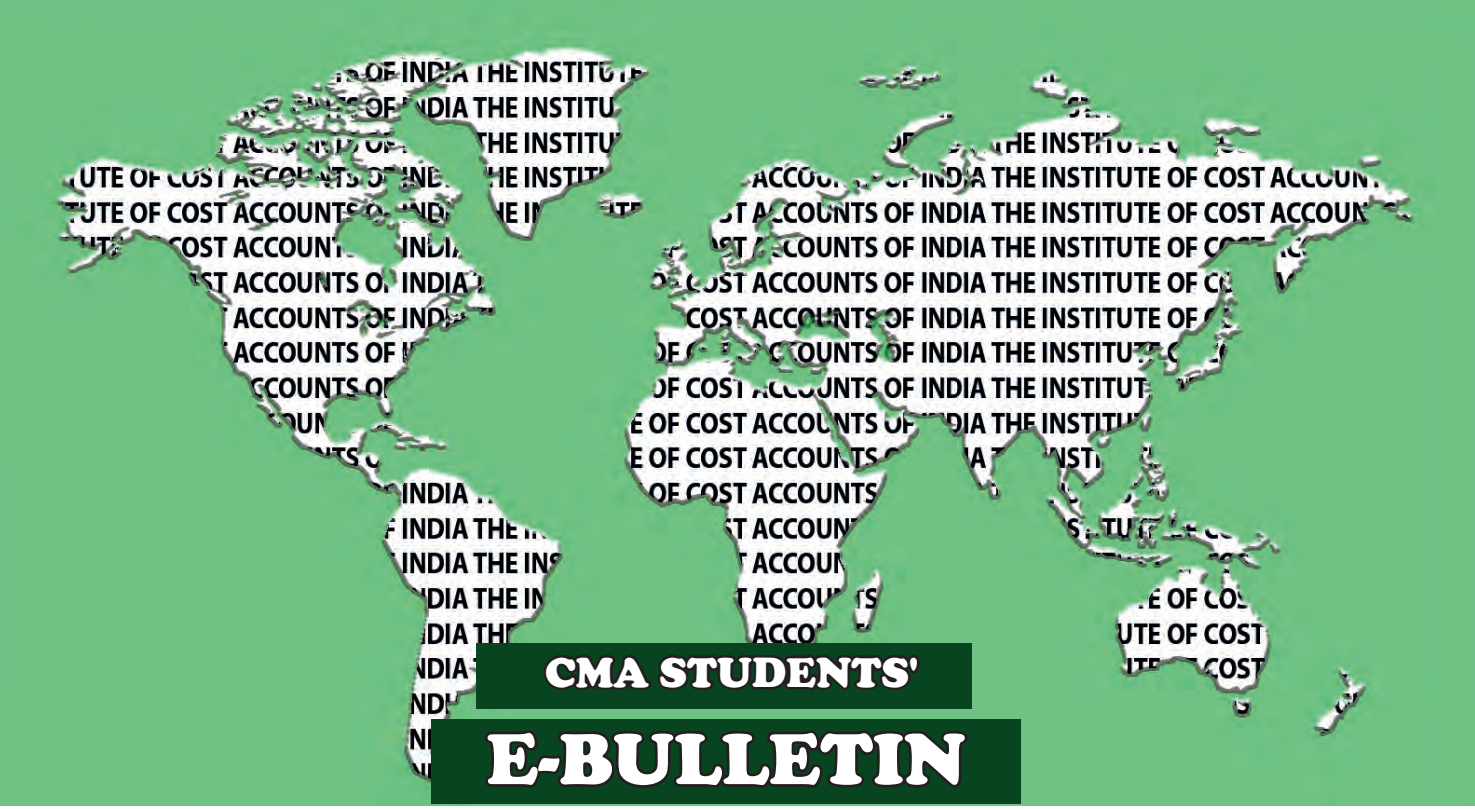

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THE INSTITUTE OF COST ACCOUNTANTS OF INDIA
(Statutory body under an Act of Parliament)

Headquarters: CMA Bhawan 12, Sudder Street, Kolkata – 700 016
Tel: +91-33 2252 1031/1034/1035/1492/1602/1619/7373/7143

Delhi Office: CMA Bhawan 3, Institutional Area Lodhi Road, New Delhi - 110003
Phones : +91 11 24666100, 24622156/57/58

Behind every successful business decission, there is always a CMA

Message from the President

Dear Students,

Greetings!!!

"Education is not preparation for life; education is life itself" -John Dewey.

From our Late visionary President one inspirational message you please carry in your mind about your future career from the day one of your joining is: ***"If we have to succeed in the globalized world, we have to enlarge the scope of Cost Audit to cover all aspects of manufacturing and service sector activities including healthcare and education".*** Love your course curriculum, dedicate yourself for your achievement from day one and be determined; see that success will surely follow.

You, being the future torch bearer of the Institute please try to be instrumental in ***'Make in India'*** initiative of our Prime Minister and see it successful. You are having enormous responsibility on your shoulder. From the very beginning, you please try to dream big and eventually you will see that it happened.

My sincere thank goes to all the eminent writers, who, despite their own busy schedules have contributed in these editions of e-bulletins.

I must appreciate the efforts of all the employees of the Directorate of Studies to come out timely with this issue.

I have full faith on your capacity and strength and I believe that you will deliver your best in the years to come and will make your Institute and your country happy.

I want to put an end with the words of Les Brown- ***"Shoot for the moon. Even if you miss, you'll land among the stars".***

CMA Manas Kumar Thakur
President
The Institute of Cost Accountants of India

Be a CMA, be a Proud Indian

Message from the Chairman

I am delighted to know that your responses about the E-bulletin are received by the Directorate of Studies with positive notes.

Thomas Henry Huxley said that ***"Zeal without knowledge is fire without light"***. The Directorate of Studies is trying to boost up your energy level towards this by the publication of these issues and your duty is to extract the best out of it. With your study notes, if you try to cater your knowledge from all other available resources like RTPs, MTPs and prepare sincerely from the very beginning, you must succeed in the examination and fulfil your dreams timely.

