## B.B.A. (Part—I) Examination
## BUSINESS STATISTICS

Time : Three Hours]                                    [Maximum Marks : 80

**Note :**— (1)  Attempt all *five* questions.

(2)  All questions carry equal marks.

1.  (A)  State the objects of Classification.                                    4

(B)  Calculate 'Mean' :

$M = 31.19$

$Z = 35$                                    4

(C)  Find out lower quartile from the following :

Value : 12, 17, 19, 25, 19, 25, 28, 19, 27, 26, 28, 12, 14, 18, 19.          4

(D)  Calculate 'Mode' :

Modal group 50—60

$F_0 = 21$

$F_1 = 21$

$F_2 = 15$                                    4

**OR**

(E)  Explain importance of Statistics.                                    4

(F)  Find 'Mean' from the following Frequency Table :

| Wages in Rs. | No. of Wage Earners |
|---|---|
| 55 | 06 |
| 75 | 35 |
| 165 | 60 |
| 330 | 74 |
| 375 | 25 |

4

(G)  Marks obtained by 65 students in Statistics are shown in the table given below —
Calculate median.

| Marks | No. of Students |
|---|---|
| More than 70% | 7 |
| More than 60% | 18 |
| More than 50% | 40 |
| More than 40% | 40 |
| More than 30% | 63 |
| More than 20% | 65 |

4

(H)  Calculate 'Mode' :

| Mid Value | Frequency |
|---|---|
| 5 | 3 |
| 15 | 4 |
| 25 | 7 |
| 35 | 5 |
| 45 | 1 |
|  | $n = 20$ |

4

2. From the following information regarding the runs scored by P, Q and R in the test matches, you are asked to select a batsman for the match :

| Batsman | Match | | | | | |
|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | |
| | Innings | | Innings | | Innings | |
| | I | II | I | II | I | II |
| P | 20 | 80 | 80 | 13 | 32 | 100 |
| Q | 100 | 110 | 21 | 02 | 05 | 95 |
| R | 82 | 25 | 53 | 45 | 56 | 69 |

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**OR**

Find out Mean Deviation and its coefficient from the Mode :

| Height (in inches) | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of Workers | 10 | 12 | 15 | 20 | 21 | 23 | 20 | 15 | 10 | 05 | 02 |

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3. (A) Explain the concept of conditional probability. 4

(B) There are 17 balls numbered 1 to 17 in a bag. If a person selects 1 ball at random. What is the probability that the number printed on the ball will be an even number greater than 9 ? 4

(C) If, from a pack of cards, a single card is drawn, what is the probability that it is either a Spade or a King ? 4

(D) When a fair dice is rolled, what is the probability of getting an even number on the dice ? 4

**OR**

(E) Explain the concept of mutually exclusive event. 4

(F) One ticket is drawn at random from a bag containing 30 tickets numbered from 1 to 30.

Find the probability that it is a multiple of 5 or 7. 4

(G) From the pack of 52 cards, one card is drawn at a random, what is the probability that it is either a King or a Queen ? 4

(H) What do you mean by the term testing of hypothesis ? 4

2

4. Find correlation co-efficient between age and playing habits of the following students :

| Age | : | 15 | 16 | 17 | 18 | 19 | 20 | |
|---|---|---|---|---|---|---|---|---|
| No. of Students | : | 250 | 200 | 150 | 120 | 100 | 80 | |
| Regular Players | : | 200 | 150 | 90 | 48 | 30 | 12 | 16 |

**OR**

On checking the records of sales during the last 10 years, it was found that his annual sales proceeds and advertisement expenditure were highly correlated to the extent of 0.8; it was further noted that the annual average sales has been Rs. 45,000 and the annual average advertisement expenditure Rs. 30,000 with the variance of Rs. 1,600 and Rs. 625 in annual sales and advertisement.

Prepare Regression equation.                                                                             16

5. (A) Calculate the Index Number by Laspeyre's method :

| Commodity | Price | | Quantity | |
|---|---|---|---|---|
| | 2015 | 2016 | 2015 | 2016 |
| Rice | 8 | 7 | 50 | 40 |
| Wheat | 5 | 4 | 60 | 50 |
| Pulses | 7 | 6 | 10 | 8 |
| Jawar | 2 | 1 | 4 | 3 |

4

(B) Apply the method of Least Square to obtain the trend value for the year 2018 :

| Year | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Sales (in thousands) | 200 | 215 | 230 | 220 | 240 |

4

(C) Find the index number by Fisher's formula :

| Item | 2016 | | 2017 | |
|---|---|---|---|---|
| | Price | Value | Price | Value |
| A | 2 | 4 | 1 | 5 |
| B | 3 | 12 | 4 | 20 |
| C | 5 | 15 | 6 | 12 |

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(D) What are the components of time series ?                                                   4

**OR**

(E) Determine the equation of straight line trend and find the value of a and b :

| Year | 1 | 2 | 3 | 4 | 5 |
|------|---|---|---|---|---|
| Sales | 35 | 56 | 79 | 80 | 40 |

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(F) Find out Fisher's Index Number :

$$\Sigma P_1 Q_0 = 236 \qquad \Sigma P_0 Q_0 = 184$$

$$\Sigma P_1 Q_1 = 268 \qquad \Sigma P_0 Q_1 = 209$$

4

(G) Find out cost of Living Index Number :

| Group | Index No. | Price (2018) | Quantity (2018) |
|-------|-----------|--------------|-----------------|
| Food | 120 | 5 | 6 |
| Fuel | 150 | 6 | 4 |
| Clothing | 150 | 4 | 1 |
| Rent | 133.33 | 3 | 5 |
| Miscellaneous | 200 | 1.5 | 10 |

4

(H) Find out Price Index Number :

| Item | 2017 Price (per unit) | 2018 Price (per unit) |
|------|-----------------------|-----------------------|
| A | 5 | 7 |
| B | 7 | 12 |
| C | 10 | 15 |

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