

The CES College of Arts and Commerce Cuncolim Salcete Goa
SYBCOM III Semester End Examination, October/November 2018

Business Statistics

Marks: 80

Duration: 2hrs

Date: 26/10/2018

Time: 10.00.a.m. to 12.00 noon

Instructions: 1) Attempt all questions.

2) Figure to the right indicates full marks.

3) Use of non-programmable calculator is allowed.

4) Log tables and graph papers will be supplied on request.

Q1: Attempt the following:

a) Explain the importance of Statistics. (3mks)

b) Consider the following data: (6mks)

| | | | | | | | |
|----------------|-------|-------|-------|-------|-------|-------|-------|
| Marks | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 |
| No of Students | 10 | 12 | 13 | 22 | 20 | 7 | 4 |

Draw i) Frequency Polygon & ii) Histogram.

c) The following is the data about daily wages of workers. (7mks)

| | | | | | | |
|--------------------|---------|---------|---------|---------|---------|---------|
| Daily Wages(in Rs) | 200-250 | 250-300 | 300-350 | 350-400 | 400-450 | 450-500 |
| No of Workers | 1 | 3 | 8 | 12 | 7 | 5 |

Find i) Mean Salary & ii) Modal Salary.

OR

Q1: Attempt the following:

x) Discuss the methods of collecting primary data. (3mks)

y) The following data give the age distribution of 60 boys. (6mks)

| | | | | | | |
|----------------|-------|-------|-------|-------|-------|-------|
| Age (in years) | 10-12 | 12-14 | 14-16 | 16-18 | 18-20 | 20-22 |
| No. of Boys | 5 | 9 | 15 | 17 | 10 | 4 |

Draw Cumulative frequency Curves and answer

1) No of boys between 13 and 17 years.

2) The number of boys less than 15 years.

3) The number of boys more than 15 years.

z) Consider the following data: (7mks)

| | | | | | | |
|------|-------|-------|-------|-------|-------|-------|
| C.I | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 |
| Freq | 5 | 10 | 14 | 21 | 13 | 6 |

Find i) Median & ii) Mode.

Q2: Attempt the following:

a) Bring out the requirements of a good measure of central tendency. (3mks)

b) Calculate the quartile deviation for the following data: (6mks)

| | | | | | | |
|---------------|-------|-------|-------|-------|-------|-------|
| Age(in years) | 16-20 | 20-24 | 24-28 | 28-32 | 32-36 | 36-40 |
| No of Women | 200 | 250 | 400 | 300 | 250 | 100 |

c) Consider the following data: (7mks)

| | | | | | | | | |
|--------------|------|------|------|------|------|------|------|------|
| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| Price(in Rs) | 10 | 15 | 18 | 21 | 20 | 24 | 28 | 31 |

Find Price index numbers for all years with base 2012

OR

QII: Attempt the following:

x) Explain Harmonic Mean and its use. (3mks)

y) Calculate the mean deviation from mode for the following data: (6mks)

| | | | | | | | |
|-----------------|------|-------|-------|-------|-------|-------|-------|
| Weight (in kg) | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 |
| No of Childrens | 2 | 10 | 20 | 5 | 4 | 3 | 2 |

z) Consider the following data: (7mks)

| | | | | | | | | |
|-----------|------|------|------|------|------|------|------|------|
| Year | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| Index Nos | 100 | 120 | 135 | 150 | 170 | 190 | 210 | 220 |

Find chain base index numbers.

Q3: Attempt the following:

a) The following data give the income distribution of 100 families. Draw a frequency curve. (3mks)

| | | | | | | |
|----------------|---------|---------|---------|---------|---------|---------|
| Income (in Rs) | 100-200 | 200-300 | 300-400 | 400-500 | 500-600 | 600-700 |
| No of families | 10 | 20 | 50 | 10 | 5 | 5 |

b) Fit a linear trend by method of least square for the following data: (6mks)

| | | | | | |
|-----------------------------|------|------|------|------|------|
| Year | 2011 | 2012 | 2013 | 2014 | 2015 |
| Prod ⁿ (in tons) | 15 | 24 | 31 | 39 | 41 |

c) Consider the following data: (7mks)

| | | | | | | |
|------|-------|-------|-------|--------|---------|---------|
| C.I: | 20-40 | 40-60 | 60-80 | 80-100 | 100-120 | 120-140 |
| F | 4 | 10 | 17 | 21 | 15 | 6 |

Find the Karl Pearsons Coefficient of Skewness.