"The best way to predict the future is to create it" said by Abraham Lincoln. So, from the very beginning, you must try to practice reading in a regular basis.

There is a maxim like-'No risks, no gain' in support of this view Swami Vivekananda also said that ***"Take risks in your life. If you win, you can lead! If you lose, you can guide".***

My sincere requests to all of you that be very serious and sincere towards your study from very beginning see the result must follow.

Wishing you all- A Great Success in your endeavour,

CMA Pappa Rao Sunkara
Chairman
Training & Education Facilities (T & EF) Committee

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KNOWLEDGE UPDATE

In this section of e-bulletin we shall have a series of discussion on each of these chapters to provide a meaningful assistance to the students in preparing themselves for the examination at the short end and equip them with sufficient knowledge to deal with real life complications at the long end.

Paper: 1
Part: 1
FUNDAMENTALS OF ECONOMICS & MANAGEMENT (FEM) / (ECONOMICS)

CMA Sucharita Chakraborty
Jt. Director, Studies
She can be reached at: ***studies.jd1@icmai.in***

Your Preparation Quick Takes :

Syllabus Structure
A Fundamentals of Economics **50%**
B Fundamentals of Management **50%**

Learning Objective- A financial system is a system that allows the exchange funds between lenders, investors, and borrowers. It allows funds to be allocated, invested, or moved between economic sectors. One of the major component of a financial system is Bank. Banks are financial intermediaries that lend money to borrowers to generate revenue. serve as the principal caretaker of the economy's financial system.

To understand how financial system works, we have to know-How our banks work? For the answer you have to read our Study Note 7.

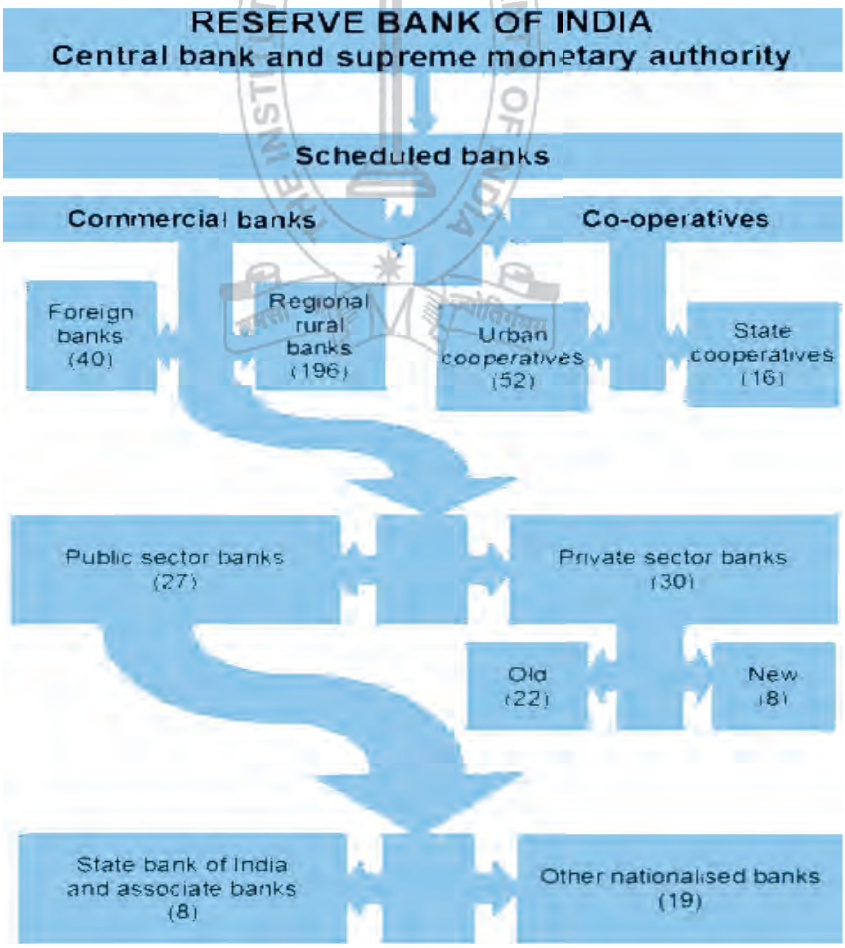
We are discussing about **'Bank'**

A bank is a financial institution that accepts deposits from the public and creates credit. The banks perform financial intermediation by pooling savings and channelizing them into investments. However, with the passage of time, the activities covered by banking business have widened and now various other services are also offered by banks. The banking services these days basically include:

- Issuance of debit and credit cards,
- Providing safe custody of valuable items, lockers,
- ATM services and online transfer of funds across the country / world etc

Although banking is said to have originated in the affluent cities of Italy in the 14th century, it was introduced in India in the late 18th century. The first banks to come up in the country were Bank of Hindustan (1770), The General Bank of India (1786), and the State Bank of India (1806).

Banking System in India:



(Source-https://en.wikipedia.org/wiki/Banking_in_India#/media/File:Scheduled_banking_structure_in_India.png)

Our Study Material 7 covers four areas:

- Meaning of Banking
- Commercial Banks
- Central Bank
- Financial Institution

A Commercial Bank is a financial Intermediary that takes money from various classes of people, pool together and lends the fund. Banks do not lend the entire sum of Deposit ; a portion is kept in the form of cash. This is called Cash Reserve Ratio.

You should learn under commercial bank-

Functions of Commercial Bank

Credit Creation by Commercial Banks

Central Bank plays a leading role in organizing,running,supervising regulating and developing the banking and financial structure of the country. Due to their importance in the financial stability of a country, commercial banks are highly regulated in most countries through Central Bank.

You should learn under Central Bank

- Functions of Central Bank
- Credit Control by Central Bank

With the introduction of planned development in India, need for specialized Institutions for supplying credit to industry, agriculture, etc was felt essential and necessary. They are said to be financial intermediaries..

