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Contents

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.

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THE MAHATMA
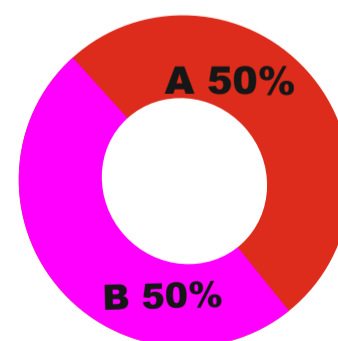
PAPER: 1, PART: I

FUNDAMENTALS

OF ECONOMICS & MANAGEMENT

(FEM) - ECONOMICS

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Your Preparation Quick Takes

A 50%

B 50%

Syllabus Structure

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

Learning Objectives:

- Studying economics, one will be able to develop the analytical skills needed to work successfully in the field, including the study of logical analysis.
- Students will be able to identify and explain economic concepts and theories related to the behaviour of economic agents, markets, industry and firm structures, legal institutions, social norms, and government policies.
- Students will be able to integrate theoretical knowledge with quantitative and qualitative evidence in order to explain past economic events and to formulate predictions on future ones.
- Students will be able to evaluate the consequences of economic activities and institutions for individual and social welfare.

Economics

Hi friends!! Hope you are doing well. Beware of covid 19! It has not gone away. The delta strain is still taking its toll. Do not be complacent about omicron as some people say that it is not at all harmful. But people are dying. Omicron is playing havoc in European countries. So please follow the covid protocol. Use mask whenever you go out. Use sanitizer frequently. Avoid crowd. Take vaccine when your turn comes. Covid 19 is a very painful disease. Corona virus which causes this disease eats up all the protein contained in the cells of the human body and makes it very weak. So be very careful. Let us start our mock test.

I. Choose the correct answer:

1. According to J.B. Say economics is the study of
   A. Wealth
   B. Welfare
   C. Scarcity
   D. Growth

2. Fluctuations in the level of output, employment and national income are studied in
   A. Micro economics
   B. Macro economics
   C. Public finance
   D. None of the above

3. Purchasing of new shares of a company is called
   A. Inventory investment
   B. Fixed investment
   C. Portfolio investment
   D. None of the above

4. Total utility is a function of
   A. Price of the consumed good
   B. Quantity consumed
   C. Quality of the good consumed
   D. None of the above

5. According to Alfred Marshall economics is the study of
   A. Wealth
   B. Scarcity
   C. Welfare
   D. Welfare of man

6. If the opportunity cost is constant,
   A. Production possibility curve will be a downward sloping straight line
   B. Production possibility curve will be convex to the origin
   C. Production possibility curve will be concave to the origin
   D. None of the above

7. In the long run
   A. All the factors are variable
   B. All factors are fixed
   C. One factor is variable
   D. One factor is fixed

8. **When AP is rising,**
   A.   MP will be rising
   B.   MP will be falling
   C.   MP will be constant
   D.   None of the above

9. **When TP curve becomes an upward sloping straight line through the origin, then the MP=AP curve becomes**
   A.   Vertical
   B.   Downward sloping
   C.   Upward sloping
   D.   Horizontal

10.   **Two isoquants will**
   A.   Intersect each other at a point
   B.   Never intersect each other
   C.   Intersect at more than one point
   D.   None of the above

KEY: 1. A, 2. B, 3. C, 4. B, 5. D, 6. A, 7. A, 8. D, 9. D, 10. B

II. **Fill in the blanks:**

1.   The law of diminishing marginal utility was first introduced by ………………… In 1854.
2.   The ……………… Effect tells that the real income of the consumer rises due to the fall in the price level.
3.   In collusive oligopoly, a …………… is formed when firm jointly fixes the price and output with a view to maximize joint profit.
4.   Central bank controls the volume of …………… In the economy through appropriate monetary policy.
5.   International development association (IDA) is affiliated to …………… bank.

KEY: 1. Gossan, 2. Income, 3. Cartel, 4. Credit, 5. World

III.   **True or False:**
1.   Profit is the main motto of central bank
2.   SDR is called paper gold
3.   The change in the total revenue is called marginal revenue
4.   Giffen goods are also called luxury goods.
5.   The discriminating monopolist fixes the higher price in that market in which elasticity of demand is less.

KEY: 1. False, 2. True, 3. True, 4. False, 5. True

IV.   **Matching:**

1.	Unit elastic DD curve	A. Keynes
2.	Budget deficit gap	B. Rectangular hyperbola
3.	Liquidity preference	C. Deficit financing
4.	Repo rate	D. Short term funds
5.	Money market	E. RBI

KEY: 1. B, 2. C, 3. A, 4. E, 5. D

 Friends ! hope you have really enjoyed solving the problems in the mock test. The study material is your Bible. Go through it thoroughly. All the questions in your final exam will come from the study material only. Your study material also contains huge number of MCQ. Practice will make you perfect. So go ahead!
Best of luck!!!

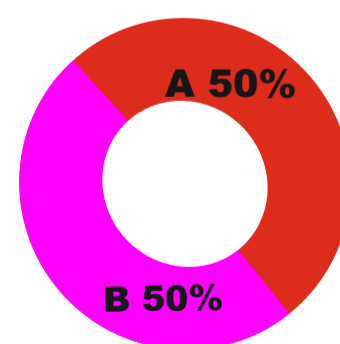150 YEARS OF CELEBRATING THE MAHATMA

PAPER: 1, PART: II

FUNDAMENTALS

OF ECONOMICS & MANAGEMENT
(FEM) - MANAGEMENT

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Your Preparation Quick Takes

A 50%
B 50%

Syllabus Structure

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

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

MANAGEMENT

1. **According to Mary Parker, _____ is an art of getting things done through others.**
   A. Job
   B. Behaviour
   C. Management
   D. Both A & B

   Answer: C

2. **Management is _____ in order to create a surplus.**
   A. An art
   B. A science
   C. Both A & B
   D. None of these

   Answer: Both A & B

3. **Managerial skills involve _____**
   A. Technical skills
   B. Human skills
   C. Conceptual skills
   D. All of the above

   Answer: D

4. **A manager needs three skills such as technical, human and ---**
   A. Conceptual
   B. Process
   C. Accuracy
   D. None

