

N-1349

Total No. of Pages : 3

Seat No.	
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B.Sc. (Part-II) (Semester-III) (New) Examination, June - 2015
STATISTICS
Statistical Methods-I (Paper-VI)
Sub. Code : 63606

Day and Date : Thursday, 04-06-2015
Time : 12.00 noon to 2.00 p.m.

Total Marks : 50

- Instructions :
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.

Q1) Choose the correct alternative:

[10]

- a) For fraction defectives which of the following chart is suitable.
- i) \bar{X} chart
 - ii) k chart
 - iii) d chart
 - iv) p-chart
- b) The best average in the construction of index number is _____.
- i) a.m.
 - ii) h.m.
 - iii) g.m.
 - iv) none of these
- c) The variation due to festivals by _____.
- i) seasonal variation
 - ii) cyclical variation
 - iii) irregular variation
 - iv) none of these
- d) STDR for standard population is _____.
- i) TFR
 - ii) SDR
 - iii) CDR
 - iv) NRR
- e) Base year of index number is _____.
- i) any convenient year
 - ii) preceding year
 - iii) succeeding year
 - iv) year of stability

P.T.O.

- f) If μ & σ are the process mean and s.d. then the control limits _____ are known as natural control limits.
- i) $\mu \pm \sigma$
 - ii) $\mu \pm 2\sigma$
 - iii) $\mu \pm 3\sigma$
 - iv) none of these
- g) Population for intercensal year (at time t) can be estimated by the formula _____.
- i) $\hat{P}_t = P_o + (B - D) + (I - E)$
 - ii) $\hat{P}_t = (B - D) + (I - E)$
 - iii) $\hat{P}_t = P_o [(B - D) + (I - E)]$
 - iv) None of these
- h) If period of cycle is an odd number, then _____ method can be used.
- i) progressive average
 - ii) moving average
 - iii) least square method
 - iv) neither (i) nor (ii)
- i) Paache's price index number uses weight as _____.
- i) base year quantity
 - ii) current year quantity
 - iii) a.m. of base year quantity and current year quantity
 - iv) g.m. of current year quantity and base year quantity.
- j) If $NRR < 1$, then population is _____.
- i) increasing
 - ii) decreasing
 - iii) steady
 - iv) none of these

Q2) Attempt Any Two of the following:

- a) Define:
 - i) Laspeyre's Index Number.
 - ii) Paasche's Index Number.
 - iii) Fisher's Index Number.

State and prove the relation between above index numbers.

- b) Explain the construction of \bar{X} and R charts in production process when standards are not given.
- c) State various measures of mortality rates and explain them.

Q3) Attempt Any Four of the following:

[20]

- a) Explain the terms 'chance cause' and 'assignable cause'.
- b) What is Shewhart's control chart? Explain its construction.
- c) Define time series with an illustration. State components of time series.
- d) Define GFR and GRR used in demography.
- e) Describe in brief progressive average method to determine trend.
- f) Show that Fisher's index number lies between Laspeyre's and Paasche's index numbers.

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B.Sc.(Part -II) (Semester-III)
Examination, December- 2015
STATISTICS
Statistical Methods-I (Paper VI)
Sub.Code: 63606

Day and Date : Saturday, 05- 12 - 2015

Total Marks :50

Time : 12.00 noon to 2.00p.m.

- Instructions : 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q1) Choose the most correct alternative:

[10]

- i) chance or random variation in the manufactured product is-----.
- | | |
|-----------------|---------------------|
| a) controllable | b) not controllable |
| c) both a and b | d) none of these |
- ii) If $NRR > 1$ then total population-----
- | | |
|--------------|--------------------|
| a) decreases | b) increases |
| c) double | d) remain as it is |
- iii) Time series analysis helps to -----
- | | |
|-------------------------------|-------------------------------|
| a) make predictions | b) compare two or more series |
| c) know behaviour of business | d) all of these |
- iv) Index number are called as---
- | | |
|-------------------------|-----------------------|
| a) economic thermometer | b) economic barometer |
| c) social barometer | d) social thermometer |
- v) Points falling above UCL is indication of-----
- | | |
|--------------------------------------|----------------------------------|
| a) increase in variation | b) increase in mean |
| c) presence of some assignable cause | d) presence of some chance cause |

P.T.O.

