

**SAMPLE CONTENT**

# SOLUTIONS TO HSC BOARD QUESTION BANK

**(COMMERCE)**

Based on Question Bank released by  
SCERT Maharashtra

- ECONOMICS
- SECRETARIAL PRACTICE
- MATHEMATICS & STATISTICS (I & II)
- ORGANISATION OF COMMERCE AND MANAGEMENT
- ENGLISH YUVAKBHARATI

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# SOLUTIONS TO HSC BOARD QUESTION BANK (Commerce)

## Salient Features

- Covers solutions to the Entire Question Bank of Std. XII released by State Council of Educational Research and Training, Maharashtra in the February 2022
- Includes English Yuvakbharati, Economics, Organisation of Commerce and Management, Secretarial Practice, Mathematics & Statistics (I & II)
- Hints provided for questions wherever deemed necessary.
- Answers framed for all questions are based on Government Textbook and as per the prescribed marking scheme

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## PREFACE

The Question Bank for Std. XII has been released by State Council of Educational Research and Training, Maharashtra in the month of February 2022 as a respite to all the HSC students whose education has suffered due to the ongoing pandemic & the resultant restrictions. This question bank released by the Board is a guiding light for all the students who will be appearing for the board exam in the year 2022 and the further years as well.

Target's '**Solutions to HSC Board Question Bank**' is intended for every state board student of standard XII. As the name suggests, the book includes the solutions to each and every question that has been provided in the question bank. The book encompasses all the question types as per the given sequence in the question bank for each subject, that is, for English Yuvakbharati, Economics, Organisation of Commerce and Management, Secretarial Practice, Mathematics & Statistics (I & II).

The answers framed in the book are completely based on the Government Textbook. At certain points, we have simplified or modified the answers for the ease of understanding. We have ensured that the answers are as per the prescribed marking scheme so that the student's efforts bear the desired fruits.

To aid students, hints are provided for questions wherever deemed necessary.

We hope that the students find the book as one stop solution to the Question Bank .

- Publisher

**Edition:** Second

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This reference book is transformative work based on '**HSC Board Question Bank (2021-22)**' for English Yuvakbharati, Economics, Organisation of Commerce and Management, Secretarial Practice, Mathematics & Statistics (I & II) released by State Council of Educational Research and Training, Maharashtra. We the publishers are making this reference book which constitutes as fair use of textual contents which are transformed by adding and elaborating, with a view to simplify the same to enable the students to understand, memorize and reproduce the same in examinations.

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applying sacred ash and vermilion. He knew this colour scheme would attract the people. He also worked near the groundnut vendor intentionally because he knew the huge crowd around the peanut vendor would someday dally towards him. The place where he sat had minimal lighting and crisscross of lights streaming in. This gave his place a mysterious aura which is needed for an astrologer. He said things which would please and astonish the crowd. So the choice of his appearance and words coupled with the location proves that the astrologer was a shrewd judge of character.

**A4. We need to understand even the smallest details of the business in order to succeed. Write your views. (2)**

**Ans:** Business is not everyone's cup of tea. It involves many process like marketing, production and sales. One needs to understand every intricate detail about their business in order to be a successful businessman. Imagine being CEO of a Smartphone brand, but not been able to explain how your mobile is developed during an interview will surely show you in poor light. Every aspiring entrepreneur should remember that 'the devil is in the details'.

**A5. Do as directed. (2)**

- i. It was a remarkable place in many ways.  
(Choose correct alternative to rewrite the given sentence as an exclamatory sentence)
- It was a remarkable place in many ways!
  - How a remarkable place in many ways it was!
  - What a remarkable place in many ways it was!
  - What remarkable in many ways the place it was!

**Ans:** c. What a remarkable place in many ways it was!

- ii. He spread out his professional equipment, which consisted of a dozen cowrie shells.  
(Choose correct alternative to rewrite the given sentence as a compound sentence)

- He spread out his professional equipment but it consisted of a dozen cowrie shells.
- He spread out his professional equipment and it consisted of a dozen cowrie shells.

- He spread out his professional equipment that it consisted of a dozen cowrie shells.
- He spread out his professional equipment and it had consisted of a dozen cowrie shells.

**Ans:** b. He spread out his professional equipment and it consisted of a dozen cowries shells.

**A6. Find the synonyms for the following words from the passage. (2)**

- Confusing
- Hanging around
- Difficult to understand
- Magical effect

**Ans:** i. Bewildering      ii. Dallied  
iii. Obscure              iv. Enchantment

**Q.2. Read the extract and complete the activities given below: [12 Marks]**

The young lift-man in a City office who threw a passenger out of his lift the other morning and was fined for the offence was undoubtedly in the wrong. It was a question of "Please." The complainant entering the lift, said, "Top." The lift-man demanded "Top-please," and this concession being refused he not only declined to comply with the instruction, but hurled the passenger out of the lift. This, of course was carrying a comment on manner too far. Discourtesy is not a legal offence, and it does not excuse assault and battery. If a burglar breaks into my house and I knock him down, the law will acquit me, and if I am physically assaulted, it will permit me to retaliate with reasonable violence. It does this because the burglar and my assailant have broken quite definite commands of the law. But no legal system could attempt to legislate against bad manners or could sanction the use of violence against something which it does not itself recognize as a legally punishable offence. And our sympathy with the liftman, we must admit that the law is reasonable. It would never do if we were at liberty to box people's ears because we did not like their behaviour, or the tone of their voices, or the scowl on their faces. Our fists would never be idle, and the gutters of the city would run with blood all day. I may be as uncivil as I may please and the law will protect me against violent retaliation. I may be haughty or boorish and there is no penalty to pay except the penalty of being written down an illmannered fellow. The law does not compel me to say "Please" or to attune my voice to other people's sensibilities any more than it says that I shall not wax my moustache or dye my hair or wear ringlets down my back. It does not



recognize the laceration of our feelings as a case for compensation. There is no allowance for moral and intellectual damages in these matters.

**A1. Read the following statements and pick out the statement which expresses the intention of the writer. (2)**

- i. There is an importance of good manners and civility.
- ii. The wound on one's self-respect is more painful than physical wound.
- iii. One needs to be courteous with a liftman.
- iv. Strict laws can civilize people.

**Ans:** i. There is an importance of good manners and civility.  
ii. The wound on one's self-respect is more painful than physical wound.

[Note: both statements (i) and (ii) justify the writer's intention.]

**A2. Pick out some examples of behaviour from the extract that are not punishable under law. (Any four) (2)**

- Ans:** i. If a burglar breaks into a house and gets knocked down.  
ii. Being ill-mannered.  
iii. Having a scowl on one's face.  
iv. Not attuning one's voice to other people's sensibilities.  
v. Discourtesy.  
vi. Not waxing moustache.  
vii. Not dying hair.

(Any four examples)

**A3. "The passenger damaged the liftman's self-respect". Support your answer with some facts from the extract. (2)**

**Ans:** The passenger entering the lift, said, "Top." The lift-man demanded "Top-please," and this request being refused, he not only declined to comply with the instruction, but hurled the passenger out of the lift. Hurling the passenger out of the lift clearly showed that the liftman's self-respect was hurt. He felt that the people should show him more respect. And when the passenger refrained from saying 'please', he was distraught.

**A4. What if- 'Discourtesy is a legal offence?' Write your response in about 30 words. (2)**

**Ans:** Discourtesy implies being rude or acting in an impolite manner. Now, there can be various reasons why a person prefers to be discourteous at a given point in time. If it is made a legal offence, everyone would demand courteous behaviour from each other. Lawyers will be pulling their hairs due to rising cases. Police station will be

brimming with complaints and courts will be full of people fighting unnecessarily over every trivial issue.

**A5. Do as directed. (2)**

- i. If I am physically assaulted, it will permit me to retaliate.

(Choose correct alternative to use 'unless')

- a. Unless I am physically assaulted, it will permit me to retaliate.
- b. Unless I am physically assaulted, it would not permit me to retaliate.
- c. Unless I am physically assaulted, it will not permit me to retaliate.
- d. Unless I am not physically assaulted, it will not permit me to retaliate.

**Ans:** c. Unless I am physically assaulted, it will not permit me to retaliate.

- ii. The law will protect me against violent retaliation.

(Choose correct alternative to use a modal auxiliary showing 'obligation')

- a. The law can protect me against violent retaliation.
- b. The law could protect me against violent retaliation.
- c. The law may protect me against violent retaliation.
- d. The law must protect me against violent retaliation.