   Answer: A

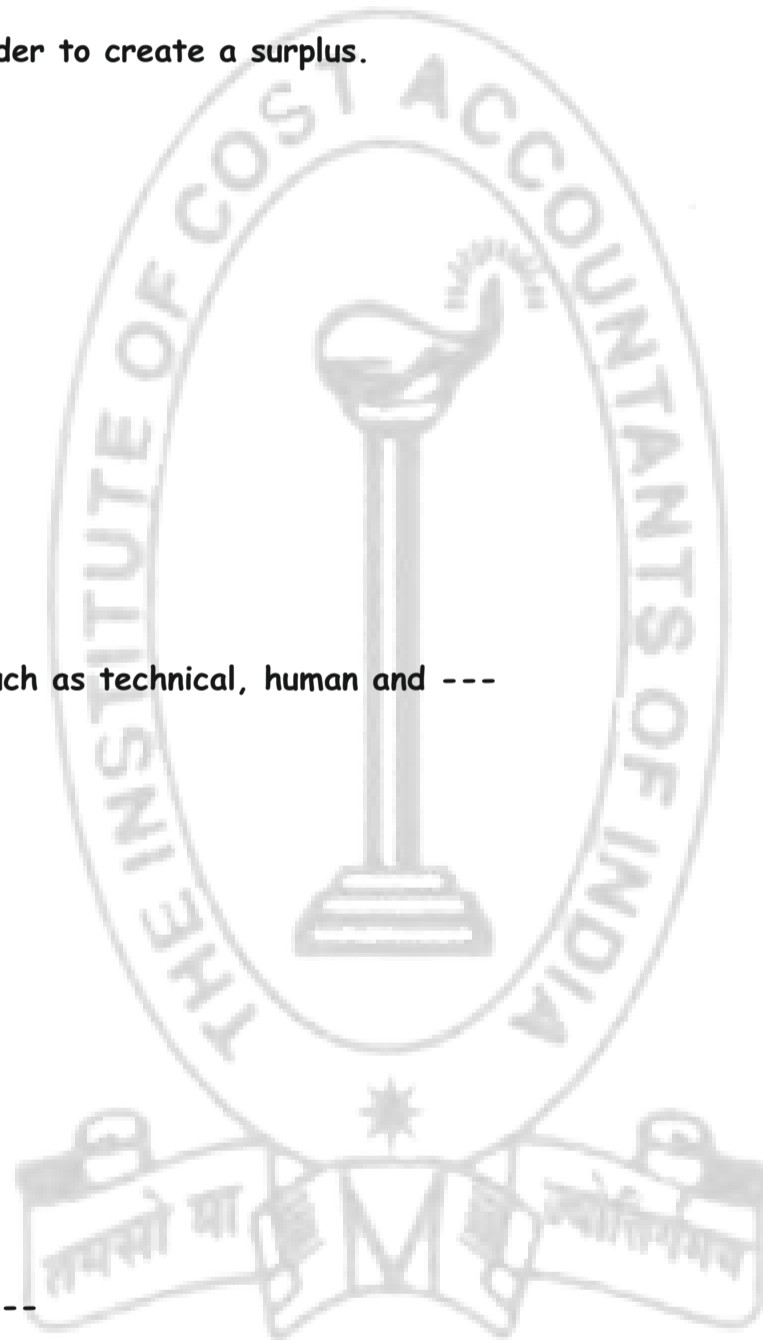5. **MBO was developed by ----**
   A. Peter.F.Drucker
   B. Chester Bernard
   C. Fayol
   D. None

   Answer: A

6. **The heart of management is ----**
   A. Planning
   B. Organisation
   C. Controlling
   D. Coordinating

   Answer: D

7. **Effective control depends on ----**
   A.   Organisation structure
   B.   Proper direction
   C.   Flow of communication
   D.   All

   Answer: D

8. Functional authority ensures ---
   A. Co-Ordination
   B. Control
   C. Better division of labour
   D. None.

   Answer: C

9. Aptitude test consists of -----
   A. Attitude test
   B. Intelligent test
   C. Interest test
   D. All

   Answer: D

10. The number of subordinates that a manager can manage is called-----
    A. Delegation
    B. Span of Management
    C. Development
    D. None.

    Answer: B

11. --------------indicates the exact manner in which the integrated serious of activities will have to be performed.
    A. Procedures
    B. Planning
    C. Organising
    D. Staffing

    Answer: A

12. Policies are ------
    A. Short-range plan
    B. Medium –term plan
    C. Long –range plan
    D. All

    Answer: D

13. . _____ is the point at which there is no profit or no loss?
    A. Maximum profit point
    B. Minimum loss point
    C. Break-even point
    D. Break down point

    Answer: C

14. Unity of command implies:
    A. A subordinate should receive orders from all the superiors
    B. Individuals must sacrifice in the larger interest
    C. Be accountable to one and only one superior
    D. None of these

    Answer: C

15. The term hierarchy implies.........
    A. Departmentalisation
    B. A definite ranking order
    C. Specialisation
    D. None of these

    Answer: B
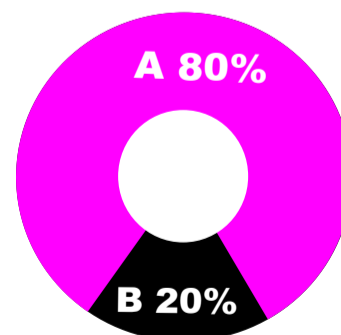
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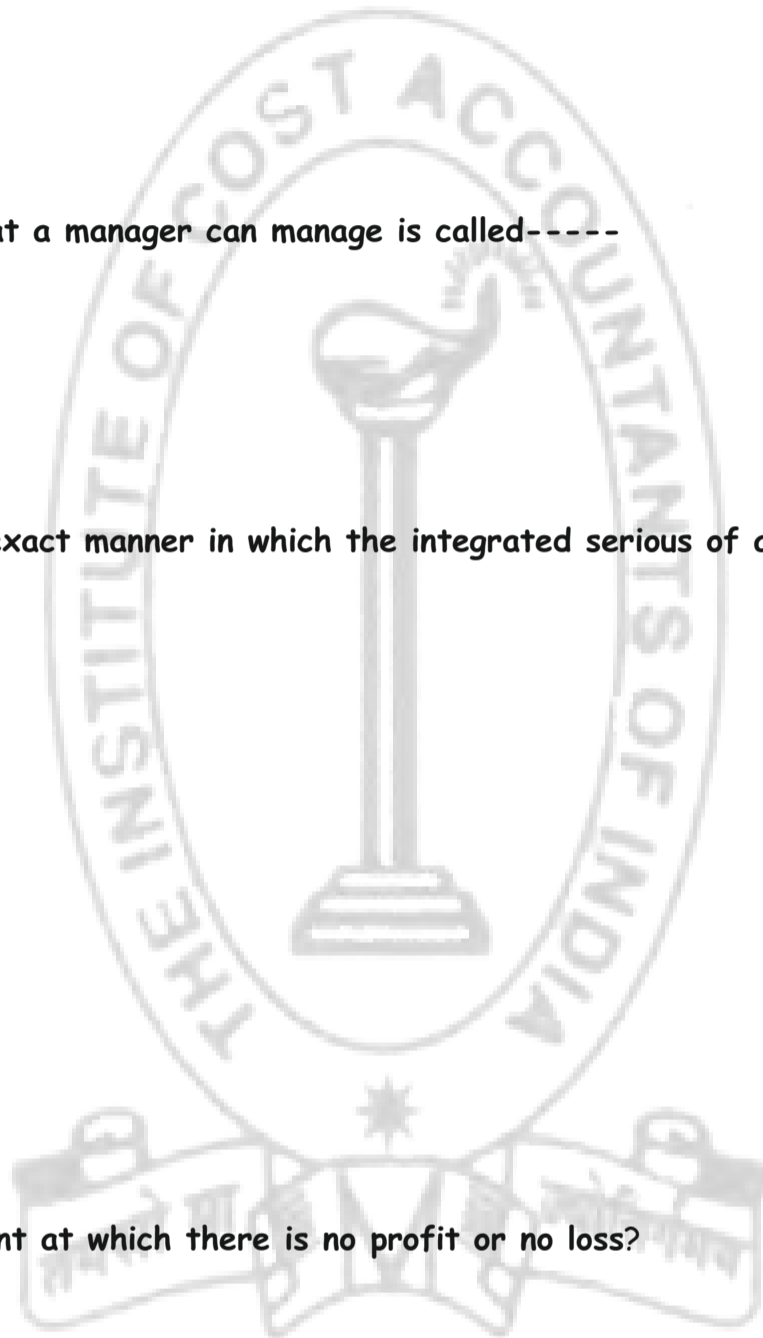
PAPER: 2

