# CBSE
# Class XI Economics

**Time: 3 hrs** **Max. Marks: 80**

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**General Instructions:**

i. **All** questions are **compulsory**.
ii. Marks for questions are indicated against each question.
iii. Question Nos. **1–4** and **13–14** are very short answer questions carrying **1** mark each. They are required to be answered in one sentence.
iv. Question Nos. **5–6** and **15–18** are short answer questions carrying **3** marks each. Answers to them should normally not exceed **60** words each.
v. Question Nos. **7–9** and **19-20** are also short answer questions carrying **4** marks each. Answers to them should normally not exceed **70** words each.
vi. Question Nos. **10–12** and **21–23** are long answer questions carrying **6** marks each. Answers to them should normally not exceed **100** words each.
vii. Answers should be brief and to the point, and the above word limits should be adhered to as far as possible.

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## SECTION A: Introductory Microeconomics

**1.** What is meant by marginal cost? [1]

**2.** Under perfect competition, AR is
a. Downward sloping
b. Upward sloping
c. Horizontal straight line
d. Rectangular hyperbola [1]

**3.** What is meant by increasing returns to a factor? [1]

**4.** How does an increase in output affect the behaviour of total variable costs? [1]

**5.** A consumer purchases 10 units of a commodity when the price is Rs 10 per unit. He can purchase 8 units of the commodity with an expenditure of Rs 80. Calculate the price elasticity of demand using the percentage method. [3]

**6.** Explain why the chain reaction in the market price is higher than the equilibrium price. [3]

**7.** What is meant by production possibility curve? What will be the shape of the production possibility curve based on the following schedule? [4]

| ***Good X (units)*** | ***Good Y (units)*** |
|---|---|
| 0 | 10 |
| 1 | 8 |
| 2 | 5 |
| 3 | 1 |

**8.** Explain the difference between extension of demand and increase in demand. [4]

**9.** Using the MR–MC approach, find at which level of output will the producer strike equilibrium? Give reasons. [4]

| ***Output (units)*** | ***Marginal Revenue (Rs)*** | ***Marginal Cost (Rs)*** |
|---|---|---|
| 1 | 5 | 10 |
| 2 | 5 | 5 |
| 3 | 5 | 3 |
| 4 | 5 | 5 |
| 5 | 5 | 9 |

**10.** How is elasticity of demand affected by the following factors: [6]

i. Nature of commodity
ii. Availability of substitutes
iii. Variety of uses

**11.** Define supply. Explain the factors which affect supply. [6]

**12.** What can be said about products sold under perfect competition? How does it differ from products sold under monopolistic competition? [6]

## SECTION B: Statistics for Economics

**13.** Which of the following is a drawback of the direct personal interview method? [1]

a. Time consuming
b. Personal bias
c. More expensive
d. All of the above

**14.** Give the meaning of price relative. [1]

**15.** Draw a frequency polygon without histogram from the following data: [3]

| Marks in Arts | Number of Students |
|---|---|
| 0–10 | 5 |
| 10–20 | 10 |
| 20–30 | 12 |
| 30–40 | 18 |
| 40–50 | 25 |
| 50–60 | 20 |
| 60–70 | 16 |

**16.** Find the missing class intervals from the following distribution: [3]

| Classes | Frequency |
|---|---|
| Less than 20 | 14 |
| 20–60 | 12 |
| 60–100 | 9 |
| 120–200 | 6 |
| Above 200 | 3 |
| **Total** | **44** |

**17.** Is rank correlation coefficient different from Pearson correlation coefficient? Explain with reason. [3]

**18.** Construct index number of industrial production from the following data: [3]

| Industry | Number of Items | | Weight |
|---|---|---|---|
| | Base Year | Current Year | |
| Iron and steel | 45 | 108 | 15 |
| Cotton and jute | 412 | 1230 | 80 |
| Sugar | 20 | 28 | 5 |

