 25, 00,000 + 13, 00,000)……. (A)

Equity Funds = ₹ (30, 00,000 + 15, 00,000 + 5, 00,000)…….   (B)

$$\text{Leverage} = \frac{A}{A+B} = \frac{₹70}{₹120} = 58.33\%$$

d) iv) ₹3600

Financial Leverage $= \frac{\text{EBIT}}{\text{EBT}} = \frac{3}{1}$

EBIT   = 3EBT
EBIT-200   = EBT
EBIT   =3[EBIT-200]

Therefore, EBIT=₹300

Operating Leverage $= \frac{\text{s}-\text{v}}{\text{EBIT}} = \frac{4}{1}$

S –v   = 4 EBIT = 4×300=1200
(100-66.67%) s=1200
Therefore Sales = $\frac{1200}{33\frac{1}{3}\%}$ = ₹3600

2. **Complete the Balance Sheet given below with help of the following information:**

Gross profits	**₹40,500**
Shareholders' Funds	**₹5,75,000**
Gross profit margin	15%
Credit sales to total sales	60%
Total Assets Turnover	0.3 times
Inventory turnover	4 times
Average Collection period (a 360 days year)	20 days
Current Ratio	1.35
Long-term Debt to Equity	45%

Balance Sheet

Creditors	?	**Cash**	?
Long-term debt	?	**Debtors**	?
Shareholder' funds	?	**Inventory**	?
		Fixed assets	?

[16]

Solution:

Gross Profits   ₹ 40500

Gross Profit Margin   15%

∴   Sales $= \dfrac{\text{Gross Profits}}{\text{Gross Profit Margin}}$

= ₹ 40500 / 0.15

	= ₹ 2, 70,000
Credit Sales to Total Sales	= 60%
∴ Credit Sales	= ₹ 2, 70,000×0.60
	= ₹ 162000
Total Assets Turnover	= 0.3 times
∴ Total Assets	$= \dfrac{Sales}{Total\ Assets\ Turnover}$
	$= \dfrac{Rs.\ 2,70,000}{0.3}$
	= ₹ 9, 00,000
Sales – Gross Profits	= COGS
∴ COGS	= ₹ 2, 70,000 – 40500
	= ₹ 229500
Inventory turnover	= 4 times
Inventory	= COGS/ Inventory turnover=229500/4
	= ₹ 57375
Average Collection Period	= 20 days
∴ Debtors turnover	$= \dfrac{360}{Average\ Collection\ Period}$
	= 360/20=18
∴ Debtors	$= \dfrac{Credit\ Sales}{Debtors\ turnover}$
	= 16200/18
	= ₹ 9000
Current ratio	= 1.35
1.35	= [Debtors+ Inventory +Cash]/Creditors
1.35 Creditors	= (₹ 9000 + ₹ 57375 + Cash)
1.35 Creditors	= ₹ 66375 + Cash
Long-term Debt to Equity	= 45%
Shareholders Funds	= ₹ 575000
∴ Long-term Debt	= ₹ 575,000×45%
	= ₹ 258750
Creditors (Balance figure)	= 9, 00,000 – (575000 + 258750)
	= ₹ 66250
∴ Cash	= (66250×1.35) – 66375

= ₹23062.50

Balance Sheet (in Rs)

Creditors (Bal. Fig)	66250	Cash	23063.
		Debtors	9000
Long- term debt	258750	Inventory	57375
Shareholders' funds	575000	Fixed Assets (Bal fig.)	810562
	9,00,000		9,00,000

3.

a) **The following information relates to Rays Ltd.**

Earning of the company	**₹10,00,000**	**Rate of return on investment**	**15%**
Dividend payout ratio	**60%**	**Equity capitalization rate**	**12%**
No. of shares outstanding	**2,00,000**		

i) **What would be the market value per share as per Walter's model?**

ii) **What is the optimum dividend payout ratio according to Walter's model and the market value of company's share at that payout ratio?**

[3+3=6]

b) **Sampa Ltd is evaluating a project costing ₹20 lakhs. The Project generates savings of ₹2.95 lakhs per annum to perpetuity. The business risk of the project warrants a rate of return of 15%.**

i) **Calculate Base case NPV of the project assuming no tax.**

ii) **Assuming Tax Rate of 30% with 12% Cost of Debt constituting 30% of the cost of the project, determine Adjusted Present Value.**

iii) **Find out minimum acceptable Base Case NPV, as well as Minimum IRR.**

[3+3+4=10]