**Ans:** d. The law must protect me against violent retaliation.

**A6. Find out the words from the passage which mean the following: (2)**

- i. Lack of courtesy
- ii. Fight with the fists
- iii. Uncultured
- iv. An attacker

**Ans:** i. Discourtesy      ii. To Box  
iii. Boorish            iv. Assaultant

**Q.3. Read the extract and complete the activities given below: [12 Marks]**

Soapy left his bench and strolled out of the square and across the level sea of asphalt, where Broadway and Fifth Avenue flow together. Up Broadway he turned, and stopped at a luxurious café. Soapy had confidence in himself from the lowest button of his vest upward. He was shaven, and his coat was trim and his neat, black bow had been presented to him by a lady missionary on Thanksgiving Day. If only he could reach a table in the restaurant unsuspected, success would be his. The portion of him that would show above the table would raise no doubt in the waiter's mind. A roasted mallard duck, thought Soapy, would be





about the thing with a bottle of wine and then some cheese, a cup of coffee and a cigar. One dollar for the cigar would be enough. The total would not be so high as to call forth any extreme of revenge from the cafe management; and yet the meat would leave him filled and happy for the journey to his winter island. But as Soapy set foot inside the restaurant door, the head-waiter's eye fell upon his tattered trousers and decadent shoes. Strong and ready hands turned him about and conveyed him in silence and haste to the side-walk and averted the ignoble fate of the menaced mallard. Soapy turned off Broadway. It seemed that his route to the coveted island was not to be an easy one. Some other way of entering the limbo must be devised. At a corner of Sixth Avenue electric lights and cunningly displayed wares behind plate glass made a shop window attractive. Soapy took a stone and dashed it through the glass. People came running round the corner, a policeman in the lead. Soapy stood still with his hands in his pockets, and smiled at the sight of brass buttons. "Where's the man that done that?" inquired the officer agitatedly. "Don't you think that I might have had something to do with it?" said Soapy, with a friendly voice, as one greets good fortune. The policeman refused to accept Soapy even as a clue. Men who smash windows do not remain to chat with the police. They take to their heels. The policeman saw a man half-way down the block running to catch a car. With drawn club he joined in the pursuit. Soapy, with disgust in his heart, drifted along, twice unsuccessful.

**A1. Soapy's attempts to get into Winter Island: (2)**

<b>Attempt 1</b>	
<b>Attempt 2</b>	

**Ans:**

<b>Attempt 1</b>	Soapy tried to enter a luxurious cafe. He thought he would consume a hearty meal and refuse to pay the bill. That would enable him to land in to the Winter Island if the cafe owners handed him over to the police
<b>Attempt 2</b>	He smashed the glass window at an attractive shop with a stone and remained on the spot to get arrested.

**A2. Complete the given statement in 30 words. (2)**

Soapy couldn't enter the restaurant because.....

**Ans:** Soapy couldn't enter the restaurant because although he was shaven, his coat

was trim and wore a neat black bow, his shoes were decadent and trousers were tattered. The head waiter in the luxurious cafe noticed it and turned him away.

**A3. Soapy had confidence in himself from the lowest button of his vest upward. Here the lowest button of his vest upward means ..... (2)**

**Ans:** Soapy was clean shaven. He was wearing a coat and a black bow. This attire looked ideal for the luxurious cafe except for the fact that he was wearing tattered trousers and worn out shoes which played spoilsport. Despite this, Soapy was confident about his vest and felt that the people will notice only the coat once he sits. So here the lowest button of his vest upward refers to the upper part of his attire i.e., the coat.

**A4. If a person tries to damage the public property, how you will react in such a situation. (write your response in 3/ 4 lines) (2)**

**Ans:** Vandalism is a social evil which needs to be eliminated. Damaging public property is an obnoxious act. If a person tries to damage public property, I will make him realise that he is hurting his own reputation in the society by indulging in such acts. Person resorting to vandalism can never be adored in a civil society. So I will tell the person involved in such acts to opt for peaceful protest in case if they want to put across their viewpoint to the government.

**A5. Do as directed. (2)**

i. The policeman refused to accept Soapy even as a clue.

**(Choose the correct alternative to transform as a negative statement)**

- The policeman didn't accept Soapy even as a clue.
- The policeman had never accepted Soapy even as a clue.
- The policeman didn't accepted Soapy even as a clue.
- The policeman couldn't accept Soapy even as a clue.

**Ans:** a. The policeman didn't accept Soapy even as a clue.

ii. "Don't you think that I might have had something to do with it?" said Soapy.

**(Choose the correct alternative to change the sentence into indirect speech)**

- Soapy asked if he didn't think that he might have something to do with that.



- b. Soapy asked if he didn't think that he might have had something to do with that.
- c. Soapy asked if he didn't thought that he might have had something to do with that.
- d. Soapy asked if he didn't think that he might had had something to do with that.

**Ans:** b. Soapy asked if he didn't think that he might have had something to do with that.

**A6. Match the words in column A with column B: (2)**

	A		B
i.	stroll	a.	border place between heaven and hell
ii.	decadent	b.	walk in a leisurely way
iii.	limbo	c.	old and worn out
iv.	coveted	d.	very hard and torn
		e.	greatly desired

**Ans:** (i - b, ii - c, iii - a, iv - e)

**Q.4. Read the extract and complete the activities given below: [12 Marks]**

So a huge amount of data is collected. Let me give you an idea of how huge the data might be. Big Data can be petabytes or exabytes of data consisting of billions to trillions of records of millions of people-all from different sources, for example web, sales, customer contact centre, social media, mobile data and so on. The data available to industries and companies is enormously increasing in volume, variation, velocity, veracity and value. Such a Big Data is easy to obtain but so massive that it challenges the current computing technologies and hence Big Data analytics is used to give insights that were previously incomprehensible. Big Data analytics is the complex process of examining large and varied data sets or Big Data to uncover information- such as hidden patterns, unknown correlations, market trends and customer preferences. With such a huge data available with the industries they can have innumerable advantages hence all the industries are trying to reap the maximum benefit from it. Many industries have advanced by miles from their competitors. It's not the amount of data that is important but what the organizations do with the data is what matters.

**Uses of Big Data**

1. **Location Tracking:** Big Data has been useful in identifying and tracking the exact location of a place. Your GPS and Google Maps make use of Big Data. With geographic positioning and radio

frequency identification sensors we get the real-time data about traffic, congestion on a particular route, information if the route is closed or if it is a one-way route, understanding accident prone areas etc. You can plan your own route according to the travel time and the transportation of goods. If you have ordered something online you can track the location of your goods in transit, you can also track the condition of the goods. This has immensely helped the logistics companies to reduce risks in transport, improve speed and reliability in delivery.

**A1. Arrange the given sentences in the order to summarize the extract according to proper occurrences. (2)**

- Big data improved the logistics services.
- Every online activity is stored in big data.
- Big data is comprehensible due to Big Data Analytics.
- The industries gained advantages from the big data.

**Ans:** ii. Every online activity is stored in big data.  
 iii. Big data is comprehensible due to Big data Analytics.  
 iv. The Industries gained advantages from the big data.  
 i. Big data improved the logistics services.

**A2. Big Data analytics play a vital role. Justify. (2)**

**Ans:** Insights provided by Big Data analytics go a long way in helping various business houses. It can help us to understand things better in an altogether different light. Firms can utilize Big data analytics technique to guess the needs of the people, to discover hidden patterns and market trends. Application of Big data analytics has helped many industries surpass their competitors.

**A3. Big data is a great challenge to the present computing technologies. Explain. (2)**

**Ans:** We retrieve big data from different sources which can be petabytes or exabytes consisting of billions to trillions of records of millions of people. So it is enormously increasing in volume, velocity, veracity and value. Such a huge data poses a great challenge to the different computing technologies currently operational in the world.

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To see complete chapter buy **Target Notes** or **Target E-Notes**

## Q.1. Objective Type Questions

### Complete the correlation

- Scope of Micro-economics:
  - Theory of Product Pricing
  - Theory of Growth and Development
  - Theory of General Price Level and Inflation
  - Theory of Income and Employment

**Options:** (A) Only i (B) i, ii, iii  
(C) ii, iii, iv (D) i, iii, iv
- Statements related to Macro-economics:
  - It is the study of aggregates.
  - It is based on certain assumptions.
  - It takes into account interdependence between aggregate economic variables.
  - It is a policy oriented science.

**Options:** (A) i, ii, iii, iv (B) i, ii, iii  
(C) ii, iii, iv (D) i, iii, iv
- Exceptions to the law of diminishing marginal utility:
  - Cardinal measurement
  - Hobbies
  - Miser
  - Money

**Options:** (A) Only i (B) i, ii, iii  
(C) ii, iii, iv (D) i, iii, iv
- Criticisms to the law of diminishing marginal utility:
  - Based on unrealistic assumptions
  - Not applicable to indivisible and bulky goods
  - The law is restricted to satisfaction of a single want.
  - In reality, cardinal measurement of utility not possible.

**Options:** (A) Only i (B) i, ii, iii  
(C) ii, iii, iv (D) i, ii, iii, iv
- Statements that explain Giffen's paradox:
  - It is an exception to the law of demand.
  - It is applicable to inferior or low quality goods.
  - Demand increases when the prices of inferior goods fall.
  - It was identified by Prof. Alfred Marshall.

**Options:** (A) Only i (B) i, ii  
(C) ii, iii, iv (D) i, ii, iii, iv
- Statements related to decrease in demand:
  - It is a type of change in demand.
  - It takes place due to unfavourable changes in other factors like tastes, income etc.
  - Price remains constant.
  - Demand curve shifts to the right hand side of the original demand curve.

**Options:** (A) i, ii, iii, iv (B) i, ii, iii  
(C) ii, iii, iv (D) i, iii, iv

- Statements that are incorrect in relation to perfectly inelastic demand:
  - Percentage change in price has no effect on quantity demanded.
  - Co-efficient of elasticity is equal to 1 ( $ed = 1$ ).
  - Demand curve is a horizontal line parallel to X axis.
  - It is a type of price elasticity of demand.