**19.** Calculate the median from the following cumulative series data: [4]

| | |
|---|---|
| Less than 10 | 6 |
| Less than 20 | 14 |
| Less than 30 | 30 |
| Less than 40 | 50 |
| Less than 50 | 62 |
| Less than 60 | 70 |

**20.** Find the quartile deviation and the coefficient of quartile deviation of the following series: [4]

Marks of 9 students:

82, 64, 75, 48, 90, 60, 78, 88 and 52

**21.** Scores in the IPL series of an Indian and Australian batsman are given in the following data. Identify the following: [6]

i. Who is a good scorer in the IPL series?

ii. Who is a consistent player in the IPL series?

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Indian Batsman** | 82 | 18 | 73 | 52 | 70 | 74 | 58 | 42 | 38 | 34 |
| **Australian Batsman** | 30 | 68 | 32 | 10 | 48 | 98 | 101 | 18 | 8 | 92 |

**22.** The quantities purchased and prices paid by a household in the base and current years are given in the following table:

| **Product** | **Base Year** | | **Current Year** | |
|---|---|---|---|---|
| | **Price (in Rs)** | **Quantity** | **Price (in Rs)** | **Quantity** |
| **A** | 25 | 9 | 35 | 7 |
| **B** | 40 | 6 | 42 | 5 |

a. Find the additional dearness allowance for the household to compensate them for the price rise by using Laspeyres and Paasche's index number. [2]

b. Distinguish between price and quantity index. [2]

**23.** a. Does the sample method give better results than the census method? Give reasons for your answer. [3]

b. Explain sampling and non-sampling errors in detail. [3]

# CBSE
# Class XI Economics
# Solution

## SECTION A: Introductory Microeconomics

**Answer 1**

Marginal cost refers to the change in total cost per unit increase in output.

**Answer 2**

The correct answer is (c). Under perfect competition, a firm is a price taker. Accordingly, the price is fixed in the market. So, the AR curve is a horizontal straight line parallel to the x-axis.

**Answer 3**

Increasing returns to a factor refers to a situation where a proportionate increase in factor of production brings about a more than proportionate increase in output. Here, the total product increases at an increasing rate.

**Answer 4**

An increase in output affects the behaviour of total variable costs (TVC) because TVC vary directly with the level of output i.e. TVC rise with increase in the output and fall with decrease in the output.

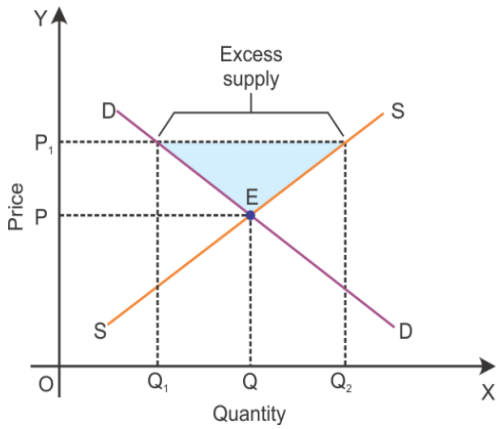
**Answer 5**

$$P_1 = \frac{80}{8} = 10 \text{ and } Q_1 = 8 \text{ units}$$

$$e_d = (-)\frac{10}{10} \times \frac{2}{0}$$

$$\therefore e_d = \infty$$

**Answer 6**



In the diagram, DD is the initial demand curve and SS is the initial supply curve. Point E is the initial equilibrium point where DD intersects SS. Correspondingly, OQ is the equilibrium quantity and OP is the equilibrium price. Suppose the market price is $P_1$ which is more than the equilibrium price. At this price, the quantity demanded is $OQ_1$ and the quantity supplied is $OQ_2$. Thus, there is excess supply in the market. This implies that there is excess stock with the producers. To clear the stock, the producers reduce the market price. This reduction in the market price increases the demand (represented by a downward movement along the demand curve). This fall in price, increase in demand and fall in supply will continue till equilibrium Point E is reached and the market is cleared.