Solution:

a)

Earnings per share = ₹ 10, 00,000 / 2, 00,000 shares = ₹ 5
Dividend payout = Rs/ 5 x 60/100 = ₹ 3

i) Calculation of market value per share as per Walter's model

$$P = \frac{D + \dfrac{R_a}{R_C}(E - D)}{R_C}$$

Where, P   = Market value of share
        R_a = Internal rate of return on investment i.e., 15% or 0.15
        D   = Dividend per share i.e., ₹ 3
        R_c = Equity capitalization rate i.e., 12% or 0.12

E   = Earnings per share i.e., ₹ 5

$$P = \frac{3 + \frac{0.15}{0.12}(5-3)}{0.12} = \frac{5.5}{0.12} = ₹\ 45.83$$

iii) Under Walter's model when the return on investment is more than the cost of equity capital, the price per share increases as the dividend payout decreases. Therefore, the optimum dividend payout ratio is nil in this case. Let us check it as below:

$$P = \frac{0 + \frac{0.15}{0.12}(5-0)}{0.12} = \frac{6.25}{0.12} = ₹\ 52.08$$

b)

i) Computation of Base case NPV

Particulars	₹ lakhs
Investment Cost	20.00
Annual saving	2.95
Present value of Perpetual savings = $\frac{\text{Annual Savings}}{\text{Rate of Return}} = \frac{2.95}{15\%}$	19.67
Net Present Value [PV of Inflows 19.67 **Less** Investment Cost 20.00]	**(0.33)**

Observation: The base Case NPV is negative and therefore, the project cannot be accepted as it is.

ii) Computation of Adjusted NPV

Particulars	₹ lakhs
Total Investment	20.00
Debt Component [30% of Investment Cost of ₹20.00 Lakhs]	6.00
Interest on Debt @12% [₹6 Lakhs x 12%]	0.72
Tax saving on Interest on debt [₹0.72 Lakhs x 30%]	0.216
Present value of tax saving on perpetuity = $\frac{\text{Annual Savings}}{\text{Interest Rate}} = \frac{0.216}{12\%}$	1.80
Base case NPV	(0.33)
Adjusted NPV [base Case NPV + PV of tax saving due to Interest on debt	**1.47**

iii) Minimum base case NPV without Tax Shield

At Minimum Base case NPV, Adjusted NPV = 0

$\Rightarrow 0$ = Base Case NPV + tax shield on Interest

$\Rightarrow 0$ = Base Case NPV + ₹1.80 Lakhs

$\Rightarrow$ Minimum base Case NPV = (₹**1.80 lakhs**)

$\Rightarrow 0$ = PV of perpetual Inflow – Investment + Tax shield

$$\Rightarrow 0 = \frac{\text{Perpetual Inflow}}{0.15} - 20.00 + 1.80$$

$$\Rightarrow 0 = \frac{\text{Perpetual Inflow}}{0.15} - 18.20$$

$$\Rightarrow 18.2 = \frac{\text{Perpetual Inflow}}{0.15}$$

$\Rightarrow$ Perpetual Inflow = ₹18.20 Lakhs x 0.15 = ₹2.73 Lakhs $\Rightarrow \dfrac{₹2.73 \text{ Lakhs}}{₹20.00 \text{ Lakhs}}$ = **13.65%**

4.

a) Explain the major steps in the capital budgeting process. **[4]**

b) A financial analyst has been asked to appraise Green LTD., an IT company in terms of the future cash generating capacity. He has projected the following after-tax cash flows:

Year	1	2	3	4	5
Cash Flows (₹ in lakh)	352	96	128	172	234

It is further estimated that beyond 5th year, cash flows will perpetuate at a constant growth rate of 7% per annum, mainly on account of inflation. The perpetuate cash flow is estimated to ₹2,552 lakh at the end of the 5th year.

Additionally the following information are available:

i) The cost of capital is 25%.

ii) The company has outstanding debt of ₹724 lakh and cash/bank balance of ₹542 lakh.

iii) The number of outstanding shares of the company is 30.30 lakh.