**Options:** (A) i, ii, iii, iv (B) i, ii, iii  
(C) ii, iii (D) i, ii
- Statements that are related to cross elasticity of demand:
  - Change in quantity demanded of one commodity due to a change in the price of other commodity
  - It is a type of elasticity of demand.
  - It is applicable to complementary goods and substitutes.
  - It is expressed as  $E_y = \frac{\% \Delta Q}{\% \Delta Y}$ .

**Options:** (A) i, ii, iii, iv (B) i, ii, iii  
(C) Only ii (D) i, ii
- Statements related to the concept of stock:
  - It is the total quantity of a commodity available with the seller at a particular point of time.
  - By increasing production, stock can be increased.
  - Normally, stock exceeds supply.
  - Stock is a flow concept.

**Options:** (A) i, ii, iii, iv (B) i, ii, iii  
(C) Only ii (D) i, ii
- Exceptions to the law of supply:
  - Constant cost of production
  - Constant technique of production
  - Does not apply to agricultural goods
  - No change in weather conditions

**Options:** (A) i, ii, iii, iv (B) i, ii, iii  
(C) only iii (D) i, ii
- Features of oligopoly market:
  - There are few firms or sellers.
  - Sellers sell differentiated product.
  - There is free entry and exit of firms.
  - There is considerable element of uncertainty in this type of market.

**Options:** (A) i, ii (B) i, ii, iii  
(C) ii, iii (D) i, iv



12. Characteristics of long period market:
- All factors of production and costs are variable.
  - Firms are able to adjust all costs.
  - It is for a few years, generally up to five years.
  - Supply of commodity cannot be increased.
- Options:** (A) i, iii, iv (B) i, ii, iii  
(C) ii, iii, iv (D) i, ii, iii, iv
13. Features of index numbers:
- It is useful in framing suitable economic policies.
  - It is useful to present financial data in real terms.
  - Index numbers are statistical devices.
  - Index numbers are specialized averages.
- Options:** (A) iii, iv (B) i, ii  
(C) ii, iii, iv (D) i, ii, iii, iv
14. Statements related to weighted index number:
- Suitable weights are assigned to various commodities.
  - It gives relative importance to the commodity in the group.
  - In most cases, quantities are used as weights.
  - Laaspeyre's Price index and Paasche's Price Index are methods of constructing weighted index number.
- Options:** (A) i, iii, iv (B) i, ii, iii  
(C) ii, iii, iv (D) i, ii, iii, iv
15. Precautions to be taken while estimating national income by output method:
- Only value of final goods and services must be taken in to account.
  - Indirect taxes included in the market prices are to be deducted.
  - Subsidies given by the government on certain products must be added.
  - Sale and purchase of second hand goods should be considered.
- Options:** (A) Only i (B) i, ii, iii  
(C) ii, iii, iv (D) i, iii, iv
16. Practical difficulties in the measurement of national income:
- Illegal income
  - Problem of double counting
  - Inadequate and unreliable data
  - Valuation of inventories
- Options:** (A) i, iii (B) i, ii, iii  
(C) ii, iii, iv (D) i, iii, iv
17. Essential characteristics of a tax:
- It is a voluntary contribution to the government.
  - Every citizen of the country is legally bound to pay the tax imposed upon him.

- Tax is imposed on income, property or commodities or services.
- The tax payer receives direct and proportionate benefits from the government in return for the tax.

**Options:** (A) i, iv (B) ii, iii  
(C) ii, iii, iv (D) i, iii, iv

18. Non tax revenue sources:
- Special assessment
  - Fines and penalties
  - Goods and Services tax
  - Gifts, grants and donations

**Options:** (A) i, ii, iv (B) i, ii, iii  
(C) ii, iii, iv (D) i, iii, iv

19. Structure of organized sector of money market:
- Reserve Bank of India
  - Commercial banks
  - Co-operative banks
  - Indigenous bankers

**Options:** (A) i, ii, iv (B) i, ii, iii  
(C) ii, iii, iv (D) i, iii, iv

20. Classification of commercial banks in India:
- Public sector banks
  - Private sector banks
  - Foreign banks
  - Central bank

**Options:** (A) Only i (B) i, ii, iii  
(C) ii, iii, iv (D) i, iii, iv

21. Features of composition of India's foreign trade:
- Increasing share in Gross National Income
  - Increase in volume and value of trade
  - Division of labour and specialization
  - Stability in price level

**Options:** (A) i, iv (B) i, ii  
(C) ii, iii (D) iii, iv

22. Statements incorrect in relation to Balance of Trade:

- It is also referred to as international trade balance.
- Trade surplus arises when export value is greater than import value.
- Trade deficit takes place when import value is greater than export value.
- Balance of trade includes value of imports and exports of visible goods only.

**Options:** (A) Only iv (B) Only i  
(C) ii, iii, iv (D) i, ii, iii

**Answers:**

- |         |         |         |         |
|---------|---------|---------|---------|
| 1. (A)  | 2. (D)  | 3. (C)  | 4. (D)  |
| 5. (B)  | 6. (B)  | 7. (C)  | 8. (B)  |
| 9. (B)  | 10. (C) | 11. (D) | 12. (B) |
| 13. (A) | 14. (D) | 15. (B) | 16. (C) |
| 17. (B) | 18. (A) | 19. (B) | 20. (B) |
| 21. (B) | 22. (A) |         |         |

**Complete the correlation**

1. Microeconomics : Mikros :: Macroeconomics : \_\_\_\_\_
2. General equilibrium : Macro-economics :: \_\_\_\_\_ : Micro-economics
3. Toys made of clay : \_\_\_\_\_ :: Woollen clothes : Place utility
4. Aggregate utility from all units consumed : Total utility :: Additional utility from last unit consumed : \_\_\_\_\_
5. Demand curve : \_\_\_\_\_ :: Supply curve : Upward
6. Tea and coffee : \_\_\_\_\_ :: Electricity : Composite demand
7. Relatively elastic demand :  $E_d > 1$  :: Relatively inelastic demand : \_\_\_\_\_
8. Steeper demand curve : Relatively inelastic demand :: Flatter demand curve: \_\_\_\_\_
9. Total cost :  $TFC + TVC$  :: Average cost : \_\_\_\_\_
10. Expansion of supply : Price rises :: Contraction of supply : \_\_\_\_\_
11. Perfect competition : Free entry and exit :: \_\_\_\_\_ : Barriers to entry
12. Monopoly : Price discrimination :: \_\_\_\_\_ : Product differentiation
13. \_\_\_\_\_ : Base year price ::  $P_1$  : Current year price
14. Laaspeyre's index : \_\_\_\_\_ :: Paasche's Index : Current year quantities
15. \_\_\_\_\_ :  $C + I + G + (X - M)$  :: GNP :  $C + I + G + X - M + (R - P)$
16. Output method : \_\_\_\_\_ :: Income method : Factor cost method
17. \_\_\_\_\_ : Protection from external attacks :: Optional function : Provision of social security
18. Income tax: Direct tax :: GST : \_\_\_\_\_
19. \_\_\_\_\_ : Commercial bank :: Credit control : Central bank
20. Primary market : New issues launched to raise capital :: \_\_\_\_\_ : Old issues through stock market.
21. Goods purchased from other countries : \_\_\_\_\_ :: Goods sold to other countries : Export
22. Export value > Import value : Trade surplus :: Import value > Export value : \_\_\_\_\_

**Answers:**

1. Makros
2. Partial equilibrium
3. Form utility
4. Marginal utility
5. Downward
6. Competitive demand
7.  $E_d < 1$
8. Relatively elastic demand
9.  $\frac{TFC+TVC}{TQ}$  or  $\frac{TC}{TQ}$
10. Price falls
11. Monopoly/ Oligopoly
12. Monopolistic Competition
13.  $P_0$
14. Base year quantities
15. GDP
16. Product method or Inventory method
17. Obligatory function
18. Indirect tax
19. Credit creation
20. Secondary market
21. Import
22. Trade deficit

**Give economic terms**

1. Branch of economics that deals with small part of national economy –
2. Average of all prices of goods and services currently being produced in an economy –
3. Utility that arises when ownership of goods is transferred from one person to another –
4. Aggregate of utility derived by the consumer from all units of a commodity consumed –
5. Total demand for a commodity from all the consumers at a given price during a given period of time. –
6. Demand for a commodity which can be put to several uses –
7. Degree of responsiveness of a change in quantity demanded to a change in the income of the consumer –
8. Infinite change in the quantity demanded of a commodity taking place due to slight or zero change in the price –
9. Rise in the quantity supplied of a commodity due to a rise in its price, other factors remaining constant –
10. Net addition made to the total cost by producing one more unit of output –
11. Type of market showing some but not all the features of a competitive market –



12. Number of firms producing differentiated products which are closely related –
13. Index numbers that measure changes in the level of output or physical volume of production in the economy. –
14. Device that measures changes in an economic variable or a group of variables over a period of time –
15. Net market value of all final goods and services produced within the territorial boundaries of a country during a period of one year –
16. Wear and tear of capital assets due to their use in the process of production –
17. Tax paid at the time of production or sale and purchase of a commodity or service –
18. Policy that deals with public expenditure, public revenue and public debt –
19. Deposits that are repayable after a certain period of time –
20. Policy that aims at managing the quantity of money in order to meet the requirements of different sectors of the economy and to increase the pace of economic growth –
21. Purchase of goods and services by one country from another country –
22. Systematic record of all international economic transactions of a country during a given period usually a year –