**Answer 7**

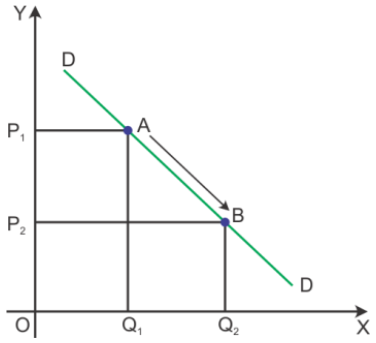
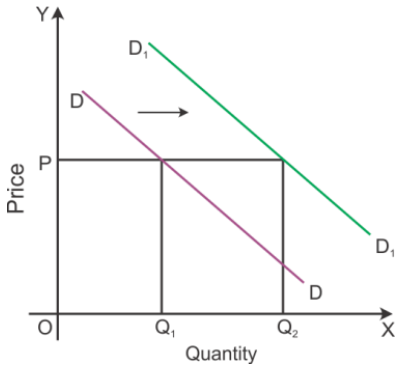
The production possibility curve refers to the curve which presents the alternative combinations of production possibilities of two goods which can be produced with the given resources and the given technology.

The slope of the production possibility curve is indicated by the marginal opportunity or the marginal rate of transformation. Opportunity cost refers to the units of one good which must be sacrificed for each additional unit of the other good.

| ***Good X (units)*** | ***Good Y (units)*** | ***Opportunity Cost*** $\frac{\Delta Y}{\Delta X}$ |
|---|---|---|
| 0 | 10 | - |
| 1 | 8 | 2 |
| 2 | 5 | 3 |
| 3 | 1 | 4 |

**Answer 8**

| ***Extension of Demand*** | ***Increase in Demand*** |
|---|---|
| It refers to a rise in demand for a commodity because of a rise in its own price. | It refers to a rise in demand for a commodity because of factors other than the price. |
| Fall in price is the only factor which leads to extension of demand. | Factors which cause increase in demand:<br>• Increase in income of the consumer<br>• Rise in price of substitute good<br>• Fall in price of complementary good<br>• Change in taste and preferences in favour of the good |

| | |
|---|---|
| Diagrammatically, it is depicted by a downward movement along the same demand curve.<br>  <br> | Diagrammatically, it is depicted by a parallel rightward shift of the demand curve.<br>  <br> |

**Answer 9**

According to the MR–MC approach, a consumer strikes equilibrium at the point where the following two conditions are met:

a. MR is equal to MC
b. MC is rising

The two conditions are met when 4 units of output are produced. At this point, MR and MC are equal to 5.

MR is equal to MC at 2 units of output as well. However, at this point, MC is falling. So, this is not the equilibrium point.

**Answer 10**

a. ***Nature of commodity***: Elasticity of demand of a commodity depends on the nature of the commodity. Necessities have low price elasticity, i.e. the quantity demanded of necessities does not change much with the change in the price of the commodity. On the other hand, luxuries have high price elasticity, i.e. the quantity demanded is highly responsive to change in price.
b. ***Availability of substitutes***: If a commodity has a large number of close substitutes, then the demand for it would be relatively more elastic. This is because in case of a rise in price, a consumer can easily shift the demand towards the substitutes, thereby highly reducing the quantity demanded.
c. ***Variety of uses***: If a commodity can be put to a large variety of uses, then it will have relatively elastic demand. This is because in case of a rise in price, the use for unnecessary purposes can be reduced, and thereby the total quantity can be reduced.

**Answer 11**

Supply of a commodity refers to the various quantities of the commodity which the producers are willing to offer for sale at different prices.

