SEAT No. :

# F.Y. B.B.A.(CA)

## CA 105: BUSINESS STATISTICS

### (2019 Pattern) (Semester - I)

[Time: 2½ Hours]

[Max. Marks: 70]

**Instructions to the candidates:**
1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Notations and abbreviations have their usual meaning.
4) Simple calculator is allowed.

**Q1)** A) Fill in the blanks:                                        [2x5=10]

  i)   The sum of observations divided by total number of observations is

       called as .....

  ii)  ....... is a statistical tool used to measure the relationship between two

       sets of variables.

  iii) ....... is the simplest absolute measure of dispersion which shows the

       difference between the highest and the lowest value in a series.

  iv)  ....... makes clear presentation of data.

  v)   The two numbers designating the class interval are called as ......

B) State whether the following statement are true OR False.         [3×2=6]

  i)   Arithmetic mean can be determined graphically also.

  ii)  If each frequency is doubled, then the variance is also doubled.

  iii) Regression lines are perpendicular to each other. if r=0.

*P. T. O.*

**Q2)** Attempt any FOUR of the following:

a) Write meaning and definition of statistics. Explain the application of statistics in the field of business sciences.

b) Two workers on the job show the following results over a long period of time:

| | Worker A | Worker B |
|---|---|---|
| Mean time of completing the job (in minutes) | 30 | 35 |
| Standard Deviaion (in minutes) | 6 | 4 |

   i) Which worker appears to be fasternin completion the job? Justify?

   ii) Which worker appears to be more consistent in the time he requires to complete the job? Justify?

c) Calculate range and coefficient of range from the following data:

   53, 46, 18, 16, 75, 84 and 28.

d) Present the following information in a tabular form.

   In a certain interview, there were 150 candidates of which 56% were males. 36 candidates were successful in the interview. The proportion of males to females in the successful candidates is 5:4.

e) A company dealing in 60 products while establishing an inventory control system, is classified into products according to price as shown in the frequency table below.

| Unit cost (in 000'Rs) | 3-6 | 6-9 | 9-12 | 12-15 | 15-18 | 18-21 | 21-24 |
|---|---|---|---|---|---|---|---|
| No. of items | 6 | 8 | 10 | 20 | 8 | 5 | 3 |

   Draw the histogram for the above data.

f) Compute the mean from the following data:

| Size | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frequency | 3 | 8 | 10 | 12 | 16 | 14 | 10 | 8 | 17 | 5 | 4 | 1 |

*P. T. O.*

**Q3)** Attempt any FOUR of the following: [4x4=16]

a) Calculate mean and mode from the following:

30, 55, 50, 40, 50, 60, 55, 62, 55, 45, 61, 65

b) Calculate coefficient of correlation for the following:

| X | 6 | 2 | 10 | 4 | 8 |
|---|---|---|----|---|---|
| Y | 9 | 11 | 5 | 8 | 7 |

c) Explain absolute and relative measure of dispersion.

d) Following are the marks out of 100 scored by 40 students.

| 56 | 78 | 62 | 37 | 54 | 39 | 62 | 60 | 47 | 41 |
|----|----|----|----|----|----|----|----|----|----|
| 28 | 82 | 38 | 72 | 62 | 44 | 54 | 42 | 50 | 52 |
| 42 | 55 | 57 | 65 | 68 | 47 | 42 | 56 | 47 | 48 |
| 56 | 56 | 55 | 66 | 42 | 52 | 48 | 48 | 53 | 68 |

Construct frequency distribution from the above given marks using intervals 25-29, 30-34 and so on.

e) The following is the frequency distribution of 100 companies:

| Profit (000'rs) | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 |
|---|---|---|---|---|---|---|---|
| No. of companies | 9 | 15 | 18 | 21 | - | 14 | 5 |

i) State the type of classification.

ii) Find missing frequency.

iii) Find class mark of $3^{rd}$ class.

iv) How many companies have profit less than Rs. 40,000?

f) Average marks of 30 candidates was 40. Later on it was found that a score of 47 was misread as 74. Find the correct average.

**Q4)** Attempt any FOUR of the following: [4x4=16]

a) Write short note on scatter diagram.

b) Compute quartile deviation for the following data:

| Marks | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 |
|---|---|---|---|---|---|
| No. of students | 6 | 8 | 12 | 4 | 2 |

*P.T.O.*

c) Find combined standard deviation:

Group I: $n_1 = 100$, $\bar{x}_1 = 50$, $\sigma_1 = 10$

Group II: $n_2 = 150$, $\bar{x}_2 = 55$, $\sigma_2 = 11$.

d) Find correlation coefficient between X and Y given that:

$n = 15, \bar{x} = 25, \bar{y} = 18, \sigma_x = 3, \sigma_y = 3, \sum xy = 6870$.

e) Represent the following data by pie diagram.

| Component | Percentage Cost of construction of house |
|-----------|------------------------------------------|
| Labour | 25 |
| Bricks | 15 |
| Cement | 20 |
| Steel | 15 |
| Timber | 10 |
| Supervision | 15 |

f) What is classification? Explain inclusive and exclusive methods of classification. [1x6=6]

**Q5)** Attempt any ONE of the following:

a) From the data given below, fit the regression line of Y on X:

| X | 2 | 3 | 5 | 7 | 8 | 10 | 12 | 15 |
|---|---|---|---|---|---|----|----|----|
| Y | 2 | 5 | 8 | 10 | 12 | 14 | 16 | 19 |

b) Draw the less than and more than ogive curves for the following data:

| Class Interval | 0-5 | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 |
|----------------|-----|------|-------|-------|-------|-------|-------|-------|
| Frequency | 2 | 16 | 26 | 39 | 43 | 21 | 8 | 4 |

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