**Answers:**

1. Micro-economics
2. General Price Level
3. Possession utility
4. Total Utility (TU)
5. Market demand
6. Composite demand
7. Income elasticity of demand
8. Perfectly elastic demand
9. Expansion of supply
10. Marginal Cost (MC)
11. Imperfect competition
12. Group/ Monopolistic competition
13. Quantity index number
14. Index number
15. Net Domestic Product (NDP)
16. Depreciation
17. Indirect tax
18. Fiscal policy
19. Time deposits
20. Monetary policy
21. Import trade
22. Balance of Payments

**Find the odd word**

1. **Features of Microeconomics**  
Price theory, Slicing method, Limited scope, Lumping method
2. **Scope of Macroeconomics -**  
Theory of product pricing, Theory of income & employment, Theory of general price level and inflation, Macro theory of distribution
3. **Exception to law of Diminishing Marginal Utility -**  
Miser, Hobbies, Addictions, Speculation
4. **Types of utility -**  
Total utility, Time utility, Possession utility, Service utility
5. **Assumptions to law of demand -**  
Constant level of income, No changes in taxation policy, No change in size of population, Cardinal measurement
6. **Types of demand -**  
Individual demand, Direct demand, Competitive demand, Complementary demand
7. **Types of elasticity of demand -**  
Unitary elasticity, Income elasticity, Cross elasticity, Price elasticity
8. **Method of measuring price elasticity of demand -**  
Ratio method, Total outlay method, Income method, Geometric method
9. **Exception to law of supply -**  
Urgent need for cash, Perishable goods, Agricultural goods, Prestige goods
10. **Cost concepts -**  
Total Cost, Marginal Cost, Average Cost, Production Cost
11. **Market on the basis of place -**  
Local market, National market, International market, Long period market
12. **Selling cost -**  
Expenditure on television broadcasts, Hoardings, Exhibitions, Mobile handsets
13. **Types of index numbers -**  
Price index, Quantity index, Simple index, Value index
14. **Steps involved in the construction of index number -**  
Selection of commodities, Selection of base year, Selection of cost, Selection of items, Selection of price quotation
15. **Concepts of national income -**  
GDP, NNP, LIC, GNP



- 16. Practical difficulties in measuring national income -**  
Problem of double counting, Unreliable data, Illegal income, Depreciation
- 17. Non-tax revenue -**  
Special assessment, Special levy, GST (Goods & Service Tax), Fees
- 18. Optional functions of Government -**  
Provision of education and health services, Social security measurement, Protection from external attacks, Welfare measures
- 19. Organized sector -**  
Co-operative banks, Commercial banks, Money lenders, Reserve Bank of India
- 20. Unregulated non-bank financial intermediaries -**  
Indigenous bankers, Chit funds, Nidhi, Loan companies
- 21. Types of foreign trade -**  
Import trade, Export trade, Entrepot trade, National trade
- 22. Development of New Port -**  
Kandla, Cochin, Mumbai, Nhava Sheva
- Answers:**
- Lumping method
  - Theory of product pricing
  - Speculation
  - Total utility
  - Cardinal measurement
  - Individual demand
  - Unitary elasticity
  - Income method
  - Prestige goods
  - Production cost
  - Long period market
  - Mobile handsets
  - Simple index
  - Selection of cost
  - LIC
  - Illegal income
  - GST (Goods & Service Tax)
  - Protection from external attacks
  - Money lenders
  - Indigenous bankers
  - National trade
  - Mumbai
- Complete the following statements**
- Theory of economic welfare, basically deals with \_\_\_\_\_.  
(A) efficiency in allocation of resources  
(B) product pricing  
(C) factor pricing  
(D) efficiency in product
  - Macroeconomics is the branch of economics which analyses the \_\_\_\_\_.  
(A) part economy (B) entire economy  
(C) mixed economy (D) political economy
  - Unit at which MU (Marginal Utility) becomes equal with market price is \_\_\_\_\_.  
(A) producers equilibrium  
(B) consumers' equilibrium  
(C) partial equilibrium  
(D) general equilibrium
  - In relationship between Total Utility & Marginal Utility, MU (Marginal Utility) of a commodity becomes negative when TU (Total Utility) of a commodity is \_\_\_\_\_.  
(A) rising (B) constant  
(C) falling (D) zero
  - The demand for a commodity which can be put to several uses is known as \_\_\_\_\_.  
(A) joint demand  
(B) composite demand  
(C) direct demand  
(D) derived demand
  - The Law of Demand was introduced by \_\_\_\_\_.  
(A) Prof. Adam Smith  
(B) Prof. Alfred Marshall  
(C) Prof. Joan Robinson  
(D) Prof. Keynes
  - Demand curve is parallel to 'Y' axis in case of \_\_\_\_\_.  
(A) perfectly elastic demand  
(B) perfectly inelastic demand  
(C) relatively elastic demand  
(D) relatively inelastic demand
  - $E_d = 0$  in case of \_\_\_\_\_.  
(A) luxuries (B) normal goods  
(C) necessities (D) comforts
  - Downward movement along the same supply curve should \_\_\_\_\_.  
(A) contraction of supply  
(B) decrease in supply  
(C) expansion of supply  
(D) increase in supply
  - Net addition made to total cost by producing one more unit of output is \_\_\_\_\_.  
(A) average cost (B) marginal cost  
(C) total cost (D) variable cost
  - The interaction of demand and supply to determine price of a commodity in perfect competition is \_\_\_\_\_.  
(A) market price  
(B) normal price  
(C) fluctuating price  
(D) equilibrium price





12. Product differentiation is the main feature of \_\_\_\_\_.
- (A) perfect competition  
(B) monopolistic competition  
(C) monopoly market  
(D) oligopoly market
13. Index number was originally developed to measure \_\_\_\_\_.
- (A) changes in quantity level  
(B) changes in price level  
(C) changes in agricultural production  
(D) changes in industrial production
14. Index number which is computed from a single variable called is a \_\_\_\_\_.
- (A) composite index  
(B) double variate index  
(C) univariate index  
(D) multivariate index
15. In India, national income is estimated using \_\_\_\_\_.
- (A) expenditure method  
(B) income method  
(C) output method  
(D) combination of output and income method
16. NNP is obtained by \_\_\_\_\_.
- (A) deducting depreciation from GNP  
(B) deducting depreciation from GDP  
(C) including depreciation from GNP  
(D) including depreciation from GDP
17. Government borrows from its citizens, banks, central bank etc. is known as \_\_\_\_\_.
- (A) internal debt  
(B) public debt  
(C) external debt  
(D) government debt
18. Financial (Fiscal) policy is implemented by the \_\_\_\_\_.
- (A) Central Bank  
(B) Reserve Bank of India  
(C) Government  
(D) Commercial Bank
19. Capital market is a market for \_\_\_\_\_.
- (A) short term funds  
(B) long term funds  
(C) liquidity management  
(D) indigenous bankers
20. Deposits that are withdrawable on demand are known as \_\_\_\_\_.
- (A) time deposits  
(B) demand deposits  
(C) fixed deposits  
(D) recurring deposits

21. Buying and selling of goods and services within the boundaries of a nation are referred to as \_\_\_\_\_.
- (A) foreign trade (B) internal trade  
(C) export trade (D) entrepot trade
22. Balance of trade is also referred to as \_\_\_\_\_.
- (A) National trade balance  
(B) International trade balance  
(C) Balance of Payment  
(D) Systematic record of all international economic transactions

**Answers:**

1. (A) 2. (B) 3. (B) 4. (C)  
5. (B) 6. (B) 7. (B) 8. (C)  
9. (A) 10. (B) 11. (D) 12. (B)  
13. (B) 14. (C) 15. (D) 16. (A)  
17. (A) 18. (C) 19. (B) 20. (B)  
21. (B) 22. (B)

**Assertion and Reasoning type questions**

1. **Assertion (A):** Micro-economics uses slicing method.  
**Reasoning (R):** Slicing method is the study of the whole economy rather than its part.
- (A) (A) is True but (R) is False.  
(B) (A) is False but (R) is True.  
(C) Both (A) and (R) are True and (R) is the correct explanation of (A).  
(D) Both (A) and (R) are True and (R) is not the correct explanation of (A).
2. **Assertion (A):** Macro-economic analysis shows how the general price level is determined.  
**Reasoning (R):** It deals with determination of the prices of goods and services as well as factors of production.
- (A) (A) is True but (R) is False.  
(B) (A) is False but (R) is True.  
(C) Both (A) and (R) are True and (R) is the correct explanation of (A).  
(D) Both (A) and (R) are True and (R) is not the correct explanation of (A).
3. **Assertion (A):** Utility depends on the intensity of want.  
**Reasoning (R):** The concept of utility has no ethical consideration.
- (A) (A) is True but (R) is False.  
(B) (A) is False but (R) is True.  
(C) Both (A) and (R) are True and (R) is the correct explanation of (A).  
(D) Both (A) and (R) are True and (R) is not the correct explanation of (A).