Factors which affect supply:

i. ***Price of the commodity***: Quantity supplied of a commodity is directly related to its price. Higher the price, higher is the quantity supplied and *vice versa*.
ii. ***Price of related goods***: Supply of a commodity also depends on the price of the related goods. For instance, if the price of the substitute good rises, the supply of the concerned good would fall and *vice versa*. This is because the producer would be willing to supply more of the substitute good.
iii. ***Number of firms***: A rise in the number of firms in the industry would lead to arise in the total supply and *vice versa*.
iv. ***Price of raw material and other factors of production***: If the price of raw material or other factors of production increases, then this implies an increase in the cost of production. Accordingly, the firms would be willing to supply more quantity of the commodity at the existing price.
v. ***Government policies***: Government policies related to taxes and subsidies also affect the quantity supplied of a commodity. For instance, an increase in taxes may lead to a reduction in the supply of the commodity.

**Answer 12**

Under perfect competition, products sold by firms are completely homogeneous. In other words, they are exactly identical to each other in terms of size, shape and colour. Accordingly, the products of various firms are perfect substitutes of each other. Also, there is no need for any kind of selling costs or advertising costs.

The presence of homogeneous products has the following implications:

i. No single firm can control the market prices. There prevails uniform market price.
ii. There is absolutely zero product differentiation.
iii. Because of homogeneity of products, the market price which prevails is the minimum possible.

As against this, under monopolistic competition, there is product differentiation. Product differentiation means that the products sold by different firms are only close substitutes of each other. The products serve the same purpose but differ in terms of certain features such as size, colour, packaging and certain ingredients.

Product differentiation under monopolistic competition has the following implications:

i. Firms are able to exercise some control over the market price.
ii. Because a large number of close substitutes are available in the market, the price elasticity of demand is very high.
iii. A large variety or choice of products is available to consumers.

## SECTION B: Statistics for Economics

**Answer 13**

The correct option is (d). Direct personal investigation is costly, time consuming and highly prone to personal bias of the investigator. This method is used only when the researcher possesses appropriate skills and training to conduct a face-to-face interview with respondents.

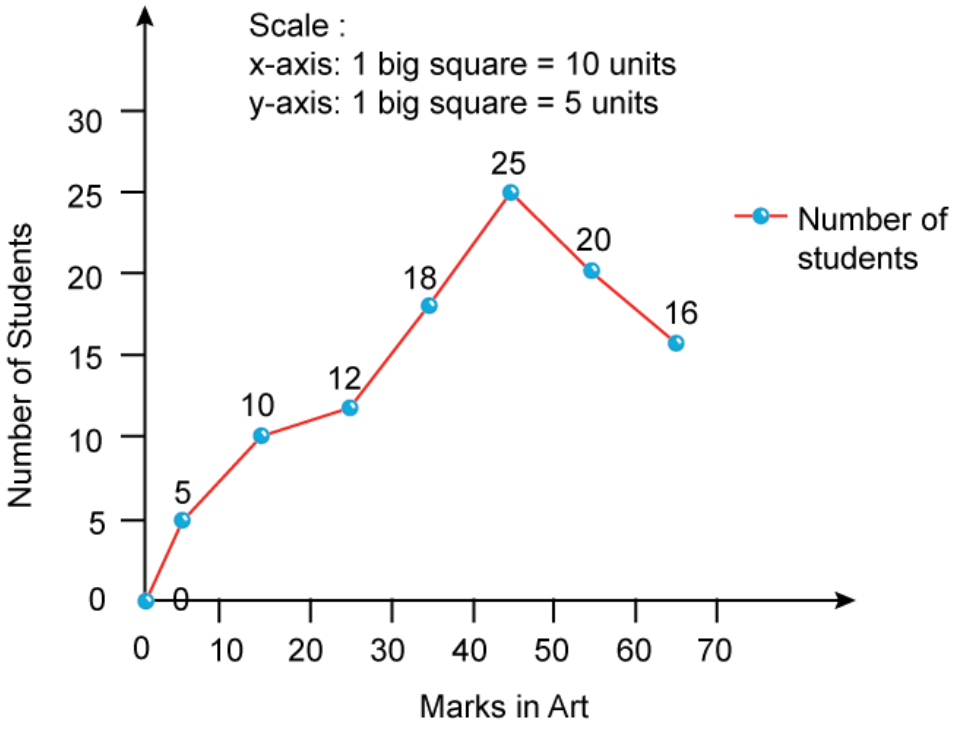
**Answer 14**

Price relative means the percentage changes in current prices with reference to base year prices.