Our Study Material covers

- IFCI
- SFC
- ICICI
- SIDC
- UTI
- IDBI
- NABARD
- LIC
- GIC

Paper: 1
Part: 2
FUNDAMENTALS OF ECONOMICS & MANAGEMENT (FEM) / (MANAGEMENT)

CMA Dr. Sumita Chakraborty
Joint Director, Studies
She can be reached at: ***studies.jd2@icmai.in***

Your Preparation Quick Takes :

Learning Objectives:

- Students will demonstrate their knowledge of business and management principles
- Students will reveal effective written and oral communication
- Students will exhibit an awareness of the global environment in which businesses operate
- Students will display the ability to recognize when change is needed, adapt to change as it occurs, and lead change

In the previous bulletin we have discussed about 'Planning' as one of the functions of Management. Here we want to discuss about 'Organizing'.

Organising refers to the identification of activities and creation of departments. Thus, it also leads to creation of authority and responsibility relationships throughout the enterprise.

In the words of Louis Allen, "organizing 'is the process of identifying and grouping the work to be performed, defining and delegating responsibility and authority, and establishing relationships for the purpose of enabling the people to work most effectively together in accomplishing the objectives".

Process of Organising:

As a function of management, i.e. as a process, organizing includes the following steps:

- identifying the work
- grouping the work
- establishing formal reporting relationships
- providing for measurement evaluation, and control
- delegation of authority and responsibility
- coordination,

What is meant by 'Orientation' and how it differs from 'Placement':

'Orientation' involves the introduction of new employees to the enterprise, its functional tasks and people. Large firms usually conduct a formal orientation programmed which are conducted usually by the HR Department Orientation acts as a function of organizational socialization serving three main purposes –

(i) Acquisition of work skills and abilities

(ii) Adoption of appropriate role behaviour

(iii)Adjustment to the norms and values of the work group

'Placement', on the other hand may be defined as 'determination of the job to which an accepted candidate is to be assigned, and his assignment to that job'. A proper placement is instrumental in reducing employee turnover, absenteeism and boosts employee morale.

'Leading' is another of the basic function within the management process "Leading is the use of influence to motivate employees to achieve organizational goals" – Richard Daft.

Managers must be able to make employees want to participate in achieving an organization's goals.

Three components make up the leading functions:

- Motivating employees
- Influencing employees
- Forming effective groups.

The leading process helps the organization move toward goal attainment.

Principles of Scientific Management:

Fredrick Winslow Taylor has been accepted as the father of scientific management, who, for the first time proved through experiments that scientific methodology can be applied to the field of management.

A scientific process consists of:

- observation,
- analysis,
- experimentation and
- generalization.

Taylor wanted to introduce these elements into management also to establish a casual relationship between efforts and results.

Scientific management is not any system to increase production or to pay wages, or to figure neither costs nor it is merely a time study or motion study, but it is a mental revolution both for the employer and for the employees.

Such a mental revolution has the following objectives in view:

(a) Rule of thumb to be replaced by rule of science; to improve the standard of performance.

(b) There should be perfect harmony among the activities of different individuals and not discord.

(c) An atmosphere of perfect cooperation among different workers has to be created for mutual interest sublimating personal interests.

(d) Production has to be maximized and not restricted output.

(e) There should be encouragement to greatest efficiency and prosperity of every individual, both employer and employees.

(f) Proper selection and training of workers.

(g) Equitable division of work and responsibility between the management and the employees

The **main points of criticism** of F.W.Taylor by the employer and the employees are:

i) It deals with factory management only.

(ii) Separation of planning from doing is a misleading concept.

(iii) It lays too much emphasis on engineering side ignoring the importance of human aspect in production.

(iv) Functional foremanship is not a direct improvement on the concept of line theory of organization.

(v) He considered human elements as cogs of a machine.

(vi) It created condition of industrial autocracy.

(vii) It creates unfair distribution of benefits between the employers and the employees.

(viii) It is doubtful whether standard of work can be really measured.

(ix) It is antisocial because it is aimed at efficient workers only.

(x) It is not possible to find out 'one best way' to do a job. What is true for one may not be true for another.

(xii) It is not really scientific management but scientific approach to management.

Span of Management

Span of Management also known as span of control, span of supervision or span of authority represents the numerical limit of subordinates to be supervised and controlled by a single supervisor. It is an important principle of building a sound organization.

The principle is based on the theory of relationships propounded by Graicunas – a French management consultant who analysed the superior – subordinate relationship based on a mathematical formula.

No. of direct relationships = n

No. of cross relationships = n (n-1)

No. of group relationships = n [2n – 1 -1]

Total No. of relationships = n [2n/2 + (n-1)]

Where, n represents the number of subordinates.

The concept of span of management is central to the classical organization theory.

Proper span of management is considered a necessity for effective supervision, co-ordination and control. It is therefore critical to determine the ideal span. If the span of control is narrow, there will be more organizational levels which in turn may impede communication. If the span is widened, the supervisory load may become too heavy. Thus, sound organization structure required striking an optimum balance between organization levels, and supervisory work load.

Paper: 2

FUNDAMENTALS OF ACCOUNTING (FOA)

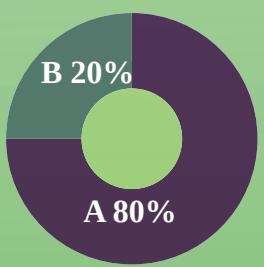
CMA (Dr.) Nibir Goswami
Associate Professor in Commerce
Vidyasagar Mahavidyalaya. W.B.
He can be reached at: *drnibirgoswami@gmail.com*

Your Preparation Quick Takes :

Syllabus Structure

Section A covers **80** marks with Fundamentals of financial accounting and

Section B covers **20** marks with Fundamentals of cost and management accounting.



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Learning Objectives

- Read the Study Material minutely.
- For details or if you don't understand Study Material or the section is important to identify the topic, then refer to Bare Act, otherwise reference to Bare Act is not necessary. For Company Law, book by Avtar Singh is recommended. For other laws Institute Study Material is sufficient.
- The words used in any of the texts as mentioned above should be understood by immediate reference to the Dictionary.
- The main points coming out in any of the provisions should be either underlined or written in separate copy which has to be repeated again and again.
- Theoretical knowledge should be adequate and clear before solving practical problems.
- Don't write wrong English. It changes the meaning and therefore answer may be wrong even when the student's conception is clear. Also don't make spelling mistakes.