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**Q.1.**  
**(A)**

Select the appropriate option and rewrite the complete sentence

1. 'Entreprendre' means \_\_\_\_\_.  
(A) to business (B) to enterprise  
(C) to undertake
2. \_\_\_\_\_ is the function which supports to activate the plans with the help of employees.  
(A) Directing (B) Staffing  
(C) Controlling
3. \_\_\_\_\_ was regarded as Father of Scientific Management.  
(A) Henry Fayol (B) F W Taylor  
(C) Philip Kotler
4. Start-Up India is an initiative of the \_\_\_\_\_.  
(A) Government of India  
(B) RBI  
(C) World Bank
5. Scalar chain means the hierarchy of \_\_\_\_\_ from the top level to the lower level for the purpose of communication.  
(A) authority (B) unity  
(C) discipline
6. In \_\_\_\_\_ policy, subject matter is insured for specific voyage irrespective of time.  
(A) annuity (B) voyage  
(C) floating
7. The function of management starts with \_\_\_\_\_ function.  
(A) directing (B) planning  
(C) controlling
8. The term market is derived from the \_\_\_\_\_ word 'mercatus'.  
(A) Latin (B) French  
(C) Italian
9. In modern competitive market, consumer is regarded as the \_\_\_\_\_.  
(A) king (B) owner  
(C) buyer
10. The government has established \_\_\_\_\_ to settle the consumer disputes by compromise.  
(A) consumer organisations  
(B) lok adalat  
(C) national commission
11. \_\_\_\_\_ are trustees of the society.  
(A) Businessmen (B) Employees  
(C) Investors
12. Warehouse creates \_\_\_\_\_ utility.  
(A) space (B) time  
(C) possession
13. Principle of \_\_\_\_\_ is not applicable to life insurance.  
(A) utmost good faith  
(B) insurable interest  
(C) indemnity
14. Business is a \_\_\_\_\_ activity.  
(A) socio-economic (B) non-profit  
(C) charitable
15. In online shopping, customers put the product in the \_\_\_\_\_.  
(A) shopping cart (B) account  
(C) digital cart

**Answer:**

- |         |         |         |         |
|---------|---------|---------|---------|
| 1. (C)  | 2. (A)  | 3. (B)  | 4. (A)  |
| 5. (A)  | 6. (B)  | 7. (B)  | 8. (A)  |
| 9. (A)  | 10. (B) | 11. (A) | 12. (B) |
| 13. (C) | 14. (A) | 15. (A) |         |

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**Q.1.**  
**(A)**

Select the correct answer from the options given below and rewrite the statements

1. Finance is the management of \_\_\_\_\_ affairs of the company.  
(A) monetary (B) marketing  
(C) production
2. Corporate finance deals with the acquisition and use of \_\_\_\_\_ by business corporations.  
(A) goods (B) capital  
(C) land
3. The benefit of depository receipt is ability to raise capital in \_\_\_\_\_ market.  
(A) national (B) local  
(C) international
4. Under \_\_\_\_\_ method, issue price of shares is based on bidding.  
(A) book building (B) fixed price  
(C) bonus issue
5. In \_\_\_\_\_, shares of a company are offered to the public for the first time.  
(A) Further Public Offer  
(B) Initial Public Offer  
(C) ESOS
6. \_\_\_\_\_ is offered to existing equity shareholders.  
(A) IPO (B) ESOS  
(C) Rights issue
7. Secured debentures must be redeemed within \_\_\_\_\_ from the date of its issue  
(A) 10 days (B) 10 years  
(C) 15 years
8. Debenture certificate must be issued within \_\_\_\_\_ of allotment of debentures.  
(A) 3 months (B) 6 months  
(C) 60 days
9. The contract between company and debenture trustees of companies is called as \_\_\_\_\_.  
(A) debenture trust deed  
(B) letter of offer  
(C) prospectus
10. Deposit can be accepted for a minimum of 6 months and maximum for \_\_\_\_\_ months.  
(A) 36 (B) 3  
(C) 30
11. Company issues \_\_\_\_\_ to invite its members to subscribe for its deposit scheme.  
(A) advertisement (B) circular  
(C) newspaper
12. Return of deposit must be filed every year on or before \_\_\_\_\_.  
(A) 30<sup>th</sup> June (B) 31<sup>st</sup> March  
(C) 30<sup>th</sup> April
13. Secretarial correspondence with members should be \_\_\_\_\_.  
(A) lengthy (B) shortcut  
(C) prompt and precise
14. Debentures repayable after a certain period are \_\_\_\_\_ debentures.  
(A) convertible (B) registered  
(C) redeemable
15. The rate of interest payable on debentures is \_\_\_\_\_.  
(A) uncertain (B) floating  
(C) fixed
16. Depositors are \_\_\_\_\_ of a company.  
(A) members (B) creditors  
(C) debtors
17. In physical mode, securities are held in \_\_\_\_\_ form.  
(A) paper  
(B) dematerialization  
(C) electronic
18. Risk of losing certificates exists in \_\_\_\_\_ mode.  
(A) physical (B) dematerialized  
(C) digital
19. Depository Act was passed in \_\_\_\_\_.  
(A) 1919 (B) 1996  
(C) 1999
20. In India, ISIN for corporate securities is allotted by \_\_\_\_\_.  
(A) NSDL  
(B) central government  
(C) state government
21. Dividend is recommended by \_\_\_\_\_.  
(A) managing director  
(B) secretary  
(C) board of directors
22. Interim dividend is declared by \_\_\_\_\_.  
(A) board of directors  
(B) debenture holders  
(C) depositors
23. Final dividend is declared by \_\_\_\_\_.  
(A) board of directors (B) shareholders  
(C) depositors



- 24. Dividend cannot be declared out of \_\_\_\_\_.  
(A) capital (B) profit  
(C) reserves
- 25. Payment of \_\_\_\_\_ dividend must be authorized by the Articles of Association.  
(A) interim (B) final  
(C) bonus
- 26. Money market is a market for lending and borrowing of funds for \_\_\_\_\_ term.  
(A) short (B) medium  
(C) long

**Answer:**

- 1. (A) 2. (B) 3. (C) 4. (A)
- 5. (B) 6. (C) 7. (B) 8. (B)
- 9. (A) 10. (A) 11. (B) 12. (A)
- 13. (C) 14. (C) 15. (C) 16. (B)
- 17. (A) 18. (A) 19. (B) 20. (A)
- 21. (C) 22. (A) 23. (B) 24. (A)
- 25. (A) 26. (A)

Sample Content

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01 Mathematical Logic

**Q.1. Select and write the most appropriate answer from the given alternatives:**

- i. Which of the following statement is true?
  - (A)  $3 + 7 = 4$  or  $3 - 7 = 4$
  - (B) If Pune is in Maharashtra, then Hyderabad is in Kerala
  - (C) It is false that 12 is not divisible by 3
  - (D) The square of any odd integer is even
- ii. Which of the following is not a statement?
  - (A)  $2 + 2 = 4$
  - (B) 2 is the only even prime number
  - (C) Come here
  - (D) Mumbai is not in Maharashtra
- iii. If p is any statement, then  $(p \vee \sim p)$  is a
  - (A) Contingency
  - (B) Contradiction
  - (C) Tautology
  - (D) None of these
- iv. If p and q are two statements, then  $(p \rightarrow q) \leftrightarrow (\sim q \rightarrow \sim p)$  is
  - (A) Contradiction
  - (B) Tautology
  - (C) Neither (i) nor (ii)
  - (D) None of these
- v. Negation of  $p \rightarrow (p \vee \sim q)$  is
  - (A)  $\sim p \rightarrow (\sim p \vee q)$
  - (B)  $p \wedge (\sim p \wedge q)$
  - (C)  $\sim p \vee (\sim p \vee \sim q)$
  - (D)  $\sim p \rightarrow (\sim p \rightarrow q)$
- vi. If p : He is intelligent  
q : He is strong  
Then, symbolic form of statement "It is wrong that, he is intelligent or strong" is
  - (A)  $\sim p \vee \sim q$
  - (B)  $\sim(p \wedge q)$
  - (C)  $\sim(p \vee q)$
  - (D)  $p \vee \sim q$
- vii. A biconditional statement is the conjunction of two \_\_\_\_\_ statements.
  - (A) Negative
  - (B) Compound
  - (C) Connective
  - (D) Conditional
- viii. If  $p \rightarrow q$  is an implication, then the implication  $\sim q \rightarrow \sim p$  is called its
  - (A) Converse
  - (B) Contrapositive
  - (C) Inverse
  - (D) Alternative
- ix. The dual of the statement  $(p \vee q) \wedge (r \vee s)$  is
  - (A)  $(p \wedge q) \wedge (r \wedge s)$
  - (B)  $(p \wedge q) \vee (r \wedge s)$
  - (C)  $(p \vee q) \vee (r \vee s)$
  - (D)  $(p \vee q) \wedge (r \vee s)$
- x. The false statement in the following is
  - (A)  $p \wedge (\sim p)$  is contradiction
  - (B)  $(p \rightarrow q) \leftrightarrow (\sim q \rightarrow \sim p)$  is a contradiction
  - (C)  $\sim(\sim p) \leftrightarrow p$  is a tautology
  - (D)  $p \vee (\sim p)$  is a tautology