$$R = \frac{p_1}{p_2} \times 100$$

**Answer 15**

**Frequency Polygon without Histogram**




**Answer 16**

In the given distribution, the lower limit of the first class interval and the upper limit of the last class interval are missing. Here, the width of the 2nd, 3rd, 4th class intervals is 40, 60 and 80, respectively. This shows that the width is increasing by 20 in each class interval.
Magnitude of a class interval ($i$) = Upper limit ($l_2$) – Lower limit ($l_1$)
Magnitude of the first class interval ($i$) = 20 – 0 = 20
Magnitude of the last class interval ($i$) = 300 – 200 = 100

Thus, the lower limit of the first class is 20 − 20 = 0 and the upper limit of the last class is 200 + 100 = 300.

**∴ Lower limit of first class = 0**

**Upper limit of last class = 300**

**Answer 17**

Yes, rank correlation coefficient differs from Pearson correlation coefficient in the following ways:

i. Karl Pearson's method of correlation measures correlation for ***quantitative data*** such as income and savings of the household, while Spearman's method of rank correlation measures correlation for ***qualitative data*** such as intelligence and beauty of a person.

ii. Karl Pearson's method of correlation computes the ***deviations from actual or assumed mean*****,** but Spearman's method of rank correlation measures the ***differences in rank***.

iii. Karl Pearson's method of correlation has ***high significance to extreme values*** as it is based on actual values, while Spearman's method has ***low significance to extreme values*** as it provides them rank.

**Answer 18**

Index of Industrial Production (IIP):

| Item | $q_0$ | $q_1$ | $R = \frac{q_1}{q_0} \times 100$ | W | RW |
|---|---|---|---|---|---|
| Iron and steel | 45 | 108 | 240 | 15 | 3600 |
| Cotton and jute | 412 | 1230 | 298.54 | 80 | 23883.2 |
| Sugar | 20 | 28 | 140 | 5 | 700 |
| | | | | $\sum W = 100$ | $\sum RW = 28183.2$ |

$$IIP = \frac{\sum RW}{\sum W}$$

$$IIP = \frac{28183.2}{100}$$

$$\therefore IIP = 281.83$$

**Answer 19**

First, the given cumulative frequency is converted to simple frequency to find the frequency of the median class as follows:

| Age (in years) | No. of people Frequency (f) | Cumulative frequency (c.f.) |
|---|---|---|
| 0–10 | 6 | 6 |
| 10–20 | 8 | 14 |
| 20–30 | 16 | **30** |
| **30–40** | **20** | 50 |
| 40–50 | 12 | 62 |
| 50–60 | 8 | 70 |
| | **N = 70** | |

Median = size of $\left(\frac{N}{2}\right)^{th}$ item

Median = size of $\left(\frac{70}{2}\right)$ = size of $35^{th}$ item

35th item lies in cumulative frequency 37 which corresponds to the class interval 30-40.