CLASSIFICATION OF COST AND COST SHEET

As we are going to discuss the format of cost sheet today let us first know the classification of cost as per the need of cost sheet that is element wise. Cost may be classified element wise in the following manner:

Raw materials cost

Direct labour cost

Overhead cost

In the above classification raw material and direct labour are direct cost and overhead is indirect cost. Again depending on the behavoiur , cost may be classified as fixed and variable. The format of a cost may be as follows:

COST SHEET

Rs.

RAW MATERIALS CONSUMED:
Opening stock of raw material
Add Purchase of Raw material
Add expenses related to purchase
Less Returns
Less Closing stock of raw material
Add Direct wages
Direct expenses
PRIME COST
Add factory overhead
Add opening WIP
Less closing WIP
WORKS COST
Add administration overhead
COST OF PRODUCTION
Add opening stock of Finished Goods
Less closing stock of finished Goods
COST OF GOODS SOLD
Add selling and distribution overhead

COST OF SALES

Add / less Profit/ Loss

SALES

Example :

Prepare a cost sheet from the following information :

		Opening(Rs)	Closing (Rs)
Raw materials		16000	19600
WIP		12600	4600
Finished goods at cost		16400(3000 units)?	(2500 units)
Purchase	Rs.111600		
Sales (40500 units)	Rs.283500		
Productive wages	Rs. 67200		
Adminstartive expenses	Rs. 20800		
Selling expenses	Rs. 0.50 per unit sold		
Machine hours worked	8000 hours		
Machine hour rate	Rs. 2.50		

Assume sales are made on FIFO principle.

COST SHEET

				Rs.
RAW MATERIALS CONSUMED:				
Opening stock of raw material			16000	
Add Purchase of Raw material			111600	
	Add expenses related to purchase			
	Less Returns			
Less Closing stock of raw material			19600	**108000**
Add	Direct wages			67200
	Direct expenses			
		PRIME COST		**175200**
Add	factory overhead (8000 hrs *2.50)		20000	
	Add opening WIP		12600	
	Less closing WIP		4600	28000
		WORKS COST		**203200**
Add	administration overhead			20800
		COST OF PRODUCTION		**224000**
Add opening stock of Finished Goods			16400	
	Less closing stock of finished Goods (224000/40000*2500)(FIFO)		14000	
		COST OF GOODS SOLD		**226400**
Add	selling and distribution overhead (40500*0.5)			20250
		COST OF SALES		**246650**
Add / less	Profit/ Loss			36850
		SALES		**283500**

Note : production= sales +closing stock-opening stock. =40500+2500-3000=40000 units.

Always maintain the above format and fill up the blanks with appropriate figures. This is the simple way of preparing cost sheet. Keep practising sums. Best wishes.

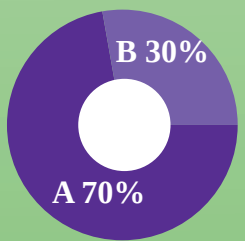
Paper: 3

FUNDAMENTAL OF LAWS AND ETHICS (FLE)

CMA Aditi Dasgupta
Dy. Director, Examination
She can be reached at: ***exam.dd1@icmai.in***

Your Preparation Quick Takes :

Syllabus Structure
A Fundamentals of Commercial Laws **70%**
B Fundamentals of Ethics **30%**



Learning Objectives:

In order to internalize the concepts of subjects like law one has to have an understanding of the learning objectives of the chapters. Try to go through the Statement of Objects and Reasons issued for every act as it would give you a background to your study.

FUNDAMENTALS OF COMMERCIAL LAW:-

In the previous issue you have got an overview of the Indian contract act. In this issue we will discuss about the capacity of parties for contract. As you can recollect that capacity of parties to enter into a contract is one of the essential elements of constituting a valid lawful contract and hence its importance cannot be overemphasized.

If we consider Section 11 of the Indian Contract Act, then the following elements are required for capacity for contract. –

1) Must have attained the age of majority

2) Must be of sound mind

3) Must not be disqualified from contracting by any other law to which he is subject to.

According to the Indian Minority Act, 1875, a minor is one who has not completed his/her 18th year of age. i.e. a person becomes major only after completion of 18th year of age. However it should be noted that in case if the a guardian is appointed by the court of law of when a the minor's property is taken by the Court of Wards for management then the minority continues up to the age of 21 years of the concerned person.

An agreement by a minor is absolutely void and inoperative (excepting a few cases) is based upon the strict interpretation of section 11. The reason behind this is that minors are supposed to be incapable of judgment and can be ill treated and exploited by majors. Since minors are not matured enough to make conscious and informed decision it is the duty of court to protect them.

However a minor who falsely represent him as a major and thereby induces another person to enter into a contract can never the less plead minority as his defense in an action on the agreement. Also note that a minor on attaining majority cannot ratify an agreement entered into while he was a minor. The reason behind this is an agreement entered by a minor is void ab initio i.e. it was void from the beginning and hence a void agreement cannot be validitated by any subsequent action.

Section 12 of the Indian Contract Act states that "a person is said to be of sound mind for the purpose of making a contract if at the time he makes it, he is capable of understanding it and forming a rational judgment as to its effect upon his interests".

Soundness cannot be awarded to a person if he is suffering from lunacy, idiocy and even drunkenness. Please note that a person who is usually of unsound mind but occasionally of sound mind can enter into a contract when he is of sound mind.

A person who is usually of sound mind but occasionally of unsound mind can enter into a contract when he is of sound mind but cannot enter into a contract when he is of unsound mind. Since drunkenness produces temporary incapacity to make rational judgment, any contract entered into by a drunk is void.

However an agreement by a lunatic or unsound mind for supply of necessities for himself or for persons whom he is bound to support is valid. Please note there is no personal liability, only the estate of such person is liable.