**Answers:**

- i. (C) ii. (C) iii. (C) iv. (B)
- v. (B) vi. (C) vii. (D) viii. (B)
- ix. (B) x. (B)

**Hints:**

- i. Note that 12 is divisible by 3.  
 $\therefore$  The statement '12 is not divisible by 3' is wrong.  
 $\therefore$  The truth value of the statement 'It is false that 12 is not divisible by 3.' is true.
- ii. Sentence given in option (C) is an imperative sentence. Hence, it can not be a statement.

iii.

p	$\sim p$	$p \vee \sim p$
T	F	T
F	T	T

- $\therefore (p \vee \sim p)$  is a tautology.
- iv.  $(p \rightarrow q) \leftrightarrow (\sim q \rightarrow \sim p)$   
Note that ' $\sim q \rightarrow \sim p$ ' is contrapositive of the statement ' $p \rightarrow q$ '  
A conditional statement and its contrapositive are always equivalent.  
Hence,  $(p \rightarrow q) \leftrightarrow (\sim q \rightarrow \sim p)$  is tautology.
- v. Negation of  $p \rightarrow q$  is  $p \wedge \sim q$ .  
 $\therefore \sim[p \rightarrow (p \vee \sim q)] \equiv p \wedge \sim(p \vee \sim q)$   
 $\equiv p \wedge (\sim p \wedge q)$   
...[De-Morgan's Law]
- vi. The symbolic form of statement 'He is intelligent or strong' is  $p \vee q$ .  
 $\therefore$  The symbolic form of the given statement is  $\sim(p \vee q)$ .
- vii. Consider a biconditional statement  $p \leftrightarrow q$   
 $p \leftrightarrow q \equiv (p \rightarrow q) \wedge (q \rightarrow p)$   
i.e., conjunction of two conditional statements.
- x. Consider,  $(p \rightarrow q) \leftrightarrow (\sim q \rightarrow \sim p)$   
Note that ' $\sim q \rightarrow \sim p$ ' is contrapositive of the statement ' $p \rightarrow q$ '  
A conditional statement and its contrapositive are always equivalent.  
Hence,  $(p \rightarrow q) \leftrightarrow (\sim q \rightarrow \sim p)$  is tautology.  
 $\therefore$  Statement in option (B) is false.

[Note: Option (D) has been modified.]





**Q.2. State whether the given statements are true or false.**

- The negation of  $10 + 20 = 30$  is, it is false that  $10 + 20 \neq 30$ .
- $x^2 = 25$  is true statement.
- $p \rightarrow q$  is equivalent to  $p \rightarrow \sim q$ .
- Truth value of  $\sqrt{3}$  is not an irrational number is F.
- $(p \vee q) \wedge \sim p$  is a contradiction.
- $p \leftrightarrow q$  is false when  $p$  and  $q$  have different truth values.
- The dual of  $(p \wedge q) \vee \sim q$  is  $(p \vee q) \wedge \sim q$ .
- Mathematical identities are true statements.
- $p \vee \sim p \equiv \sim c$
- The converse of inverse of  $\sim p \rightarrow q$  is  $q \rightarrow \sim p$ .

**Answers:**

- |           |            |            |
|-----------|------------|------------|
| i. False  | ii. False  | iii. False |
| iv. True  | v. False   | vi. True   |
| vii. True | viii. True | ix. True   |
| x. False  |            |            |

**Hints:**

- The negation of  $10 + 20 = 30$  is, ' $10 + 20 \neq 30$ ' or 'it is false that  $10 + 20 = 30$ '.
- $x^2 = 25$  is an open sentence. It is not a statement.
- 

p	q	$\sim q$	$p \rightarrow q$	$p \rightarrow \sim q$
T	T	F	T	F
T	F	T	F	T
F	T	F	T	T
F	F	T	T	T

v.

p	q	$\sim p$	$p \vee q$	$(p \vee q) \wedge \sim p$
T	T	F	T	F
T	F	F	T	F
F	T	T	T	T
F	F	T	F	F

- The inverse of  $\sim p \rightarrow q$  is  $\sim(\sim p) \rightarrow \sim q$  i.e.,  $p \rightarrow \sim q$   
 $\therefore$  The converse of inverse of  $\sim p \rightarrow q$  is  $\sim q \rightarrow p$ .

**Q.3. Fill in the following blanks.**

- Conjunction of two statement pattern  $p$  and  $q$  is symbolically written as \_\_\_\_\_.
- Negation of "Some men are animals" is \_\_\_\_\_.
- The truth value of negation of "London is in England" is \_\_\_\_\_.
- The truth value of the statement "Neither 27 is a prime number nor divisible by 4" is \_\_\_\_\_.
- The contrapositive of  $p \rightarrow \sim q$  is \_\_\_\_\_.

**Answers:**

- $p \wedge q$
- All men are not animals
- False
- True
- $q \rightarrow \sim p$

**Hints:**

- Truth value of the given statement is T.  
 $\therefore$  Truth value of its negation is F.
- The contrapositive of  $p \rightarrow \sim q$  is  $\sim(\sim q) \rightarrow \sim p$  i.e.,  $q \rightarrow \sim p$

**Q.4. Answer the following questions.**

- Write the negation of the statement "An angle is a right angle if and only if it is of measure  $90^\circ$ ".

**Solution:**

Let  $p$  : An angle is a right angle.  
 $q$  : An angle is of measure  $90^\circ$ .

The given statement is  $p \leftrightarrow q$ .

Its negation is

$$\sim(p \leftrightarrow q) \equiv (p \wedge \sim q) \vee (q \wedge \sim p)$$

- The negation of given statement is 'An angle is a right angle and it is not of measure  $90^\circ$  or an angle is of measure  $90^\circ$  and it is not a right angle.'

- Write the following statements in symbolic form.

- Milk is white if and only if the sky is not blue.
- If Qutub – Minar is in Delhi then Taj-Mahal is in Agra.
- Even though it is not cloudy, it is still raining.

**Solution:**

- Let  $p$  : Milk is white.  
 $q$  : Sky is blue.  
 The symbolic form is  $p \leftrightarrow \sim q$ .

- Let  $p$  : Qutub-Minar is in Delhi.  
 $q$  : Taj-Mahal is in Agra.  
 The symbolic form is  $p \rightarrow q$ .

- Let  $p$  : It is cloudy.  
 $q$  : It is raining.  
 The symbolic form is  $\sim p \wedge q$ .

- Use quantifiers to convert the given open sentence defined on  $N$  into a true statement.

- |                 |                 |
|-----------------|-----------------|
| a. $n^2 \geq 1$ | b. $3x - 4 < 9$ |
| c. $Y + 4 > 6$  |                 |

**Solution:**

- $\forall n \in N, n^2 \geq 1$   
 It is a true statement, since all  $n \in N$  satisfy it.
- $\exists x \in N$ , such that  $3x - 4 < 9$   
 It is a true statement, since  $x = 2, 3, 4, \dots \in N$  satisfy  $3x - 4 < 9$ .
- $\exists Y \in N$ , such that  $Y + 4 > 6$   
 It is a true statement, since  $Y = 3, 4, \dots \in N$  satisfy  $y + 4 > 6$ .



- iv. Examine whether the statement pattern is a tautology, contradiction or contingency.  
 $(p \wedge \sim q) \rightarrow (\sim p \wedge \sim q)$

**Solution:**

$$(p \wedge \sim q) \rightarrow (\sim p \wedge \sim q)$$

p	q	$\sim p$	$\sim q$	$p \wedge \sim q$	$\sim p \wedge \sim q$	$(p \wedge \sim q) \rightarrow (\sim p \wedge \sim q)$
T	T	F	F	F	F	T
T	F	F	T	T	F	F
F	T	T	F	F	F	T
F	F	T	T	F	T	T

Truth values in the last column are not identical.  
 Hence, it is a contingency.

- v. Using truth table prove that  $\sim p \wedge q \equiv (p \vee q) \wedge \sim p$ .

**Solution:**

$$\sim p \wedge q \equiv (p \vee q) \wedge \sim p$$

1	2	3	4	5	6
p	q	$\sim p$	$\sim p \wedge q$	$(p \vee q)$	$(p \vee q) \wedge \sim p$
T	T	F	F	T	F
T	F	F	F	T	F
F	T	T	T	T	T
F	F	T	F	F	F

In the above truth table, the entries in the columns 4 and 6 are identical.

$$\therefore \sim p \wedge q \equiv (p \vee q) \wedge \sim p.$$

- vi. Write the dual of the following.

a. 13 is prime number and India is a democratic country

b.  $(p \wedge \sim q) \vee (\sim p \wedge q) \equiv (p \vee q) \wedge \sim (p \wedge q)$

**Ans:**

a. 13 is prime number or India is a democratic country.

b.  $(p \vee \sim q) \wedge (\sim p \vee q) \equiv (p \wedge q) \vee \sim (p \vee q)$

- vii. Write the converse, inverse and contrapositive of the statement  
 “If it snows, then they do not drive the car”

**Solution:**

Let p : It snows.

q : They do not drive the car.

$\therefore$  The given statement is  $p \rightarrow q$ .

Its converse is  $q \rightarrow p$ .

If they do not drive the car, then it snows.

Its inverse is  $\sim p \rightarrow \sim q$ .