FUNDAMENTALS
OF ACCOUNTING (FOA)

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Your Preparation Quick Takes

A 80%

B 20%

Syllabus Structure

A Fundamentals of Financial Accounting **80%**

B Fundamental of Cost Accounting **20%**

Learning Objectives:

In order to internalize the concepts of subjects like accountancy 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 topics as it would give you a background to your study.

FINANCIAL OF ACCOUNTING

Life is such – full of problems and uncertainties. In fact that makes life beautiful. Life indeed would have been dull unless there is no problem. Following are some of morale boosters to give up negative thoughts and accept the challenges with smile.

1. "When you have a dream, you've got to grab it and never let go." — **Carol Burnett**
2. "There is nothing impossible to they who will try." — **Alexander the Great**
3. "The bad news is time flies. The good news is you're the pilot." — **Michael Altshuler**
4. "Life has got all those twists and turns. You've got to hold on tight and off you go." — **Nicole Kidman**
5. "Keep your face always toward the sunshine, and shadows will fall behind you." — **Walt Whitman**

Now let us solve the following problems :

1. Match list I and List II and select the correct answer using the codes given below:

List – I – Items	List – II- Recorded in			
a. Wrapping material	I Trading account			
b. Wages and salaries	ii. Profit and loss account			
c. Prepaid expenses	iii. Balance sheet			
d. Opening stock				
Codes		a	b	c	d
	a	II	I	I	III
	b	**II**	**I**	**III**	**I**
	c	III	III	II	I
	d	III	II	I	III

2. which one of the following is the ingredient of the entity convention of accounting
   a. the owner of a unit and the unit itself is one and the Same
   b. the owner and the unit treated separately
   c. no separate accounts for the unit is required
   d. the unit is a private affair of the owner and no accounting is required

3. legal expenses incurred to defend a suit for breach of contract to supply goods will be treated as
   a. Capital expenditure
   b. Revenue expenditure
   c. Deferred Revnue expenditures
   d. None of the above

4. choose the wrong statement
   a. **Any expenditure is unreasonably large is capital expenditure**

b. Any expenditure intended to benefit the current period is revenue expenditure
c. capital expenditure is any expenditure which is benefitting future period
d. amount paid for acquiring goodwill is capital expenditure

5. **amount spent on advertisement campaign, the benefit of which is likely to last for three years is a**
   a. Capital expenditure
   b. Revenue expenditure
   c. **Deferred Revenue expenditures**
   d. None of the above

6. **income and expenditure account is prepared by**
   a. **Non Profit organisations**
   b. Sole proprietorship business
   c. Partnership Firms
   d. Companies

7. **Match list I and List II and select the correct answer using the codes given below:**

List – I – Items	List – II- Headings			
a. Preliminary Expenses	I. Current Assets			
b. Unclaimed dividend	ii. Loans and advances			
c. Bills receivables	iii. Current Liabilities			
d. Loose Tools	iv. Miscellaneous expenses			
Codes		a	b	c	d
	a	IV	III	II	I
	b	I	II	III	IV
	c	IV	III	I	II
	d	II	II	IV	III

8. **Cost of inventories includes**
   a. Direct material plus direct expenses
   b. Direct labour plus direct expenses
   c. **All costs of purchase cost of conversion and other costs incurred bringing the inventories to their present location and condition**
   d. Direct material only

9. **Final account of a company includes**
   a. Manufacturing account and P/L a/c
   b. **P/l A/C and Balance sheet**
   c. Trading a/c and P/L a/c
   d. Funds flow statement and cash flow statement

10. **Match list I and List II and select the correct answer using the codes given below:**

List – I – Types of assets	List – II- Example of assets			
a. fixed assets	I. Discount on issue of shares, preliminary expenses			
b. intangible assets	ii. Timberlands, mineral deposits, oil reserves			
c. wasting assets	III. .Goodwill, patents, trade marks etc.			
d. Fictitious assets	IV.Plant and machinery, building etc.			
Codes		A	b	c	d
	a	IV	III	II	I
	b	I	II	III	IV
	c	II	I	III	IV
	d	IV	III	I	II

11. Choose the wrongly matched pair out of the following:
    a. Trading and profit and loss account : Income statement
    b. Balance sheet : Position statement
    c. Financial statements: Final accounts
    d. Funds flow statement: Cash flow statement

12. **In a period of inflation which of the following inventory methods would be considered suitable by an accountant?**
    a. LIFO
    b. FIFO
    c. Average cost
    d. Standard cost

13. **Provision for discount on debtors shall be made on**
    a. Book Debts before providing bad debt
    b. Book debts after providing bad debt
    c. Book debts after deducting bad debt and provision for doubtful debt
    d. None of these

14. **Match list I and List II and select the correct answer using the codes given below:**

List – I – Name of account	List – II- Items to be shown				
a. Trading a/c	I. Assets and liabilities				
b. P/L a/c	ii. Indirect expenses				
c. Balance sheet	iii. Direct expenses				
Codes			a	b	c
	a		**III**	**II**	**I**
	b		III	I	II
	c		I	II	III
	d		II	I	III

15. **The aim of preparing Profit and Loss account is to ascertain**
    a. Gross profit or Loss
    b. Net profit or loss
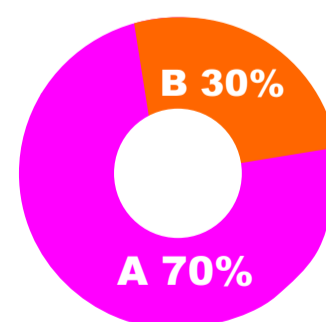   c. Financial position of business
    d. All of the above