Requirements:

a. What is the value of green Ltd. in terms of expected future cash flows?

b. Calculate the value of shareholders.

c. The company has received a takeover bid of ₹402 per share. Is it good offer?

[4+2+2=8]

c) Briefly Explain the Stochastic (Miller-Orr) Model. Also mention its limitations.

[4]

Solution:

a) The major steps in the capital budgeting process are given below. They are a) Generation of project; b) Evaluation of the project; c) Selection of the project and d) Execution of the project. The capital budgeting process may include a few more steps. As each step is significant they are usually taken by top management.

    A. **Generation of Project:** Depending upon the nature of the firm, investment proposals can emanate from a variety of sources. Projects may be classified into five categories.

    i)   New products or expansion of existing products.

    ii)   Replacement of equipment or buildings.

    iii)   Research and development.

    iv)   Exploration.

    v)   Others like acquisition of a pollution control device etc.

Investment proposals should be generated for the productive employment of firm's funds. However, a systematic procedure must be evolved for generating profitable proposals to keep the firm healthy.

B. **Evaluation of the project:** The evaluation of the project may be done in two steps. First the costs and benefits of the project are estimated in terms of cash flows and secondly the desirability of the project is judged by an appropriate criterion. It is important that the project must be evaluated without any prejudice on the part of the individual. While selecting a criterion to judge the desirability of the project, due consideration must be given to the market value of the firm.

C. **Selection of the project:** After evaluation of the project, the project with highest return should be selected. There is no hard and fast rule set for the purpose of selecting a project from many alternative projects. Normally the projects are screened at various levels. However, the final selection of the project vests with the top level management.

D. **Execution of project:** After selection of a project, the next step in capital budgeting process is to implement the project. Thus the funds are appropriated for capital expenditures. The funds are spent in accordance with appropriations made in the capital budget funds for the purpose of project execution should be spent only after seeking format permission for the controller. The follow – up comparison of actual performance with original estimates ensure better control.

Thus the top management should follow the above procedure before taking acaital expenditure decision.

b)

NET WORKS LTD

i)   Present value of Cash flows for the year 1 to year 5:
352 x 0.8 + 96 x 0.64 + 128 x 0.512 + 172 x 0.4096 + 234 x 0.327
= ₹ 555.55 Lakh

Present value of Perpetual Cash flows:
[2552 (1+0.07)] x 0.327 = ₹4961.32 lakhs
[(0.25 – 0.07)]

VALUE OF THE COMPANY:
₹ (555.55 + 4961.32) = ₹5517 Lakh

ii)   SHARE HOLDERS' VALUE:
₹5517 + 542 (Cash / Bank Balance) – 724 (outstanding debt)
= ₹5335 Lakh

iii) VALUE PER SHARE:
   ₹5335 / 30.30 = ₹176.07

This is much lower than the takeover bid value (₹ 402). Thus, the Bid value is good offer from the point of view of the company.

c) The model prescribes two control limits, Upper control Limit (UCL) and Lower Control Limit (LCL). When the cash balances reaches the upper limit a transfer of cash to investment account should be made and when cash balances reach the lower point a portion of securities constituting investment account of the company should be liquidated to return the cash balances to its return point. The control limits are converting securities into cash and the vice – versa, and the cost carrying stock of cash.
The "O" optimal point of cash balance is determined by using the formula

$$O = \sqrt[3]{\frac{2TV}{4I}}$$

Where,
O = Target cash balance (Optimal cash balance)
T = Fixed cost associated with security transactions
I = Interest per day on marketable securities
V = Variance of daily net cash flows.

Limitations: This model is subjected to some practical problems
   i)   The first and important problem is in respect of collection of accurate data about transfer costs, holding costs, number of transfers and expected average cash balance.
   ii) The cost of time devoted by financial managers in dealing with the transfers of cash to securities and vice versa.
   iii) The model does not take into account the short term borrowings as an alternative to selling of marketable securities when cash balance reaches lower limit.

Besides the practical difficulties in the application of the model, the model helps in providing more, better and quicker information for management of cash. It was observed that the model produced considerable cost savings in the real life situations.