- vi) Secular trend in time series is of nature-----
- | | |
|---------------|-----------------|
| a) increasing | b) decreasing |
| c) stagnant | d) all of these |
- vii) An index number is said to satisfy time reversal test if -----
- | | |
|--------------------------------------|-------------------------------|
| a) $P_{01} \times P_{01} = P_{10}^2$ | b) $P_{01} = P_{10}$ |
| c) $P_{01} \times P_{10} = 1$ | d) $P_{01} \times Q_{10} = 1$ |
- viii) ----- gives future mothers replaced by present women in the reproduction age group in the population.
- | | |
|--------|--------|
| a) GRR | b) NRR |
| c) TFR | d) CBR |
- ix) STDR for standard population is -----
- | | |
|--------|--------|
| a) CDR | b) TFR |
| c) SDR | d) NRR |
- x) Index numbers measure the average
- | | |
|------------------------|--------------------------|
| a) relative changes | b) absolute changes |
| c) percentage increase | d) proportionate changes |

Q2) Attempt any two of the following:

[20]

- a) Explain the procedure of setting a control chart for fraction defectives in a production process with fixed sample size when standards are not given.
- b) Explain the different components of a time series with illustrations.
- c) Discuss the various problems involved in the construction of index number.

Q3) Attempt any four of the following:

- a) Define consumer price index number and explain its construction by family budget method.
- b) Discuss the importance and utility of time series analysis in various fields.
- c) What is Shewhart's control chart? Explain its construction.
- d) Distinguish between TFR and GRR.
- e) Discuss the criteria for detecting lack of control.
- f) Write a note on Specific Death Rate (SDR).



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B.Sc. (Part - II) (Semester - III) Examination, May - 2017

STATISTICS

Statistical Methods - I (Paper - VI)

Sub. Code : 63606

Day and Date : Monday, 29-05-2017

Total Marks : 50

Time : 12.00 noon to 2.00 p.m.

- Instructions :**
- 1) All questions are Compulsory.
 - 2) Figures to the right indicates full marks.

Q1) Choose the most correct alternative:

[10]

- a) A time series is a set of data recorded _____.
- i) Periodically
 - ii) At time or space interval
 - iii) Both (i) and (ii)
 - iv) Neither (i) or (ii)
- b) Variation in the items produced in a factory may be due to _____.
- i) Assignable causes
 - ii) Chance causes
 - iii) Both (i) and (ii)
 - iv) None of these
- c) Combined changes in prices and quantities are measured by _____.
- i) Price index number
 - ii) Quantity index number
 - iii) Value index number
 - iv) None
- d) Purchasing power of money decreases if _____.
- i) Price index increases
 - ii) Price index decreases
 - iii) Depends on type of index number used
 - iv) Depends on type of quantity index used

- e) The long term regular movement in a time series is called as _____.
- i) Seasonal variation ii) Cyclical variations
iii) Secular trend iv) Irregular variations
- f) A production process is said to be in state of statistical control if it is governed by _____.
- i) Assignable causes ii) Chance causes
iii) Both (i) and (ii) iv) None of these
- g) Index numbers are expressed in _____.
- i) Percentages ii) Ratios
iii) Terms of absolute value iv) All of these
- h) The Schewart's Control charts are meant _____.
- i) To detect whether process is under control or not
ii) To find assignable causes
iii) To reflect the selection of samples
iv) All of these
- i) In vital statistics the rates of vital events are measured in _____.
- i) Per million ii) Per thousand
iii) Percentages iv) Fraction
- j) Mortality or health conditions of persons in two cities are efficiently compared by using _____.
- i) CDR ii) SDR
iii) STDR iv) None of these

Q2) Attempt any two of the following:

[20]

- a) What is time series? State four components of time series. Describe any one of them.
- b) Explain the control chart for number of defects when standards are not given, Give two situations where such a chart can be used.
- c) Define, GRR and NRR. How are they computed? Give their interpretations.

D-623
[20]

Q3) Attempt any four of the following:

- a) Distinguish between simple and weighted index numbers.
- b) Discuss the criteria for detecting lack of control.
- c) Describe moving average method for determining trend.
- d) Explain the construction of control chart for process average.
- e) Explain the terms GFR and TFR.
- f) Define Fishers price index number. Show that it is geometric mean of Laspeyre's and Paasche's price index number.



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B.Sc. (Part - II) (Semester - III) Examination, November - 2017

STATISTICS

Statistical Methods-I (Paper-VI)

Sub. Code : 63606

Day and Date : Monday, 13 - 11 - 2017

Total Marks : 50

Time : 12.00 noon to 2.00 p.m.

- Instructions :
- 1) All questions are compulsory.
 - 2) Figures to the right in the bracket indicate full marks.

Q1) Choose the correct alternative: [10]

- a) In time series analysis the method of simple averages is used to study _____.
- i) Trend
 - ii) Seasonal variations
 - iii) Cyclical variations
 - iv) Irregular variations
- b) The variance of fraction defectives is obtained by the variance of _____ distributions.
- i) Poisson
 - ii) Hyper geometric
 - iii) Binomial
 - iv) Geometric
- c) Specific death rate may be calculated according to _____.
- i) Age
 - ii) Sex
 - iii) Religion
 - iv) Any of (i), (ii), (iii)
- d) Base year of index number is _____.
- i) Any convenient year
 - ii) Preceding year
 - iii) Year of stability
 - iv) Succeeding year
- e) The weighted average of SDR is _____.
- i) CDR
 - ii) GFR
 - iii) STDR
 - iv) CBR
- f) Secular trend in time series is of nature _____.
- i) Increasing
 - ii) Decreasing
 - iii) Stagnant
 - iv) All of these

P.T.O.