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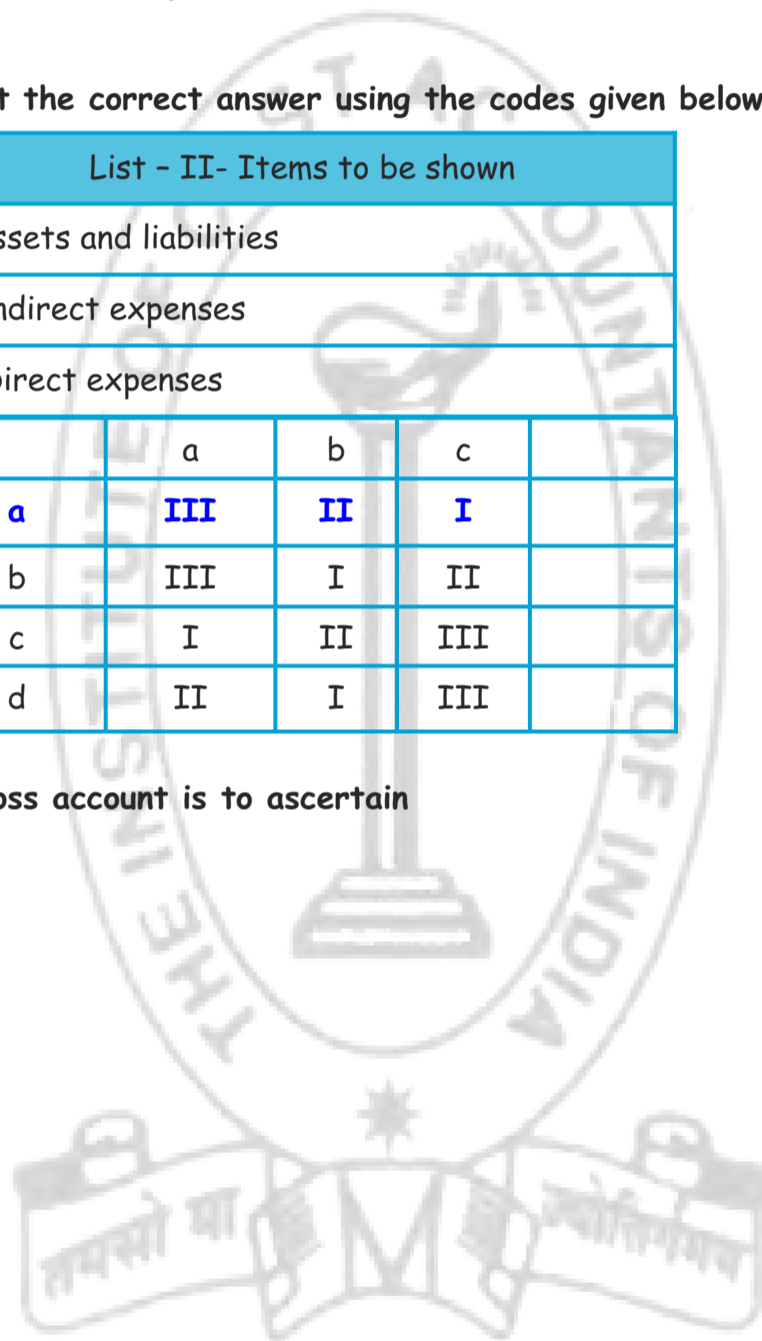
PAPER: 3

FUNDAMENTALS
OF LAWS AND ETHICS (FLE)

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Your Preparation Quick Takes

B 30%

A 70%

Syllabus Structure

A Fundamentals of Commercial Laws **70%**

B Fundamentals of Ethics **30%**

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.

LAWS & ETHICS

This is a Special message for students intending to take the examination within a few weeks .Here are some tips for all of you :-
How to wind up your studies and get ready to confidently face the examinations –

1. Prepare a time-table with time allotted for each subject – to read, write and revise.
2. For this Law paper, you must have noticed that I always highlight the salient points for the questions raised.
3. Please note down the question and the jot down the main points highlighted by me.
4. Keep revising those points so that you remember those.

On the day of your Law & Ethics Exam :

1. After the question paper is distributed, please take a deep breath and glance at all the questions – the Main questions, the Sub-questions and the short notes.
2. Hold a pencil and on the right margin, mark in which order you intend to attempt the questions first, second and so on.
3. Allot time to each question depending on the marks allotted and do not waste time on small questions even if you know that very well.
4. This is called Time Management. Keep aside time for revision.
5. While attempting a question always try to impress the examiner.
6. Concentrate on good handwriting.
7. Give a Heading to highlight the salient points.
8. Inside the answer, give Bullet Points to impress that you know the answer well.
9. Then if the question demands, enlarge those main points with more emphasis on what the question demands.
10. Never fill up the pages with trash matters.
11. In a long question, start with an introduction and end with a conclusion.

Under the changed environment, where life is becoming unpredictable due to the continued pandemic, the future is uncertain but still life must go on. The examinations must be conducted while ensuring that the quality and standard of the professional examination is not compromised. *Under the Multiple Choice Question (MCQ) System, you have to initiate a Special Method of Preparation totally different from the essay type examination pattern. MCQ exams contain many more questions than essay exams. You can no longer resort to selective study based on past questions. You are expected to be studying in greater depth and gather more range of knowledge with no more chance to bluff the examiner.*

Under the MCQ pattern, you will be given several questions first and then **asked to answer among a set of options where there may be one or more wrong answers**. *You must try to lay* **emphasis on details** and therefore **keep studying regularly every day** and **make short notes** and **keep revising repeatedly until your brain can retain it for a long term. You must pay particular emphasis on getting your concept clear with sound fundamentals.** You must learn to think logically in normal sequence and develop the knack to distinguish between similarities and differences which might be confusing , yet be the basis used to distinguish correct choices from among the choices given with each question. *Always remember that MCQ tests are designed to test your knowledge and ability.*

Now, you will realize the importance of reading the Sections and definitions so that you understand what the Sections lays and/or what the definition means. *You will notice that the question-setter will actually be rephrasing the words in the Section and/or definition and placing them before you as MCQs. Therefore, please study carefully because under the MCQ pattern you can fall prey to misleading options that will distract you as the options will look similar to the correct answer.*

So, now please note the few suggestive Rules to be kept in mind for taking MCQ type exams :
1. Start a few deep breathing exercise before starting to read the entire question. *Never read the answers before reading the* *question.*
2. After reading the question, repeat the question mentally and find the correct answer .*Now check whether your answer matches with any of the options given. Select the best answer.*
3. In this manner keep answering the questions you know confidently. If you have doubts, simply mark **(CROSS OUT)** that question

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with a PENCIL and continue with the next question. DO NOT WASTE ANY TIME. Attempt the Crossed Out questions only at the end.