If it does not snow, then they drive the car.

Its contrapositive is  $\sim q \rightarrow \sim p$ ,

If they drive the car, then it does not snow.

**Q.5. Answer the following questions.**

- i. Examine whether the statement pattern

$[p \rightarrow (\sim q \vee r)] \leftrightarrow \sim [p \rightarrow (q \rightarrow r)]$  is a tautology, contradiction or contingency.

**Solution:**

$$[p \rightarrow (\sim q \vee r)] \leftrightarrow \sim [p \rightarrow (q \rightarrow r)]$$

p	q	r	$\sim q$	$\sim q \vee r$	$q \rightarrow r$	$p \rightarrow (q \rightarrow r)$	$p \rightarrow (\sim q \vee r)$	$\sim [p \rightarrow (q \rightarrow r)]$	$[p \rightarrow (\sim q \vee r)] \leftrightarrow \sim [p \rightarrow (q \rightarrow r)]$
T	T	T	F	T	T	T	T	F	F
T	T	F	F	F	F	F	F	T	F
T	F	T	T	T	T	T	T	F	F
T	F	F	T	T	T	T	T	F	F



F	T	T	F	T	T	T	T	F	F
F	T	F	F	F	F	T	T	F	F
F	F	T	T	T	T	T	T	F	F
F	F	F	T	T	T	T	T	F	F

All the truth values in the last column are F. Hence, it is a contradiction.

ii. Using truth table prove that  $p \vee (q \wedge r) \equiv (p \vee q) \wedge (p \vee r)$ .

**Solution:**

$$p \vee (q \wedge r) \equiv (p \vee q) \wedge (p \vee r)$$

1	2	3	4	5	6	7	8
P	q	r	$q \wedge r$	$p \vee (q \wedge r)$	$p \vee q$	$p \vee r$	$(p \vee q) \wedge (p \vee r)$
T	T	T	T	T	T	T	T
T	T	F	F	T	T	T	T
T	F	T	F	T	T	T	T
T	F	F	F	T	T	T	T
F	T	T	T	T	T	T	T
F	T	F	F	F	T	F	F
F	F	T	F	F	F	T	F
F	F	F	F	F	F	F	F

The entries in the columns 5 and 8 are identical.

$$\therefore p \vee (q \wedge r) \equiv (p \vee q) \wedge (p \vee r)$$

iii. Without using truth table show that

$$(p \vee q) \wedge (\sim p \vee \sim q) \equiv (p \wedge \sim q) \vee (\sim p \wedge q).$$

**Solution:**

$$\begin{aligned} \text{L.H.S.} &= (p \vee q) \wedge (\sim p \vee \sim q) \\ &\equiv [(p \vee q) \wedge \sim p] \vee [(p \vee q) \wedge \sim q] && \dots[\text{Distributive law}] \\ &\equiv [(p \wedge \sim p) \vee (q \wedge \sim p)] \vee [(p \wedge \sim q) \vee (q \wedge \sim q)] && \dots[\text{Distributive law}] \\ &\equiv [F \vee (q \wedge \sim p)] \vee [(p \wedge \sim q) \vee F] && \dots[\text{Complement law}] \\ &\equiv (q \wedge \sim p) \vee (p \wedge \sim q) && \dots[\text{Identity law}] \\ &\equiv (p \wedge \sim q) \vee (\sim p \wedge q) && \dots[\text{Commutative law}] \\ &= \text{R.H.S.} \end{aligned}$$

[Note: The question has been modified.]

iv. With proper justification state the negation of

$$(p \leftrightarrow q) \vee (\sim q \rightarrow \sim r).$$

**Solution:**

$$\begin{aligned} &\sim[(p \leftrightarrow q) \vee (\sim q \rightarrow \sim r)] \\ &\equiv \sim(p \leftrightarrow q) \wedge \sim(\sim q \rightarrow \sim r) && \dots[\text{Negation of disjunction}] \\ &\equiv [(p \wedge \sim q) \vee (q \wedge \sim p)] \wedge \sim(\sim q \rightarrow \sim r) && \dots[\text{Negation of double implication}] \\ &\equiv [(p \wedge \sim q) \vee (q \wedge \sim p)] \wedge [\sim q \wedge \sim(\sim r)] && \dots[\text{Negation of implication}] \\ &\equiv [(p \wedge \sim q) \vee (q \wedge \sim p)] \wedge (\sim q \wedge r) && \dots[\text{Negation of negation}] \end{aligned}$$

v. Prepare truth table for  $(p \wedge q) \vee \sim r$ .

**Solution:**

$$(p \wedge q) \vee \sim r$$

p	q	r	$\sim r$	$p \wedge q$	$(p \wedge q) \vee \sim r$
T	T	T	F	T	T
T	T	F	T	T	T
T	F	T	F	F	F
T	F	F	T	F	T
F	T	T	F	F	F
F	T	F	T	F	T
F	F	T	F	F	F
F	F	F	T	F	T

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**Q.1. Choose the correct alternative.**

- i. A salesman receives 3% commission on the sales up to ₹ 50,000 and 4% commission on the sales over ₹ 50,000. His total income on the sale of ₹ 2,00,000 is \_\_\_\_\_.  
 (A) ₹ 6,000 (B) ₹ 7,550  
 (C) ₹ 7,500 (D) ₹ 1,500
- ii. The present worth of ₹ 11,660 due 9 months hence is ₹ 11,000. The True discount is \_\_\_\_\_.  
 (A) ₹ 660 (B) ₹ 750  
 (C) ₹ 400 (D) ₹ 5,940
- iii. If A bill of ₹ 6,395 drawn on 15th February 2015 for 10 months was discounted on 28th May 2015 at 8% p.a. interest, then legal due date is \_\_\_\_\_.  
 (A) 15<sup>th</sup> December 2015  
 (B) 15<sup>th</sup> November 2015  
 (C) 18<sup>th</sup> December 2015  
 (D) 18<sup>th</sup> November 2015
- iv. The date on which the period of the bill expires is called \_\_\_\_\_.  
 (A) Legal Due Date  
 (B) Days of grace  
 (C) The Nominal Due date  
 (D) Date of Drawing
- v. The marked price is also called as \_\_\_\_\_.  
 (A) Cost price (B) Selling price  
 (C) Invoice price (D) List price

**Answers:**

- i. (B) ii. (A) iii. (C) iv. (C)  
 v. (D)

**Hints:**

- i. Salesman earns 3% commission on the sales upto ₹ 50,000 and 4% commission on the sales over ₹ 50,000.  
 His total sales is ₹ 2,00,000.  
 $\therefore$  Commission on sales upto ₹ 50,000  
 $= 50,000 \times \frac{3}{100}$   
 $= ₹ 1,500$   
 Commission on sales over ₹ 50,000  
 $= (2,00,000 - 50,000) \times \frac{4}{100}$   
 $= 1,50,000 \times \frac{4}{100}$   
 $= ₹ 6,000$   
 Total commission = 1,500 + 6,000 = ₹ 7,500  
 $\therefore$  Total income on the sale of ₹ 2,00,000 is ₹ 7,500.

- ii. Sum due = ₹ 11,660, Present worth = ₹ 11,000.

$$n = \frac{9}{12} \text{ years}$$

$$\begin{aligned} \text{True discount} &= \text{Sum due} - \text{Present worth} \\ &= 11,660 - 11,000 \\ &= ₹ 660 \end{aligned}$$

- iii. Date of drawing = 15<sup>th</sup> February 2015  
 Period of bill = 10 months  
 Nominal due date = 15<sup>th</sup> December 2015  
 Legal due date = 18<sup>th</sup> December 2015

**Q.2. Fill in the blanks.**

- i. An agent who gives guarantee to his principal that the party will pay the sale price of goods is called \_\_\_\_\_.
- ii. The difference between the \_\_\_\_\_ and the true discount is called Banker's Gain (B.G). It is equal to the interest on true discount.
- iii. The buyer is legally allowed \_\_\_\_\_ days grace period.
- iv. The date on which the bill is drawn is called as \_\_\_\_\_.
- v. When transactions like sale, purchase, auction etc. are done through some middlemen, such middlemen are called \_\_\_\_\_.

**Answers:**

- i. Del Credere Agent
- ii. Banker's Discount
- iii. 3
- iv. date of bill
- v. an agent

**Q.3. State whether each of the following is True or False.**

- i. The trade discount is first calculated on the catalogue (list) price.
- ii. A factor is an agent who is given the possession of goods and enters a contract for sale in his/her own name.
- iii. A person can get both, trade discount and cash discount.
- iv. The sum due is also called as Cash value
- v. If only one discount is given then List price = Invoice price.

**Answers:**

- i. True      ii. True      iii. True
- iv. False      v. False

**Hints:**

- iv. The sum is also called as Face value.
- v. When only one discount is given then Invoice price = Net sellign price.