- g) Index numbers are called as _____.
- i) Economic barrometer ii) Economic thermometer
 iii) Social barrometer iv) Social thermometer
- h) The control limits are _____.
- i) Always equidistant from central limit
 ii) Equidistant from central limit in \bar{X} -chart
 iii) Equidistant from central limit in R-chart
 iv) Equidistant from central limit if the process is under statistical control
- i) If all four components of time series operate independently, then we use _____.
- i) Additive model ii) Multiplicative model
 iii) Exponential model iv) None of these
- j) If $NRR = 1$, then the total population _____.
- i) Decreases ii) Increases
 iii) Doubles iv) Remains as it is

Q2) Attempt any two of the following:

[10+10]

- a) Define time reversal test and factor reversal test for index numbers. Show that fisher's price index number statistics FRT.
- b) Define
- i) CDR
 ii) CBR
 iii) SDR
 iv) GRR
 v) NRR
- c) Explain the construction of mean chart when
- i) Standards are given
 ii) Standards are not given

C-701

[5+5+5+5]

Q3) Answer any four of the followings:

- a) Distinguish between chance and assignable causes of variations.
- b) Explain unweighted index number by using average of price relative method by using a.m. and g.m.
- c) Discuss the criteria for detecting lack of control.
- d) Write a note on cyclical variations in time series.
- e) Explain the difference between Laspeyre's and Paasche's index numbers.
- f) What is a time series? Give three illustrations in different fields.



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B.Sc. (Part - II) (Semester - III) Examination, May - 2018
STATISTICS
Statistical Methods - I (Paper - VI)
Sub. Code: 63606

Total Marks : 50

Day and Date : Tuesday, 29 - 05 - 2018

Time : 12.00 noon. to 2.00 p.m.

- Instructions :
- 1) All questions are compulsory.
 - 2) Figures to the right in the bracket indicate full marks.

Q1) Choose the correct alternative.

[10]

- a) Sum of monthly seasonal indices is _____.
- i) 1200
 - ii) 400
 - iii) 700
 - iv) 0
- b) If μ and σ are process mean and s.d. then shewart suggested the control limits _____.
- i) $\mu \pm \sigma$
 - ii) $\mu \pm 2 \sigma$
 - iii) $\mu \pm 3 \sigma$
 - iv) $\mu \pm 4 \sigma$
- c) STDR for standard population is _____.
- i) CDR
 - ii) TFR
 - iii) SDR
 - iv) NRR
- d) If price index number is 135%, then the interpretation is _____.
- i) price of each commodits increases by RP 35
 - ii) price of each commodits increases by 35%
 - iii) average rise in prices is by RP 35
 - iv) average rise in prices is by 35%

P.T.O.

- e) Moving averages remove the cyclical variations if _____.
- the period is even
 - the period is odd
 - the average is weighted
 - the period is same as that of cycle
- f) A production process is said to be in state of Statistical Control if it is governed by _____.
- assignable causes
 - chance causes
 - both (i) and (ii)
 - none of these
- g) Population for intercensal year (t) is estimated by the formula _____.
- $P_t = P_0 + (B - D) + (I - E)$
 - $P_t = (B - D) + (I - E)$
 - $P_t = P_0 + (B - D) \times (I - E)$
 - $P_t = P_0 + (B - D) - (I - E)$
- h) Laspeyris index numbers suffer from _____.
- up ward bias
 - down ward bias
 - either up ward or downward bias
 - no bias
- i) If $NRR > 1$, then we say that there is _____ in the population.
- decrease
 - increase
 - non increase or decrease
 - all of these
- j) Time series analysis helps to _____.
- make predictions
 - compare two or more series
 - know behaviour of business series
 - all of these

Q2) Attempt any two of the following:

- a) Discuss the various problems involved in the construction of index numbers.
- b) What is secular trend? What are the methods for measuring trend? Describe any one of them.
- c) Explain the procedure of setting a control chart for fraction defective in a production process with fixed sample size when standards are not given.

Q3) Attempt any four of the following:

[5+5+5+5]

- a) Show that Fisher's Index Number Satisfies factor reversal test (FRT).
- b) Write a note on Specific Death Rate (SDR).
- c) Define :
 - i) CBR
 - ii) TFR
- d) Discuss the criteria for detecting lack of control.
- e) Define cost of living index number and explain its construction by Aggregate Expenditure Method.
- f) Distinguish between seasonal variations and cyclical variations.