Study note 2 deals with Sale of Goods Act,1930. In simple words it is the law relating to the sale of movable goods. In this issue we will focus on the overview of the act. As you have known there are certain essential elements of a contract for the sale of goods. The main highlighting points –

- ✓ The Sale of Goods Act deals with movable goods except actionable claims and money and does not apply to immovable goods.
- ✓ There must be a money consideration. A mere exchange of goods for goods cannot be termed as sale according to this act. However a sale partly for money and partly for goods can be termed as a contract for sale.
- ✓ Since a sale is a bilateral contract there must two parties to the sale. There must be a change in ownership. However a partner can sale goods to his firm and vice versa.
- ✓ A contract for sale may be in writing, or by word or may be implied.
- ✓ It must be made by a valid offer and a legal acceptance of the offer to buy or sell goods with specified price, and specified mode and date of delivery.
- ✓ There are two types of terms in a contract for sale. Essential terms are called Conditions and non essential terms are called Warranties.
- ✓ A contract for sale must satisfy other essential elements of a valid contract i.e. consideration, lawful object, free consent, capacity of parties.

FUNDAMENTALS OF ETHICS :-

Even though ethics and morality deals with the rightness and wrongness of action, ethics has to be seen from the societal perspective whereas morality has to be seen form the individual perspective. Again there is a significant difference between ethics and law. As already said ethics is about what is wrong and what is right, but law is about what is lawful and what is unlawful. We all have a personal compass or meter which tells us what is right, wrong, good or evil. But then if thought deeply right or wrong is a very subjective matter. In a business some act which is considered to be lawful can appear to be unethical depending on your moral compass.

There are many approaches to business ethics. A responsive business accepts that acting ethically can payoff whereas ethical practice is at the core of an ethical business. An amoral business does anything to fulfill its objective even breaking the law and legalistic business follows the law only. The key influence on business ethics are individuals and culture. Individual's ethical value and also organizational culture has a strong bearing on the business performance and the challenges it might face in future. E.g. a CEO's unethical decision might put the reputation of the business at stake.

" A man without ethics is a wild beast loosed upon this world" – Albert Camus.

Paper: 4

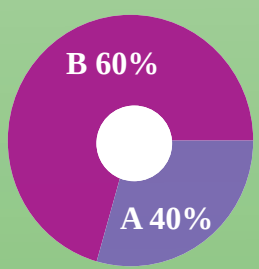
FUNDAMENTALS OF BUSINESS MATHEMATICS & STATISTICS (FBMS)

Dr. Lakshimikanta Roy
Visiting faculty,Vidyasagar Mahavidyalaya,
Hooghly, W.B.

Your Preparation Quick Takes :

Syllabus Structure

A Fundamentals of Business Mathematics **40%**
B Fundamentals of Business Statistics **60%**



Behind every successful business decission, there is always a *CMA*

Learning Objectives:

- appreciate the usefulness, power and beauty of mathematics
- enjoy mathematics and develop patience and persistence when solving problems
- understand and be able to use the language, symbols and notation of mathematics
- develop mathematical curiosity and use inductive and deductive reasoning when solving problems
- become confident in using mathematics to analyse and solve problems both in professional and in real-life situations

1.6 COMMON LOGARITHMS:

Now it appears that the value of the logarithm of any number does not only depend on the number but also on its base. Same number has different logarithmic value with respect to different bases for numerical calculation logarithms are calculated with respect to the base 10. These logarithms are called common logarithm. In case of common logarithm if the base is not mentioned, thon it is to be understand that its base is 10.

NOTE: The logarithms of positive number only can be calculated.

1.7 NATURAL OR NAPLERLAN LOGARITHMS:

If logarithms are calculated with respect to the base e then these logarithms are called Natural or Napierian logarithm denoted by In i.e., in x = $\log_e x$

NOTE: Here e is called Exponential Number and

$$e = 1+\frac{1}{1!}+\frac{1}{2!}+\frac{1}{3!}+ \quad \ldots\ldots\ldots\ldots \infty$$

= 2.71828 (Approx)

1.8 CHARACTERISTIC AND MANTISSA:

It is observed that

$$\left.\begin{array}{lll} 10^0 = 1 & \therefore \log_{10} 1 = 0 & \text{or } \log 1 = 0 \\ (10)^1 = 10 & \therefore \log_{10} 10 = 1 & \text{or } \log 10 = 1 \\ (10)^2 = 100 & \therefore \log_{10} 100 = 2 & \text{or } \log 100 = 2 \\ (10)^3 = 1000 & \therefore \log_{10} 1000 = 3 & \text{or } \log 1000 = 3 \end{array}\right\} \quad \ldots\ldots\ldots\ldots (A)$$

Abo

$$\left.\begin{array}{lll} (10)^{-1} = \frac{1}{10} & \therefore \log_{10} \frac{1}{10} = 0 & \text{or } \log \frac{1}{10} = -1 \\ (10)^{-2} = \frac{1}{100} & \therefore \log_{10} \frac{1}{100} = -2 & \text{or } \log \frac{1}{100} = -2 \\ (10)^{-3} = \frac{1}{1000} & \therefore \log_{10} \frac{1}{1000} = -3 & \text{or } \log \frac{1}{1000} = -3 \end{array}\right\} \quad \ldots\ldots\ldots\ldots (B)$$

If appears from (A) that $\log x_1 = o + p$ = Integral Part + Decimal Part

Where $0 < x_1 < 10$

$\log x_2 = 1 + q = 1.P. + D.P. \text{ where } 10 < X_2 < 100$

$\log x_3 = 2 + r = 1.P. + D.P. \text{ where } 100 < X_3 < 1000$

Again from (B)

$\log y_1$ = o+ l = Integral Part + Decimal Part

Where $0 < y_1 < \frac{1}{10} = 0.1$

$\log y_2$ = -1 + m = 1.p.(-ve) + D.P. where $\frac{1}{10} < y_2 < \frac{1}{100} = 0.01$

$\log y_3$ = -2 + n = 1.p. (-ve) + D.P. where $\frac{1}{100} < y_3 < \frac{1}{1000} = 0.001$

NOTE: it can be concluded that the common logarithm of a number consists of two parts, one integral (may be o, +ve or –ve integer) and the other decimal (<1 and is always positive).

DEFINITION: The Integral Part of a common logarithm is called characteristic and the Decimal Part which is always positive is called Mantissa of the logarithm.