4. In case you have confusion with words, in the options given, try to find your own logic. Answers that seem logical are generally ultimately incorrect. If your mind prompts you with a logical alternative, that means that, that word is just to misguide you. Therefore, that option is not correct.

5. Please remember that when you are given options such as "All the above" and "None of the above", never select "All the above" if you think that any one answer is incorrect. Similarly never select "None of the above" option, if you feel that at least one option is true. Interestingly, if you notice two correct options to a MCQ , you can choose "All the above".

6. A study of MCQ pattern reveals that *generally the correct answer gives out more information than the other options given with that question.*

For those students who are not appearing in the next examination, it is hoped that you all keep on reading and recapitulating all that you have read because your exams are NEVER far away as- time just flies.

You must prepare a time-table with time allotted for each subject – to read, write and revise .

Now, let us understand why this paper is really very important for all of you who are aspiring to be true professionals and are all eager to proudly proclaim aloud that – **Yes, behind every successful decision, there is a CMA.** With Mission CMA in mind, the students are advised to study this paper with a practical approach, as if the points concern you and you are given to deal with it as a professional. As a CMA in the making whether you decide to get employed or be self-employed and employ people, you will have to deal with Offers and Acceptances legally and establish Legal relationship for lawful consideration and perform your professional duties. Keeping that in mind, you have to study this subject seriously.

The first TIP is that you must start thinking like A Teacher. You must start studying the subject and raise questions to yourself and find your own answers.

Now, let us start revising part by part, what we have read in the previous issues.

Ethics and Business

Let us remember the points laid as **Guiding Principles to be followed in our daily Public Life,** with the help a Slogan –
I Should **O**rganize **A**nd **O**perate with **H**onest **L**eaders, where –

I	=	**Integrity** while discharging duties
S	=	**Selflessness** without personal gains and bias
O	=	**Openness** and transparency
A	=	**Accountability** for decisions taken
O	=	**Objectivity** and focused approach
H	=	**Honestly** in discharging Public Duties
L	=	**Leadership** with sound principles and practices

To sum up, **Ethics and Law** are both complementary and inter-related in order to link social rules, customs, regulations and restrictions prescribed by Society through social customs and beliefs. That is perhaps why it is said that Convention is more than law.

Business Ethics is applicable within the periphery of a business circle and environment. It encompasses the behavior of individuals within business organizations, giving top priority to Business Interests. In this context, one must remember **the 3 C's of Business Ethics , which are** – a) **Compensation,** b) **Competency** and c) **Character.**

One must accept and appreciate that **– Ethical Business Profit**, *is a reward to the businessman for – investing in business, for generating employment, for contributing to the growth of business at large, by abiding by the Laws of the Land and the ethical practices followed in the trade and business.*

Ethics applies to all accepted activities of the people, including those engaged in business. However, one must ethically refrain from too much greed and profiteering and from corruption at any stage. **Ethics must promote healthy practices and standards in the political, social and economic arena** for bring Value-addition among individuals in the society at all walks of life while maintaining good Work-Life Balance.

Business Ethics must proceed with – Skill, efficiency and diligence.
Good Business Ethical practices must –

a) Avoid Indulgence in malpractices,
b) Help workers to work with Self-Confidence,
c) Encourage customer satisfaction and confidence,
d) Promote business,
e) Protect consumer rights,
f) Look into the interests of the Employees as well as the Owner/Stakeholders and also
g) Enable steady growth of the organization amid of healthy completion.

Ethics : Please remember that Ethics is truly the pillar on which you, – the would-be professionals will be expected by the society and the world-at-large, to stand, during your professional career.

Right from the day an individual is born, the world accepts him/her as a member of a Society, a Clan, a Culture and a Tradition and each of those categories are governed by respective Standards and Ethics. We may therefore, explain that ***Ethics are***

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such standards that are consistently followed over the years depending on the philosophy that ,that system has been following based on the terms of right, obligations and the benefits derived by the society depending on their geographical location and demographic characteristics.

It is known that, right after his/her birth,from the day a person, begins to see, hear, understand and realize the customs, beliefs, traditions and culture into which he/she is born, he/she is told to do or not to do something, to speak or not to speak something, to wear or not to wear certain dresses, to eat or not to eat certain foods and vegetables or to behave in a certain manner, etc. However, **we must never be confused but should be able to distinguish between Morals and Ethics.**

It must be appreciated that all *ethical traditions and customs are generally followed based on systematic and scientific reasons depending on how much the individual has bonded and established his relationship within that category where he/she belongs or interacts with*, but such reasons may not be always known to every individual existing within that system. Let us take an example. When you enter or pass through a place where the environment is good, peaceful and congenial, you tend to prolong your stay over there, but in a reverse situation, you will definitely either avoid such place or quickly leave that place. In the former case, the individuals gathered there have not breached their ethics but in the latter case, the ethics have been definitely breached and violated.

That prompts us to raise a question – should ethics be rigid or does it need changes ? The answer is that we must remember that **ethics is something which is generally prompted by your conscience. Ethics, helps us to realize what is right and wrong and what we should refrain from doing**. Moreover, since the time- machines keeps ticking and changes are bound to take place depending on situations and circumstances, ethics actually guides us to study and analyze an existing system first before showing the path towards development and fine-tuning of an existing system that needs a change.

Now, let us deal with the Sale of Goods Act, 1930

In respect of such papers , the students are reminded that since they are taking an exam, they must first focus on securing marks. For that, they must study the relevant Sections of the Act , write what the question wants and then attempt to elaborate by analyzing and commenting on the interpretations of the Act.

At the very start, let us be clear that **Sale of Goods Act relate to sale and purchase of goods**, but the contract of sale is regulated by the Indian Contracts Act,1872.

At the very start, we must clear our conception about the following terms – **Goods**, **Specific Goods**, **Unascertained goods**, **Future goods** and **Contingent goods.**

The immediate question coming to mind is – **What are goods** ? It is clarified that **every kind of movable property** is goods but – Actionable Claims and Money are excluded .(All things attached to the earth are not movable and are therefore not goods under the Act. However, standing crops, grass and fruits on trees that can be separated are covered under the definition of movable goods).
So, the question arises – **What are Actionable Claims** ? Actionable claims are debt or a claim for money which a person may have from another person, which may be recovered by suit.

So, what is **Money ?** Money here simply means legal tender.
Specific Goods are goods that can be clearly identified and recognized
Unspecific Goods are those goods that can be indicated by description but cannot be separately identified. For example , as long as the bags of sugar, kept in a godown for sale, are not identified with any specific buyer, they remain Unspecified Goods. As soon as a some bags are brought out, marked, separated and issued to a buyer, they become identifiable and become Specific goods.

Future Goods are goods which have not yet been manufactured or produced or acquired by the seller after entering into a contract of sale. For example, X agrees to sell Apples to Z that he will grow in his orchard in the coming fruit season. Such a contract is for sale of future goods.