Thus, median class is 30-40.

$$\text{Median} = l_1 + \frac{\frac{N}{2} - \text{c.f.}}{f} \times i$$

$$= 30 + \frac{35-30}{20} \times 10$$

$\therefore$ Median = 32.5

**Answer 20**

Arranging the data in the ascending order:

48, 52, 60, 64, 75, 78, 82, 88 and 90

N = 9

$Q_1 = \text{Size of } \left(\frac{9+1}{4}\right)^{th} = \text{size of } 2.5^{th} \text{ item}$

$Q_1 = \text{Size of } 2^{nd} \text{ item} + 0.5 \text{ (size of } 3^{rd} \text{ item - size of } 2^{nd} \text{ item)}$

$Q_1 = 52 + 0.5\,(60 - 52)$

$\therefore Q_1 = 56$

$Q_3 = \text{Size of } 3\left(\frac{9+1}{4}\right)^{th} = \text{size of } 7.5^{th} \text{ item}$

$Q_3 = \text{Size of } 7^{th} \text{ item} + 0.5 \text{ (size of } 8^{th} \text{ item} - \text{size of } 7^{th} \text{ item)}$

$Q_3 = 82 + 0.5\ (88 - 82)$

$\therefore Q_3 = 85$

$QD = \frac{Q_3 - Q_1}{2}$

$QD = \frac{85 - 56}{2}$

$\therefore \boxed{QD = 14.5}$

$\text{Coefficient of QD} = \frac{Q_3 - Q_1}{Q_3 + Q_1}$

$\text{Coefficient of QD} = \frac{85 - 56}{85 + 56}$

$\text{Coefficient of QD} = \frac{29}{141}$

$\therefore \boxed{\text{Coefficient of QD} = 0.205}$

**Answer 21**

**Indian batsman:**

| $X_1$ | $x_1 = X_1 - 54.1$ | $x_1^2$ |
|---|---|---|
| 82 | 27.9 | 778.41 |
| 18 | −36.1 | 1303.21 |
| 73 | 18.9 | 357.21 |
| 52 | −2.1 | 4.41 |
| 70 | 15.9 | 252.81 |
| 74 | 19.9 | 396.01 |
| 58 | 3.9 | 15.21 |
| 42 | −12.1 | 146.41 |
| 38 | −16.1 | 259.21 |
| 34 | −20.1 | 404.01 |
| $\Sigma X_1 = 541$ | | $\Sigma x_1^2 = 3916.9$ |

$$\bar{X} = \frac{\sum X_1}{n_1} = \frac{541}{10}$$

$\therefore \boxed{\bar{X} = 54.1}$

$$\sigma = \sqrt{\frac{\sum x_1^2}{n_1}} = \sqrt{\frac{3916.9}{10}}$$

$\therefore \boxed{\sigma = 19.79}$

$$\text{Coefficient of Variation} = \frac{\sigma}{\bar{X}} \times 100 = \frac{19.79}{54.1} \times 100$$

$\therefore \boxed{\text{Coefficient of Variation} = 36.58}$

**Australian batsman:**

| $X_2$ | $x_1 = X_1 - 50.5$ | $x_2^2$ |
|---|---|---|
| 30 | −20.5 | 420.25 |
| 68 | 17.5 | 306.25 |
| 32 | −18.5 | 342.25 |
| 10 | −40.5 | 1640.25 |
| 48 | −2.5 | 6.25 |
| 98 | 47.5 | 2256.25 |
| 101 | 50.5 | 2550.25 |
| 18 | −32.5 | 1056.25 |
| 8 | −42.5 | 1806.25 |
| 92 | 41.5 | 1722.25 |
| $\Sigma X_2 = 505$ | | $\Sigma x_2^2 = 12106.5$ |

$$\bar{X} = \frac{\sum X_2}{n_2} = \frac{505}{10}$$

$\therefore \boxed{\bar{X} = 50.5}$

$$\sigma = \sqrt{\frac{\sum x_2^2}{n_2}} = \sqrt{\frac{12106.5}{10}}$$

$\therefore \boxed{\sigma = 34.79}$

$$\text{Coefficient of Variation} = \frac{\sigma}{\bar{X}} \times 100 = \frac{34.79}{55} \times 100$$

$\therefore \boxed{\text{Coefficient of Variation} = 63.25}$

i. **Good scorer:** The Indian batsman is a good scorer as his mean runs is 54.1 which is higher than the Australian batsman whose mean runs is 50.5.
ii. **Consistent player:** The Indian batsman is a consistent player as his coefficient of variation is 36.43, which is lower than the Australian batsman whose coefficient of variation is 63.25.