EXAMPLE: (i) If log 47.1 = 1.6730; then 1 is characteristic and .6730 is Mantissa of the logarithm

(ii) log 0.153 = -1+.1847, then -1 is characteristic and .1847 is Mantissa of the logarithm.

NOTE: (i) The negative sign of the characteristic is usually written over the number i.e., log 0.163 = -1+.1847 = $\overline{1}$. 1847

(ii) If is to be remembered that 1. 2576 and – 1.2576 are not the same

$\overline{1}$.2576 implies -1 + .2576

-1. 2576 implies -1- .2576

1.9 DETERMINATION OF CHARACTERISTICE:

Characteristics of the common logarithms can be determined by inspection in the following ways:

WAY 1: For a positive number $x \geq 1$, the characteristic of log x is positive and is one less than the number of total number of digits in the integral part of x

EXAMPLE: Number x : 87412 3961.5 9.12

Characteristic of log x : 4 3 0

WAY2: For a positive number x< 1, the characteristic of log x is negative and is numerically one greater than the number of zeros immediately after the decimal point of x.

EXAMPLE: Number x : 0.6789 .07104 .00112

Characteristic of log x : $\overline{1}$ $\overline{2}$ $\overline{3}$

1.10 DETERMINATION OF MANTISSA:

The Mantissa of the common logarithm of a number cannot be determined by inspection like its characteristic it can be determined with the help of a Table called Table of logarithms or simply log-Table.

1.11 DESCRIPTION OF LOGARITHMIC TABLE

FOUR-FIGURE LOGARITHMIC TABLE

	0	1	2	3	4	5	6	7	8	9	Mean Difference								
											1	2	3	4	5	6	7	8	9
10	0000	0043	0086	0128	0170	0212	0253	0294	0334	0974	5 4	9 8	13 12	17 16	21 20	26 24	30 28	34 32	38 36

Table -1

Let us have a brief look through the Table -1. Here we observe that the figures ranging from 10 to 99 are placed in the Extreme left of the Table. A Top-most Row containing the figures 0,1,2,3.....9 is found in the Table – 1. Below each of these figures four-figure numbers are placed. These numbers are called Mantissa.

Another Table called Mean Difference Table is found in the Extreme Right of the Table. This is the formation of a Four-Figure logarithmic Table. This Table is called Four-Figure logarithmic Table as the Mantissa contains four digits only. Similarly the Tables from where the Mantissa with five digits or seven digits is obtained, is known as Five-Figure or seven- Figure logarithmic Table. This Table is used for more accurate calculations.

1.12 USE OF LOGARITHMIC TABLE TO FIND THE COMMON LOGARITHM OF ANY NUMBER:

It is supposed that log 8579 is to be found out. It is known that log 8579 = characteristic + Mantissa. Characteristic can be found out by inspecting the number of significant digits. Here this number is 4. So the characteristic of log 8579 is 3.

For Mantissa of log 8579, we first search for the number 85 in the Extreme left column of the Four-Figure log Table (Five Figure or Seven Figure log Table may be used if required). Now let us glance horizontally from the left of the Top-Most Row to right to find the figure 7 and then glance down the column headed by 7 up to the figure 9330. This figure is found at the place common to both the Row containing the figure 85 and the column headed by the figure 7. Let us search for the remaining figure I in the Mean Difference Table and after abstaining the number let us again glance down the column headed by I up to the figure 5. This figure is also found at the place common to both the Row counting the figure 85 and the column headed by the figure 9. now the Mantissa of log 8579 can be obtained as follows:

.9330

\+ 5

.9335

∴ log 8579 = Characteristic + Mantissa

= 3+ .9335

= 3.9335

NOTE: (i) Here it is observed that the mantissa is associated with a decimal point just preceding it. It is to be understood that each mantissa has a decimal point just preceding it, and it remains dropped in the log Table.

(ii) let us glance down the logarithms of the numbers.

Log 6457 = 3.8101

Log645.7 = 2.8101

Log64.57 = 1.8101

Log6.457 = 0.8101

Log.6457 = $\bar{1}$.8101

Log.06457 = $\bar{2}$.8101

Log.006457 = $\bar{3}$.8101

Here it appears that the figure remaining same, the characteristic of the logarithms of the figures changes with the charge of placement of decimal point where as the Mantissa remains same.

(iii) To find log 8 we have to take log 8.00

Now log 8.00 = Characteristic + mantissa

= 0 + Mantissa

For mantissa, we have to take first two figures 80 and then the third figure 0

As already told, log 8.00 = 0 + .9031

= 0.9031

(iv) To find log 53.426

Here it is observed that the figure contains five digits. In this case log 53.426 can be found out in three ways

WAY 1: For rough calculation the figure is to be restricted to four digits and in this case log 53.426 ≈ log 53.43 = 1.7277

WAY 2: For more accurate calculation it is to be proceeded as follows:

Log 53.4 = 1.7275

Mean difference for 2		
To be added	2	
Mean Difference for 6		
To be added		
		5

Log 53426 = 1.7278

WAY 3: By the Method of interpolation:

This method is based on the principle that for a small change in any number, the corresponding change in its logarithmic value is proportional to the change in the said number.

EXAMPLE: Given log 34938 = 4.5432980

And log 34939 = 4.5433105

Find log 34938.7

Solution: HERE log 34939 = 4.5433105

Log 34938 = - 4.5432980

Difference for 1 = 0.0000125

∴ Difference for .7 = .0000125 × .7

= .0000087.5

Already given log 34938 = 4.5432980

Adding Difference for .7 = .00000875

It is found that log 34938.7 = 4.54330675

1.13 ANTILOGARITHM:

Let us have the following view:

Number	**Value of log x**	**Value of Antilog y**	
x	y	x	
Direct Process: x →	log x →	y	
Reverse Process: x ←	Antilog y ←	y	..... (I)

It appears from (I) that if finding the logarithm of a given number x is the Direct Process, then finding the given number x from the logarithmic value y is the Reverse process. This Reverse Process is known as Antilogarithm and this Process can be executed with the help of Table called Antilogarithm Table to find out the numbers. The formation of this Table is shown hereunder.