Contingent Goods, are goods that can be sold only depending on the happening of an uncertain event, called a Contingency. For example, M enters into a contract to sell a particular watch to N if M manages to buy it from C - the current owner of the watch. The watch here is considered - Contingent Goods.
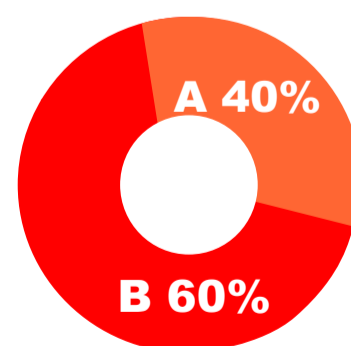
150 YEARS OF CELEBRATING THE MAHATMA

PAPER: 4

FUNDAMENTALS

OF BUSINESS MATHEMATICS AND STATISTICS (FBMS)

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Your Preparation Quick Takes

A 40%

B 60%

Syllabus Structure
A Fundamentals of Business Mathematics **40%**
B Fundamentals of Business Statistic **60%**

Learning Objectives:

- To understand the basic concepts and needs of Business Mathematics.

- To Know the reasonableness and explanation in calculation.

- To know the application of various mathematical techniques.

BUSINESS MATHEMATICS AND STATISTICS

In this issue we will discuss some conventional problems on Rank Correlation
We know that there are many occasions in business and industry when it is not possible to measure the variable under consideration quantitatively or when the statistical series is composed of items the exact magnitude of which cannot be ascertained.

e.g. it may be possible for two foreman to rank their ten employees for promotions whereas it may be difficult to assign them a numerical grade.

In all such cases it is not possible to measure the relationship between the attributes by coefficient of correlation. If the two series are ranked according to two attributes, the correlation coefficient between their ranks is called Rank Correlation
Spearman's rank correlation coefficient is determined as

$$P = 1 - \frac{6\sum d^2}{N\left(N^2 - 1\right)}, \text{ when given ranks are all different to each other}$$

&

$$p = 1 - \frac{6\left(\sum d^2 + \sum \frac{m^2 - \left(m^2 - 1\right)}{12}\right)}{N\left(N^2 - 1\right)}, \text{ When m no of pair of ranks are similar}$$

Where
d = difference between pair of ranks
N = the number of paired observations
m = the number of times an item is repeated
p = spearman's rank correlation coeffiecient
The value of rank correlation coefficient also varies between -1 to +1.
When the value of p = 1, it implies complete agreement in the order of ranks and the ranks will also be in the same direction. When the value of p = -1, it implies complete dis agreement in the order of ranks and the ranks will also be in the opposite direction.
Q1.Sixteen industries of the state have been ranked according to profits earned in 2020-21 and the working capital for that year. Calculate Rank correlation coefficient

Industry	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Profit (R)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WC (R)	13	16	14	15	10	12	4	11	5	9	8	3	1	6	7	2

Ans: Ranks are not repeated so we use the 1st Formula and the details are as follows:

$$p = 1 - \frac{6\sum d^2}{N(N^2 - 1)} = 1 - \frac{6 \times 1236}{16 \times (16 \times 16 - 1)} = -0.8176$$

RANK 1	Rank 2	d = R1-R2	d2
1	13	-12	144
2	16	-14	196
3	14	-11	121
4	15	-11	121
5	10	-5	25
6	12	-6	36
7	4	3	9
8	11	-3	9
9	5	4	16
10	9	1	1
11	8	3	9
12	3	9	81

13	1	12	144
14	6	8	64
15	7	8	64
16	2	14	196
n =	16	Sum d2	1236
Rank Correlation	1-6*1236/16(16*16-1)		-0.817647059

Q2. Ten competitors in a beauty contest are ranked by three judges in the following order:

1st Judge	1	5	4	8	9	6	10	7	3	2
2nd Judge	4	8	7	6	5	9	10	3	2	1
3rd Judge	6	7	8	1	5	10	9	2	3	4

Use the Rank correlation coefficient to discuss which pair of judges have the nearest approach to beauty

Ans: Ranks are not repeated so we use the 1st Formula and the details are as follows:

$$p = 1 - \frac{6\sum d^2}{N(N^2 - 1)}$$

So

$$p_{12} = 1 - \frac{6\sum d^2}{N(N^2 - 1)} = 1 - \frac{6 \times 74}{10 \times (10 \times 10 - 1)} = 0.55 \text{ \& details are as follows}$$

RANK 1	Rank 2	d = R1-R2	d2
1	4	-3	9
5	8	-3	9
4	7	-3	9
8	6	2	4
9	5	4	16
6	9	-3	9
10	10	0	0
7	3	4	16
3	2	1	1
2	1	1	1
n =	10	Sum d2	74
Rank Correlation	1-6*74/10(10*10-1)		0.551515152

Similarly

$$p_{23} = 1 - \frac{6\sum d^2}{N(N^2 - 1)} = \frac{6 \times 44}{10 \times (10 \times 10 - 1)} = 0.73$$

&

$$p_{13} = 1 - \frac{6\sum d^2}{N(N^2 - 1)} = 1 - \frac{6 \times 156}{10 \times (10 \times 10 - 1)} = 0.054$$

Since p_{23} is maximum, we conclude that the pair of judges 2 and 3 has the nearest approach to beauty
The details are as follows:

RANK 1	Rank 2	d = R1-R2	d2
1	6	-5	25
5	7	-2	4
4	8	-4	16
8	1	7	49
9	5	4	16
6	10	-4	16
10	9	1	1
7	2	5	25
3	3	0	0
2	4	-2	4
n =	10	Sum d2	156
Rank Correlation	1-6*156/10(10*10-1)		0.054545455

RANK 2	Rank 3	d = R1-R2	d2
4	6	-2	4
8	7	1	1
7	8	-1	1
6	1	5	25
5	5	0	0
9	10	-1	1
10	9	1	1
3	2	1	1
2	3	-1	1
1	4	-3	9
n =	10	Sum d2	44
Rank Correlation	1-6*44/10(10*10-1)		0.733333333

Q3. Find the rank correlation coefficient between poverty(X) and overcrowding(Y) from the following table:

Town	A	B	C	D	E	F	G	H	I	J
X	17	13	15	16	6	11	14	9	7	12
Y	36	46	35	24	12	18	27	22	2	8

Ans: Ranks are not repeated so we use the 1st Formula and the details are as follows:

$$p = 1 - \frac{6\sum d^2}{N(N^2 - 1)} = 1 - \frac{6 \times 44}{10 \times (10 \times 10 - 1)} = 0.73$$

Details are:

X	Rx	Y	Ry	d = Rx-Ry	d2
17	1	36	2	-1	1
13	5	46	1	4	16
15	3	35	3	0	0
16	2	24	5	-3	9
6	10	12	8	2	4
11	7	18	7	0	0
14	4	27	4	0	0
9	8	22	6	2	4
7	9	2	10	-1	1
12	6	8	9	-3	9
n =	10			Sum d2	44
Rank Correlation					0.733333

Q4. Quotations of index numbers of security prices of a certain joint stock company are given below:

Year	1	2	3	4	5	6	7
Debenture Price	97.8	99.2	98.8	98.3	98.4	96.7	97.1
Share Price	73.2	85.8	78.9	75.8	77.2	87.2	83.8

Using Rank Correlation determine the relationship between Debenture & Share prices.