OR

QIII: Attempt the following:

x) Distinguish between one dimensional and two dimensional diagrams. (3mks)

y) Consider the following data: (6mks)

| | | | | | | |
|---------------------|------|------|------|------|------|------|
| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| Sales (Rs in Lakhs) | 24 | 28 | 31 | 35 | 40 | 39 |

Fit a second degree trend curve for the above data and estimate the sale in 2017. (7mks)

z) Consider:

| | | | | | |
|-----|---|---|---|---|---|
| x : | 0 | 2 | 4 | 6 | 8 |
| f : | 2 | 3 | 5 | 3 | 2 |

Find Bowleys Coefficient of Skewness.

Q4: Attempt the following:

a) What is a time series? Give its components. (3mks)

b) Find the Standard Deviation for the following: (6mks)

| | | | | | |
|-----|---|---|---|---|---|
| x : | 0 | 2 | 4 | 6 | 8 |
| f : | 2 | 3 | 5 | 6 | 4 |

c) Consider the following time series. (7mks)

| | | | | | | | | |
|------|------|------|------|------|------|------|------|------|
| Year | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Freq | 35 | 38 | 42 | 45 | 42 | 41 | 50 | 48 |

Find the trend by 3 yearly moving averages.

OR

QIV: Attempt the following:

x) Explain multiplicative model of time series. (3mks)

y) The following is the data about weight (in kg) of workers of factory xyz. (6mks)

| | | | | | | | | | |
|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Weight (in kg) | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 | 80-85 | 85-90 |
| No of Workers | 4 | 8 | 12 | 21 | 26 | 15 | 11 | 6 | 6 |

Find Coefficient of Variation. *centered*

z) Estimate the trend values using the data given below by taking a four yearly moving average: (7mks)

| | | | | | | | | | | | |
|---------|------|------|------|------|------|------|------|------|------|------|------|
| Year : | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| Value : | 25.2 | 27.3 | 28.4 | 29.7 | 30.4 | 32.8 | 33.4 | 30.5 | 30.7 | 32 | 36 |

Q5: Attempt the following:

a) Explain cumulative frequency distribution. (3mks)

b) Calculate Standard Deviation and Quartile Deviation for the following distribution of the number of particles emitted by radio-active substance. (6mks)

| | | | | | |
|-----------------|-----|------|------|-------|-------|
| No of Particles | 0-3 | 4-7 | 8-11 | 12-15 | 16-19 |
| Frequency | 540 | 1200 | 660 | 300 | 20 |

c) Consider the following data: (7mks)

| Commodity | Price | | Quantity Consumed | |
|-----------|-----------|--------------|-------------------|--------------|
| | Base Year | Current Year | Base Year | Current Year |
| A | 10 | 15 | 8 | 7 |
| B | 21 | 26 | 10 | 12 |
| C | 18 | 20 | 15 | 18 |

| | | | | |
|---|----|----|----|----|
| D | 24 | 24 | 20 | 22 |
| E | 30 | 34 | 15 | 14 |
| F | 16 | 18 | 10 | 10 |

Find Fishers Price Index Number

OR

QV: Attempt the following:

x) Discuss Bi-variate frequency distribution.

(3mks)

y) Calculate the Coefficient of variation for the following data:

(6mks)

C.I 20-40 40-60 60-80 80-100 100-120 120-140

F 5 10 12 18 9 3

z) Find the cost of living index number for the following data:

(7mks)

| Commodity | Base Year | | Current Year | |
|-----------|-----------|----------|--------------|----------|
| | Price | Quantity | Price | Quantity |
| A | 12 | 2 | 15 | 3 |
| B | 18 | 8 | 20 | 8 |
| C | 24 | 14 | 26 | 16 |
| D | 30 | 21 | 34 | 26 |

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