FORMATION OF FOUR-FIGURE ANTILOGARITH- MIC TABLE

	0	1	2	3	4	5	6	7	8	9	Mean Difference								
											1	2	3	4	5	6	7	8	9
.00	1000	1005	1005	1007	1009	1012	1014	1016	1019	1021	0	0	1	1	1	1	2	2	2
.01	1023	1026	1028	1030	1033	1035	1038	1040	1042	1043	0	0	1	1	1	1	2	2	2

TABLE-2

EXAMPLE: Let us take an example show to use Antilogarithmic table to find out the number: Antilog 2.7345

Solution: The figure contains the characteristic part 2 and the Mantissa part .7345. Let us first ignore the characteristic part and take the Mantissa part.

After having a view of the Antilog Table (Table-2) let us search for the figure .73 in the Extreme left of the Table where the figures ranging from .00,.01,.02,.03,..... To .99 are arranged in a column. After searching the figure .73 let us glance harigontally at the Top-Most Row from left to right to obtain the figure 4. Then glance shown the col-

umn headed by 4 up to the figure 5420 which lies in the Row containing the figure .73 Finally from Mean Difference Table the last figure 5 of the Mantissa is searched in the Row ranging the figures from 1,2,3,..... to 9. Let us now glance down the column headed by 5 up to the number 6 lying also in the Row containing the figure .73.

Ignoring the characteristic, it is obtained as follows:

Antilog 734	= 5420
Adding Mean Difference for 5	= +6
Antilog 7345	= 5426

Since the characteristic is 2, the decimal point will be placed after three integers from the left side.

Thus antilog 2.7345 = 542.6

NOTE: (i) Five- Figure Antilogarithmic Table or seven- Figure Antilogarithmic table may be used for accurate calculation, if required.

(ii) To find x when log x = 2.87453

Solution: Given log x = 2.87453

$\therefore$ x = Antilog 2.87453

Here it is observed that Mantissa contains more than four figures. The figure in the fifty decimal Place either may be ignored or approximated to four decimal places for rough calculation. But for more accurate calculation, it is calculated as follows:

Ignoring characteristic, Antilog	874 = 7482	
Adding Mean Difference for	5 = 9	
Adding Mean Difference for	3 =	5
Antilog	87453 = 7492	

Here the characteristic is 2. Hence the number must have three integral places and finally

x = Antilog 2.87453 = 749.2

(iii) To find Antilog -3.5126

Solution: Here the given number is -3.5126

Now -3.5126 = -3 -.5126 ..... (i)

From (i) it appears that the characteristic part is -3 and the Mantissa part is -5126. But it is known that the characteristic part may be positive, zero or negative and the Mantissa part is always positive. So it is required to trans from the negative decimal part of the Mantissa to positive decimal part of the Mantissa to positive decimal part for use in reference to log or Antilog Tables so let us proceed as follows:

Here -3.5126 = -3 -.5126

= -4 + 1 -.5126

= -4 + .4874

= 4.4874

$\therefore$ Antilog -3.5126 = Antilog $\overline{4}$.4874 ..... (ii)

From (ii) it is understood that characteristic part is -4 and the Mantissa part is .4874

Ignoring characteristic, Antilog	487	=	3069
Adding Mean Difference for	4	=	+3
Antilog	4874	=	3072

Sine the characteristic is -4,

Antilog -3.5126 = Antilog $\overline{4}.4874$

= 0.0003072

2. **WORKED EXAMPLES:**

2.1 With the help of log-Table find the value of $\frac{1}{(1+0.12)^{20}}$

Solution: Let $x = \frac{1}{(1+0.12)^{20}} = \frac{1}{(1.12)^{20}}$

$= (1.12)^{-20}$

$\therefore \log x = \log (1.12)^{-20} = -20 \log(1.12)$

$= -20 \times 0.0492$ [Form log – table]

$= -0.9840$

$= -1 + 1 - 0.9840$

$= -1 + .0160$

$= 1.0160$

Antilog (1.0160) = 0.1038 [From Antilog – Table]

2.2 Find the value of $\frac{\sqrt[3]{47.1} \times \sqrt{.153}}{\sqrt[5]{1.02} \times (.0955)^2}$

With the help of log – table

Solution: Let $A = \frac{\sqrt[3]{47.1} \times \sqrt{.153}}{\sqrt[5]{1.02} \times (.0955)^2}$

$\therefore \log A = \log \frac{(47.1)^{\frac{1}{3}} \times (.153)^{\frac{1}{2}}}{(1.02)^{\frac{1}{5}} \times (.0955)^2}$

$= \log[(47.1)^{\frac{1}{3}} \times (.153)^{\frac{1}{2}}] - \log[(1.02)^{\frac{1}{5}} \times (.0955)^2]$

$$= \frac{1}{3}\log 47.1 + \frac{1}{2}\log .153 - \frac{1}{5}\log(1.02) - 2\log .0955$$

$$= \frac{1}{3}\times 1.6730 + \frac{1}{2}\times 1.1847 - \frac{1}{5}\times 0.0086 - 2\times 2.9800$$

= 0.55766 – 0.40765 – 0.00172 + 2.04

= 2.56766 - .40937

= 2.1883 (Approx)

Hence A= Antilog 2.1883 = 154.3

2.3 With the help of log – table find the value of

$$\text{of } \left[\frac{(.32)^9\times(625)^4}{(.00432)^2\times(.3125)^3\times 8}\right]^{\frac{1}{4}}$$