Ans: Ranks are not repeated so we use the 1st Formula and the details are as follows:

$$p = 1 - \frac{6\sum d^2}{N\left(N^2 - 1\right)} = 1 - \frac{6 \times 62}{7 \times (7 \times 7 - 1)} = 0.10714$$

Details are:

Debenture Price	Rd	Share Price	Rs	d = Rx-Ry	d2
97.8	5	73.2	7	-2	4
99.2	1	85.8	2	-1	1
98.8	2	78.9	4	-2	4
98.3	4	75.8	6	-2	4
98.4	3	77.2	5	-2	4
96.7	7	87.2	1	6	36
97.1	6	83.8	3	3	9
n =	7			Sum d2	62
Rank Correlation					-0.10714

Q5. Obtain the rank correlation coefficient for the following data:

X	68	64	75	50	64	80	75	40	55	64
Y	62	58	68	45	81	60	68	48	50	70

Ans: Here there are matching of ranks:
In X series 75 occurs two times and 64 occurs 3 times

So for X series $\sum \dfrac{m\left(m^2 - 1\right)}{12} = \sum\left(\dfrac{2 \times \left(2^2 - 1\right)}{12} + \dfrac{3 \times \left(3^2 - 1\right)}{12}\right) = 0.5 + 2 = 2.5$

Similarly in Y series 68 occurs 2 times
So for Y series

$$\sum \frac{m\left(m^2-1\right)}{12} = \sum \left(\frac{2 \times \left(2^2-1\right)}{12}\right) = 0.5 + 2 = 2.5$$

For finding out Rank Correlation we use the following formula

$$p = 1 - \frac{6\left(\sum d^2 + \sum \dfrac{m\left(m^2-1\right)}{12}\right)}{N\left(N^2-1\right)}$$

$$p = 1 - \frac{6\left(\sum d^2 + \sum \dfrac{m\left(m^2-1\right)}{12}\right)}{N\left(N^2-1\right)} = 1 - \frac{6 \times (72+2.5+0.5)}{10 \times (10 \times 10 -1)} = 0.545$$

Details computations are as follows:

X	RX	Y	RY	d = RX-RY	d2
68	4	62	5	-1	1
64	6	58	7	-1	1
75	2.5	68	3.5	-1	1
50	9	45	10	-1	1
64	6	81	1	5	25
80	1	60	6	-5	25
75	2.5	68	3.5	-1	1
40	10	48	9	1	1
55	8	50	8	0	0
64	6	70	2	4	16
n =	10			Sum d2	72
Rank Correlation					0.545455

Q6.Calculate coefficient of rank correlation from the following data:

Sales (R)	45	56	39	54	45	40	56	60	30	36
Advertisement (R)	40	36	30	44	36	32	45	42	20	36

Ans: Here there are matching of ranks:
In Sales series 56 occurs two times and 45 occurs 2 times
So for sales series

$$\sum \frac{m\left(m^2-1\right)}{12} = \sum \left(\frac{2 \times \left(2^2-1\right)}{12} + \frac{2 \times \left(2^2-1\right)}{12}\right) = 0.5 + 0.5 = 1$$

Similarly in advertisement series 36 occurs 3 times
So for advertisement series

$$\sum \frac{m\left(m^2-1\right)}{12} = \sum \left(\frac{3 \times \left(3^2-1\right)}{12}\right) = 2$$

For finding out Rank Correlation we use the following formula

$$p = 1 - \frac{6\left(\sum d^2 + \sum \dfrac{m\left(m^4-1\right)}{12}\right)}{N\left(N^2-1\right)}$$

$$p = 1 - \frac{6\left(\sum d^2 + \sum \dfrac{m\left(m^2-1\right)}{12}\right)}{N\left(N^2-1\right)} = 1 - \frac{6 \times (36+1+2)}{10 \times (10 \times 10 -1)} = 0.763$$

Details computations are as follows:

Sales	Rs	Advertisement	Ra	d = Rs-Ra	d2
45	5.5	40	4	1.5	2.25
56	2.5	36	6	-3.5	12.25
39	8	30	9	-1	1
54	4	44	2	2	4
45	5.5	36	6	-0.5	0.25
40	7	32	8	-1	1
56	2.5	45	1	1.5	2.25
60	1	42	3	-2	4
30	10	20	10	0	0
36	9	36	6	3	9
n =	10			Sum d2	36
Rank Correlation					0.763636

Suggestions:

This study note need to be read thoroughly. Supplementary readings could be made from other resources. This issue is based totally on study guide issued by the institute. Standard books on business statistics could be referred for additional expertise to attend the short questions. This lesson is an extension of discussion on the topic in guide book. Students should try to understand the illustrations considered. No detail discussions on formula are discussed here for which refer guide book. This is purely an aid to study guide on paper 4- Fundamental of Business mathematics and Statistics written and issued by Institute on Syllabus -16.
Best Wishes