**Q.4. Solve the following problems. [3 Marks]**

**i. Find the true discount Banker's discount and Banker's gain on a bill of ₹ 4,240 due 6 months hence at 9% p.a.**

**Solution:**

Given, S.D. = ₹ 4,240,

$$n = \frac{6}{12} = \frac{1}{2} \text{ year, } r = 9\% \text{ p.a.}$$

$$\text{Since, B.D.} = \frac{\text{S.D.} \times n \times r}{100}$$

$$\therefore \text{B.D.} = \frac{4,240 \times \frac{1}{2} \times 9}{100} = \frac{4,240 \times 9}{100 \times 2}$$

$$\therefore \text{B.D.} = ₹ 190.80$$

Let true discount be ₹  $x$

Now, B.D. = T.D. + Interest on T.D. for  $\frac{1}{2}$  year at 9% p.a.

$$\therefore 190.80 = x + \left( x \times \frac{1}{2} \times \frac{9}{100} \right)$$

$$\therefore 190.80 = x + \frac{9x}{200}$$

$$\therefore 190.80 = \frac{209x}{200}$$

$$\therefore x = \frac{190.80 \times 200}{209}$$

$$\therefore x = ₹ 182.58$$

$$\therefore \text{T.D.} = ₹ 182.58$$

Also, B.G. = B.D. - T.D. = 190.8 - 182.58

$$\therefore \text{B.G.} = ₹ 8.22$$

$\therefore$  True discount, banker's discount and banker's gain are ₹ 182.58, ₹ 190.80 and ₹ 8.22 respectively.

**ii. Ananya gets salary of ₹ 15,000 per month and commission at 8% on the sales over ₹ 50,000. If she gets ₹ 17,400 in a certain month, Find the sales made by her in that month.**

**Solution:**

Ananya gets a salary of ₹ 15,000 per month and 8% on the sales over ₹ 50,000.

Let the total sales be ₹ ' $x$ '.

$$\therefore \text{Commission earned} = (x - 50,000) \times \frac{8}{100}$$

She has earned ₹ 17,400 in certain month.

$$\therefore \text{Total income} = \text{Salary per month} + \text{Commission on sale}$$

$$17,400 = 15,000 + (x - 50,000) \times \frac{8}{100}$$

$$17,400 = 15,000 + \frac{8x - 4,00,000}{100}$$

$$17,400 = \frac{15,00,000 + 8x - 4,00,000}{100}$$

$$17,400 \times 100 = 15,00,000 + 8x - 4,00,000$$

$$17,40,000 = 11,00,000 + 8x$$

$$8x = 17,40,000 - 11,00,000$$

$$8x = 6,40,000$$

$$\therefore x = 80,000$$

$\therefore$  Ananya made sales of ₹ 80,000 in that month.

**iii. Swastik Distributors allows 15% discount on the list price of washing machine. Further 5% discount is given for cash payment. Find the list price of the washing machine if it was sold for the net amount of ₹ 38,356.25.**

**Solution:**

Let the list price be ' $x$ '

Swastik Distributors gives 15% discount on list price.

$$\therefore \text{Discount} = x \times \frac{15}{100} = 0.15x$$

$$\therefore \text{Net price} = x - 0.15x = 0.85x$$

Further cash discount is given at 5%.

$$\therefore \text{Cash discount} = 0.85x \times \frac{5}{100} = 0.0425x$$

$$\therefore \text{Net selling price} = 0.85x - 0.0425x = 0.8075x$$

However, net selling price is ₹ 38,356.25.

$$\therefore 0.8075x = 38,356.25$$

$$\therefore x = \frac{38,356.25}{0.8075}$$

$$\therefore x = ₹ 47,500$$

$\therefore$  List price of washing machine is ₹ 47,500.

**iv. An agent sold a car and charged 3% commission on sale value. If the owner of the car received ₹ 48,500, find the sale value of the car. If the agent charged 2% from the buyer, find his total remuneration.**

**Solution:**

Let sale value of the car be ₹  $x$ .

Since, agent charged 3% commission on the sale value

$$\therefore \text{Agent's commission from seller} = 3\% \text{ of sale value} = 3\% \text{ of } x$$

$$= \frac{3}{100} \times x$$

$$= \frac{3x}{100}$$

$$\text{Amount received by the owner} = \text{Sale value of the car}$$

$$- \text{Agent's commission}$$

$$\therefore 48,500 = x - \frac{3x}{100}$$

$$\therefore 48,500 = \frac{97x}{100}$$

$$\therefore x = \frac{48,500 \times 100}{97}$$

$$\therefore x = ₹ 50,000$$

$\therefore$  Sale value of the car is ₹ 50,000.



$$\begin{aligned} \therefore \text{Agent's commission from seller} &= 3\% \text{ of sale value} \\ &= 3\% \text{ of ₹ } 50,000 \\ &= \frac{3 \times 50,000}{100} \\ &= ₹ 1,500 \end{aligned}$$

Also, he charged 2% commission to the buyer.

$$\begin{aligned} \therefore \text{Agent's commission from buyer} &= 2\% \text{ of sale value} \\ &= 2\% \text{ of ₹ } 50,000 \\ &= \frac{2}{100} \times 50,000 \\ &= ₹ 1,000 \end{aligned}$$

$$\begin{aligned} \therefore \text{Agent's total remuneration} &= \text{Commission from seller} \\ &\quad + \text{commission from buyer} \\ &= 1,500 + 1,000 = ₹ 2,500 \end{aligned}$$

$\therefore$  Sale value of car is ₹ 50,000 and total remuneration of the agent is ₹ 2,500.

v. **A bill of ₹ 65,700 drawn on July 10 for 6 months was discounted for ₹ 65,160 at 5% p.a. on what day was the bill discounted?**

**Solution:**

Given, Face value = ₹ 65,700

Date of drawing = 10<sup>th</sup> July

Period of the bill = 6 months

$\therefore$  Nominal due date = 10<sup>th</sup> January

Legal due date = 13<sup>th</sup> January

$r = 5\%$  p.a.

Cash value = ₹ 65,160

Since, B.D. = F.V. - C.V. = 65,700 - 65,160

$\therefore$  B.D. = ₹ 540

But, B.D. = interest on F.V. for  $n$  years at  $r\%$

$$\text{i.e., B.D.} = \frac{\text{F.V.} \times \frac{n}{365} \times r}{100}$$

$$\therefore 540 = \frac{65,700 \times n \times 5}{100 \times 365}$$

$$\therefore n = \frac{540 \times 365 \times 100}{65700 \times 5}$$

$\therefore n = 60$  days

$\therefore$  Discount is deducted for 60 days. Thus, the bill is discounted 60 days before 13<sup>th</sup> January.

Jan	Dec	Nov	Total
13	31	16	60

$\therefore$  Date of discounting the bill is 14<sup>th</sup> November.

**Q.5. Solve the following problems. [4 Marks]**

i. **A bill was drawn on 14th April for ₹ 7,000 and was discounted on 6th July at 5% p.a. The Banker paid ₹ 6,930 for the bill. What is the legal due date.**

**Solution:**

Face value (F.V.) = 7,000

Cash value (C.V.) = 6,930

$$\begin{aligned} \text{Banker's discount (B.D.)} &= \text{F.V.} - \text{C.V.} \\ &= 7,000 - 6,930 \\ &= 70 \end{aligned}$$

Date of drawing bill = 14<sup>th</sup> April  
Date of discounting bill = 6<sup>th</sup> July  
We know that,

$$\text{Banker's discount} = \frac{\text{F.V.} \times \frac{n}{365} \times r}{100}$$

$$\therefore 70 = \frac{7,000 \times \frac{n}{365} \times 5}{100}$$

$$\therefore n = \frac{70 \times 100 \times 365}{7,000 \times 5}$$

$\therefore n = 73$

To calculate period of bill, we have to calculate 73 days from date of bill discounting.

July	August	September	Total
25	31	17	73 days

$\therefore$  Legal due date = 17<sup>th</sup> September

[Note: Answer given in the Question Bank is '14<sup>th</sup> September'. However, as per our calculation it is '17<sup>th</sup> September']

ii. **A bill of ₹ 51,000 was drawn on 18th February 2010 for 9 months. It was encashed on 28th June 2010 at 5% p.a. Calculate the banker's gain and true discount.**

**Solution:**

It is given that,

Face value (F.V.) = ₹ 51,000 which is (S.D.)

Date of drawing = 18<sup>th</sup> February 2010

Date of discounting = 28<sup>th</sup> June 2010

Period of bill = 9 months

Nominal due date = 18<sup>th</sup> November 2010

Legal due date = 21<sup>st</sup> November 2010

Number of days from date of discounting bill to legal due date

June	July	Aug	Sep	Oct	Nov	Total
2	31	31	30	31	21	146 days

Rate = 5% p.a.

We know that,

$$\text{T.D.} = \frac{\text{P.W.} \times n \times r}{100}$$

$$= \frac{\text{P.W.} \times \frac{146}{365} \times 5}{100}$$

$$\therefore \text{T.D.} = 0.02 \text{ P.W.} \quad \dots(i)$$

Since, S.D. = P.W. + T.D.

$$\therefore \text{S.D.} = \text{P.W.} + 0.02 \text{ P.W.} \quad \dots[\text{From (i)}]$$

$$\therefore 51,000 = 1.02 \text{ P.W.}$$

$$\therefore \text{P.W.} = \frac{51,000}{1.02}$$

$$\therefore \text{P.W.} = 50,000$$

$$\begin{aligned} \text{Since T.D.} &= 0.02 \times \text{P.W.} \\ &= 0.02 \times 50,000 \\ &= ₹ 1,000 \end{aligned}$$



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