Solution: let x = $\left[\frac{(.32)^9\times(625)^4}{(.00432)^2\times(.3125)^3\times 8}\right]^{\frac{1}{4}}$

$$\therefore \quad \log x = \frac{1}{4}\left[9\log .32 + 4\log 625 - (2\log .00432 + 3\log .3125 + \log 8)\right]$$

$$= \frac{1}{4}\left[9\times 1.5051 + 4\times 2.7959 - (2\times 3.6355 + 3\times 1.4949 + 0.9031)\right]$$

$$= \frac{1}{4}\left[5.5459 + 11.1836 - (5.2710 + 2.4847 + 0.9031)\right]$$

$$= \frac{1}{4}\left[6.7295 - 6.6588\right]$$

$$= \frac{1}{4}\times 12.0707$$

= 3.0177

∴ x = Antilog (3.0177) = 1042

2.4 **Solve:** $7^{3x+2} + 4^{x+2} = 7^{3x+1} + 2^{2x+6}$

Given log 2 = 0.3010, log 7 = 0.8451

Solution: Given $7^{3x+2} + 4^{x+2} = 7^{3x+1} + 2^{2x+6}$

Or $7^{3x}.7^2 + 4^x.4^2 = 7^{3x}.7^1 + 2^{2x}.2^6$

Or $49.7^{3x} + 16.4^{x} = 7.7^{3x} + 64.2^{2x}$

Or $49.7^{3x} - 7.7^{3x} = 64.2^{2x} - 16.4^{x}$

Or $42.7^{3x} = 64.2^{2x} - 16.(2^{2})^{x}$

Or $42.7^{3x} = 64.2^{2x} - 16.2^{2x}$

Or $42.7^{3x} = 48.2^{2x}$

Or $7.7^{3x} = 8.2^{2x}$

Or $\log(7.7^{3x}) = \log(8.2^{2x})$

Or $\log 7 + 3x \log 7 = \log 8 + 2x \log 2$

Or $3x \log 7 - 2x \log 2 = \log 8 - \log 7$

Or $x(3 \log 7 - 2 \log 2) = \log 2^{3} - \log 7$

Or $x(3 \log 7 - 2 \log 2) = 3 \log 2 - \log 7$

Or $x = \frac{3\log 2 - \log 7}{3\log 7 - 2\log 2} = \frac{3 \times 0.3010 - 0.8451}{3 \times 0.8451 - 2 \times 0.3010}$

Or $x = \frac{0.0579}{1.9333} = \frac{579}{19333} = 0.3$ (Approx)

$\therefore$ The required solution x= 0.3

SUBMISSIONS

Dear Students,

We are very much delighted to receive responses from all of you; for whom our effort is! We have noted your queries and your requests will definitely be carried out. Further, requesting you to go through the current edition of the bulletin. All the areas will be covered gradually. Expecting your responses further to serve you better as we believe that there is no end of excellence! One of the mails received is acknowledged below.

#jan 2017 bulletin,Very much helpful,also very interesting... looking forward for more.
Thank you for it..
Aditya pareek
Cma foundation student

adityapareek1998@gmail.com

Updation of E-Mail Address / Mobile:

Students are advised to update their E-Mail Id and Mobile Numbers timely so that important communications are not missed as the same are sent through bulk mail/SMS nowadays. Students may update their E-mail Id/ Mobile Number instantly after logging into their account at www.icmai.in at request option.

Please put your opinions so that we can make your e-bulletin everything that you want it to be.

Send your Feedback to:

e-mail: studies.ebulletin@icmai.in

website: http://www.icmai.in

PRACTICAL ADVICE
ABOUT YOUR STUDIES - FOUNDATION COURSE

Practical support, information and advice to help you get the most out of your studies.

Message from the Directorate of Studies

For the smooth and flowless preparation, Directorate of Studies have provided meaningful tipa which will help you to gain sufficent knowledge about each subject.

'Tips' are given in this E-bulletin by the knowledge experts, for the smooth encouragement in your preparation. We are sure that all studients will definitely be benefitted by those tips and that will help them to brush up their knowledge and also to swim across.

Take the course seriously from the very begining but don't be panicky. Please try to follow the general guidelines, mentioned below; which may help you in your preparation.

Essentials for Preparation:

- *Conceptual understanding & overall understanding of the subject both should be clear,*
- *Candidates are advised to go through the study material provided by the institute in an analytical manner,*
- *Students should improve basic understanding of the subject with focus on core concepts,*
- *The candidates are expected to give to the point answer, which is a basic pre-requisite for any professional examination,*
- *To strengthen the answers candidates are advised to give answers precisely and in a structured manner,*
- *In-depth knowledge about specific terms required.*
- *Write question numbers correctly and prominently.*
- *Proper time management is also important while answering.*

Be Prepared and Get Success;

PHOTOGRAPH OF SIGNING MOU

The President CMA Manas Kumar Thakur of The Institute of Cost Accountants of India & Prof. Basab Chaudhuri , Vice Chancellor of the West Bengal State University, Barasat, W.B. has signed a MoU on 9th February, 2017.

Hundreds take part in ICAI's 'Mayukha 2K17'

STAFF REPORTER

VIJAYAWADA: Hundreds of students from about 80 junior, UG and PG colleges took part in the State-level students' convention 'Mayukha 2K17' organised by the Vijayawada Chapter of the Institute of Cost Accountants of India (ICAI) in the city on Saturday.

Students belonging to various streams exhibited their talent in competitions like quiz, drawing, word game, team building, memory doctor, balance sheet analysis and others, according to one of the organisers Purnima, distribution followed by cultural performances by students of the ICAI, Vijayawada.

Students participating in 'Mayukha 2K17' State-level CMA convention in Vijayawada on Saturday.
— PHOTO: V RAJU

Speaking at the closing ceremony, ICAI, Kolkata, president CMA Manas Kumar called on the students to hone communication skills.

Indian Oil Corporation General Secretary Badrinath, AP HUDCO Regional Head L. Sudhakar Babu, APSRTC Vijayawada Region Chief Accounts Officer K. Ramachandrarao, Mylan Laboratories Vice-President V.N.V. Subba Rao, Central Council Member CMA S. Paparao, ICAI Vijayawada Chapter Chairman CMA PSR Swamy, ICAI Vice President Sanjay Gupta, SIRC Chairman V. Murali and others were present.

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DIRECTORATE OF STUDIES
THE INSTITUTE OF COST ACCOUNTANTS OF INDIA

(Statutory body under an Act of Parliament)

Headquarters: CMA Bhawan 12, Sudder Street, Kolkata – 700 016
Tel: +91-33 2252 1031/1034/1035/1492/1602/1619/7373/7143

Delhi Office: CMA Bhawan 3, Institutional Area Lodhi Road, New Delhi - 110003
Phones : +91 11 24666100, 24622156/57/58

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