THE INSTITUTE OF COST ACCOUNTANTS OF INDIA

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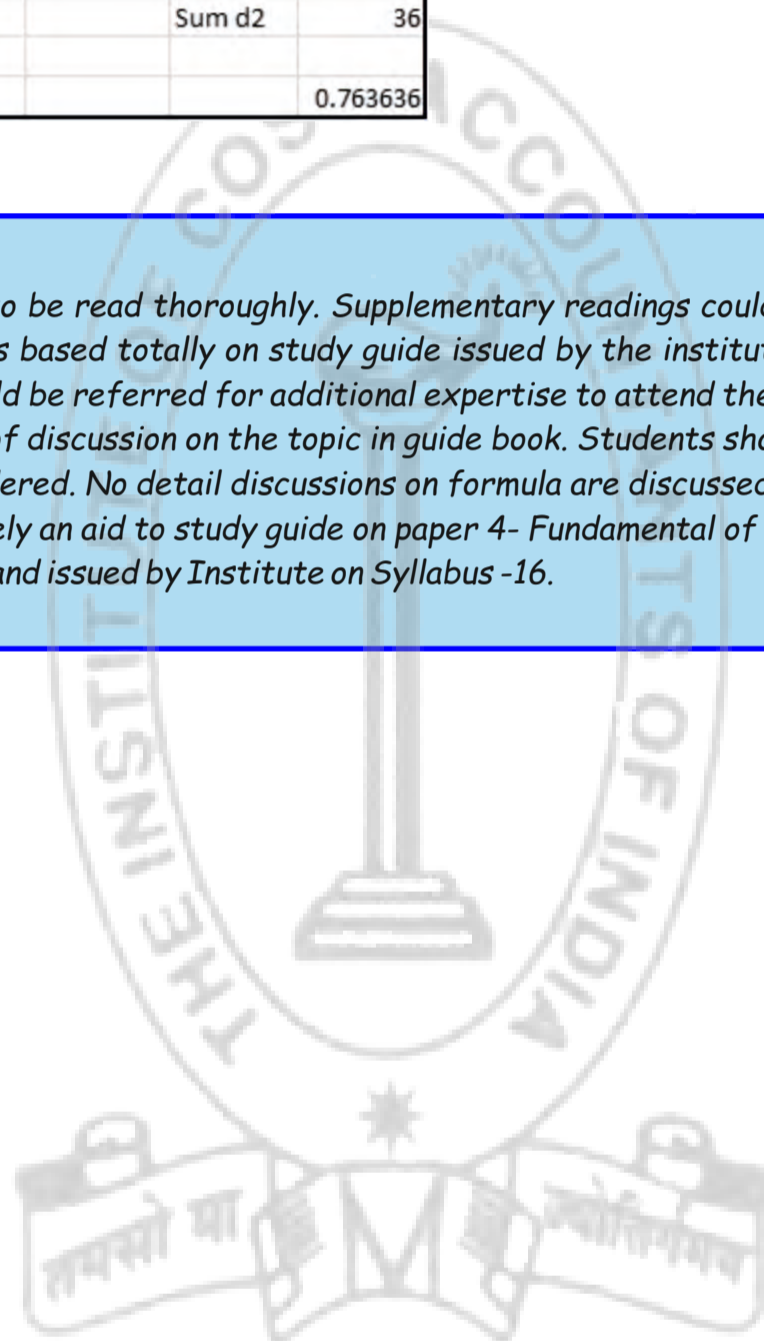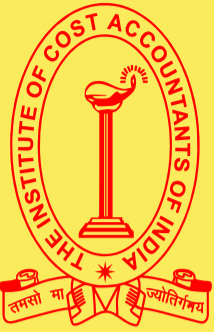
PRACTICAL
Advice

ABOUT YOUR STUDIES - FOUNDATION COURSE

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

START

01 Read Study Notes, MTPs,E-Bulletin, Work Books, Attend Webinar sessions

02 Solve Excercises given in Study Note

03 Assess Yourself

04 Appear For Examination

FINISHED

SUBMISSIONS

Submissions

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. Student may update their E-Mail id/ Mobile Number instantly after logging into their account at www.icmai.in at request option.
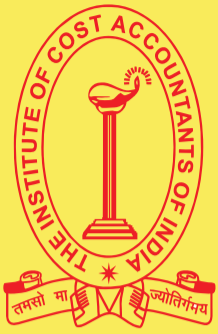
Dear Students,

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.

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

Message from
Directorate of Studies

Dear Students,

Heartfelt wishes to you for passing the exam!! All who passed out have been sincere and diligent since day one and never failed to amaze us with your dedication. You've proved that dedication and learning end at resulting in excellent outcomes. Best wishes for achieving the best place. So proud to call you our student! Congratulations and best wishes for your life. May your future be filled with many great achievements like this.

Those who could not pass out please be steady and we believe, everyone has intellect and presence of mind. But only a few students who can deliver the right thing at right time and with right courage become the winner in the examination. So, please try to deliver your best in your next examination.

We from the Directorate of studies know your expectations from us and accordingly we are trying to deliver some meaningful tips through the publications of monthly E-bulletins. If you sincerely follow those tips, we hope, you will be successful in your endeavor.

To celebrate **75 years of independence and commemorate it as India is celebrating, 'Azadi Ka Amrut Mahotsav',** across the country and amid the coronavirus pandemic and also organizing various events. India's freedom fighters fought a long and hard struggle for the country's independence from the British and, for years, their words have inspired us. We hope that our students will also participate and pay their homage to the freedom fighters.

Certain general guidelines are listed below and which will help you in preparing yourselves:

☛ Conceptual understanding & Overall understanding of the subject 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 answer precisely and in a structured manner.

☛ In-depth knowledge about specific terms is required.

☛ Write question numbers correctly and prominently.

☛ Proper time management is also important while answering.

Please refer the link mentioned below :

https://icmai.in/studentswebsite

● **Don't give up**
● **Don't give in**
● **Don't give out**
You can win!

The Institute is pleased to inform that the University Grants Commission (UGC) Ministry of Education, Govt. of India has announced that CMA qualification be Considered equivalent to PG Degree.

GOOD LUCK

Be Prepared and Get Success;

Disclaimer:
Although due care and diligence have been taken in preparation and uploading this E-bulletin, the Institute shall not be responsible for any loss or damage, resulting from any action taken on the basis of the contents of this E-bulletin.

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Few Snapshots

CMA P. Raju Iyer, President along with CMA Vijender Sharma, Vice President and CMA (Dr.) K Ch A V S N Murthy, Council Member of the Institute extending greetings to Shri Parmod Kumar Arora, Member (Actuary), Insurance Regulatory and Development Authority of India on 16th December, 2021.

CMA P. Raju Iyer, President along with CMA (Dr.) K Ch A V S N Murthy, Council Member of the Institute, CMA K Rajagopal, Chairman of SIRC, CMA S. Ramesh, Former Chairman of SIRC and CMA B.R. Prabhakar, Former Chairman of SIRC of the Institute extending greetings to Shri C.B. Ananthakrishnan, Director (Finance) & CFO of Hindustan Aeronautics Limited on 17th December, 2021.


CMA P. Raju Iyer, President of the Institute extending greetings to Shri Arjun Ram Meghwal, Hon'ble Union Minister of State for Culture and Parliamentary Affairs on 27th December, 2021 during a courtesy meeting and to extend an invitation of the Hon'ble MoS for the Skill Development Program to be organised by the Institute in the month of January 2022.

CMA Neeraj Joshi, Chairman, MAC, CMA Dr. D.P.Nandy, Sr Director, CMAChittaranjan Chattopadhyay, Chairman, BFSIB, Dr.Partha Ray, Director and Member Secretary, NIBM, Dr.Kaushik Mukherjee, Associate Professor, NIBM and Dr.Arindam Bandyopadhyay, Associate Professor (Finance)

CMA Chittaranjan Chattopadhyay, Chairman, BFSIB and CMA Debasish Mitra, Chairman, Board of Advanced Studies & Research of the Institute felicitating Dr. CKG Nair, Director, NISM alongwith other officials of the Institute and NISM.
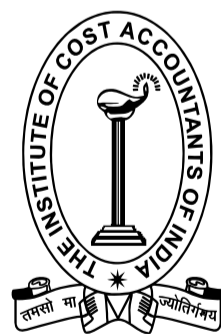
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Behind every successful business decision, there is always a CMA