



# Sanjay Ghodawat University, Kolhapur

2017-18

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

2018 FY BCom

School of Commerce and Management

Management

CBC 104

Business Mathematics & Statistics

Semester – Even (II)

May 2018

End Semester Examination

Time: 3 hrs, Max Marks: 100

24th May 2018

Instructions:

1) All Questions are compulsory.

10:30 to 1:30 pm

Marks COs

Q.1 Solve the following

a) State whether True & False ( any 5)

- |   |    |                    |
|---|----|--------------------|
| 1. There is a difference between bar chart and histogram                                      | 10 | CO104.1<br>CO104.1 |
| 2. Graph is not a Line diagram  |    |                    |
| 3. Range of set of observation is the difference between largest and smallest of observations |    | CO104.2            |
| 4. Dispersion measures the scatteredness of set of observations                               |    | CO104.3            |
| 5. The value of correlation lies between -1 to +1   |    | CO104.4<br>CO104.4 |
| 6. Bivariate data is data collected for more than two variables                               |    |                    |

b) Answer the short questions (any 5)

10  
CO104.4  
CO104.1  
CO104.2  
CO104.3  
CO104.4  
CO104.4

1. Standard deviation definition
2. Definition of Statistics
3. Meaning of Matrices
4. Merits of Median
5. Measure of Dispersion
6. Scatter diagram

Q.2 Solve/answer any Two

a) Solve the following equations by determinant method

$$X+3Y+3Z=6, 2X+Y+3Z=0, X+4Y+Z=8$$

10 CO104.1

b) Find the inverse of the following matrix by taking its adjoint

$$\begin{bmatrix} 2 & 1 & 3 \\ 3 & 1 & 2 \\ 1 & 2 & 3 \end{bmatrix}$$

10 CO104.1

c) If  $A = \begin{pmatrix} 1 & 2 \\ 0 & 2 \end{pmatrix}$        $B = \begin{pmatrix} 2 & 1 \\ -1 & 0 \end{pmatrix}$

10 CO104.1

Show that  $(AB)^2 = B^2 A^2$

Q.3 Solve/answer any Two

- a) The data on fund flow (Rs in crore) of an International Airport Authority during financial years 2011-12 to 2013-14 are given below. Represent this data by suitable BAR chart

10 CO104.2

|                     | 2011-12 | 2012-13 | 2013-14 |
|---------------------|---------|---------|---------|
| Non Traffic revenue | 40.00   | 50.75   | 70.25   |
| Traffic revenue     | 70.25   | 80.75   | 110.00  |
| Expenditure         | 70.00   | 90.00   | 100.00  |
| Profit before Tax   | 40.15   | 50.50   | 80.20   |

- b) Define statistics and explain applications of Statistics

10 CO104.2

- c) Of the 1125 students studying in a college during in a year , 720 were SC /ST , 628 were boys , and 440 were science students , the number of SC/ ST boys was 392 , that of boys studying science 205, and that of SC/ST students studying science 262 , finally the number of science students among the SC /ST boys was 148. Enter these frequencies in a three way table and complete the table by obtaining the frequencies of the remaining cells.

10 CO104.2

Q4 Solve any two

- a) Calculate the mean and median for the following data

10 CO104.3

| Marks           | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 |
|-----------------|------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| No. of students | 5    | 7     | 10    | 20    | 22    | 22    | 10    | 8     | 7     | 6      |

- b) Compute the mean deviation about the arithmetic mean for the following data

10 CO104.3

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| X | 1 | 3 | 5 | 7 | 9 |
| f | 5 | 8 | 9 | 2 | 1 |

Find the SD of the following distribution

10 CO104.3

c)

|                 |       |       |       |       |       |
|-----------------|-------|-------|-------|-------|-------|
| Weight (kg)     | 50-52 | 52-54 | 54-56 | 56-58 | 58-60 |
| No. of Students | 17    | 35    | 28    | 15    | 5     |

Q.5 Solve/answer the following

- Fit a linear regression of Y on X for the following data

10 CO104.4

|               |   |   |   |   |    |    |    |
|---------------|---|---|---|---|----|----|----|
| Output        | X | 5 | 7 | 9 | 11 | 13 | 15 |
| Profit / Unit | Y | 2 | 3 | 3 | 4  | 4  | 6  |

- b) Two persons asked to watch ten specified TV programmes and offer their evaluation by rating them 1 to 10 . These rating are given below. calculate the Rank correlation coefficient

10 CO104.4

| TV Programme   |   | A | B | C | D | E | F | G | H  | I  | J |
|----------------|---|---|---|---|---|---|---|---|----|----|---|
| Ranks given by | X | 4 | 6 | 3 | 9 | 1 | 5 | 2 | 7  | 10 | 8 |
|                | Y | 2 | 3 | 4 | 9 | 5 | 7 | 1 | 10 | 8  | 6 |