**Answer 22**

**a.**

| **Product** | $p_0$ | $q_0$ | $p_1$ | $q_1$ | $p_0 q_0$ | $p_0 q_1$ | $p_1 q_0$ | $p_1 q_1$ |
|---|---|---|---|---|---|---|---|---|
| A | 25 | 9 | 35 | 7 | 225 | 175 | 315 | 245 |
| B | 40 | 6 | 42 | 5 | 240 | 200 | 252 | 210 |
| | | | | | $\sum p_0 q_0 = 465$ | $\sum p_0 q_1 = 375$ | $\sum p_1 q_0 = 567$ | $\sum p_1 q_1 = 455$ |

Laspeyres' index number:

$$\frac{\sum p_1 q_0}{\sum p_0 q_0} \times 100 = \frac{567}{465} \times 100$$

$$= 121.93$$

Paasche's index number:

$$\frac{\sum p_1 q_1}{\sum p_0 q_1} \times 100 = \frac{455}{375} \times 100$$

$$= 121.33$$

The price index number is 121.93 in the current year as compared to 100 in the base year. This implies that compared to the base year, the prices have risen by 21.93% (121.93 – 100). Therefore, additional dearness allowance for the household will be 21.93.

**b.**

| **Price Index** | **Quantity Index** |
|---|---|
| i. It measures general changes in prices between current year and base year. | i. It measures average change in quantities and assists to compare changes in physical quantity of commodities produced and consumed. |
| ii. Two methods to calculate Price Index Number are<br>• Simple aggregative method<br>• Simple average of price relative method | ii. Two methods to calculate Quantity Index Number are<br>• Weighted average of price relative method<br>• Weighted aggregative method |
| iii. It is also known as unweighted index number. | iii. It is also known as weighted index number. |
| iv. It considers the prices of the commodity of both base year and current year. | iv. It considers the weights of the commodity assigned according to quantity. |

**Answer 23**

a. The sample method gives better results as compared to the census method because

i. ***Less costly***: The sample method is less costly as only some items of the population are studied rather than all the items of the population.

ii. ***Time saving***: This method saves a lot of time and energy of the investigator as fewer items of the population are studied.

iii. ***Easy identification of errors*****:** Errors under the sampling method can be easily identified and rectified as the number of items is small.

iv. ***Feasible for large population****:* When the size of the population is large, the sampling method is feasible as the cost of conducting the census becomes high.

v. ***Less non-sampling errors:*** The number of non-sampling errors in the sampling method is less because a limited number of items are studied.

b. Statistical errors are divided into sampling and non-sampling errors.

i. ***Sampling errors*** are relevant to the number of sample and its nature pertaining to the study area. If the number of samples chosen for the study is small in size or the nature of the sample is not responding appropriately, then the computed value may differ from the actual value of the parameter. This is called sampling error. Here, the magnitude of the error can be minimised by taking a large sample size for the study. For example, if the computed value of the parameter is 36 and the true value of the parameter is 48, then

Sampling error = True value − Computed value

= 48 − 36 = 12

ii. ***Non-sampling errors*** are relevant to the collection of data. These errors may occur in the following manner:

- Error of measurement may occur if the investigator commits error in measuring the sample such as difference in scale of measurement and procedure followed in rounding the arrived value.
- Error of non-response may occur if the respondent does not provide accurate information for the study.
- Error of misinterpretation may occur if the respondent does not interpret the question given in the questionnaire.
- Error of sampling bias may occur if the concerned study area has a problem in including certain members for the sample.

Although the sample size is large, the non-sampling errors cannot be minimised by the investigator. So, it is clear that non-sampling errors are more serious than sampling errors in the research.