PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BBA DEGREE EXAMINATION DECEMBER 2019
(First Semester)

Branch-LOGISTICS

BUSINESS STATISTICS

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer ALL questions
ALL questions carry EQUAL marks (10 x 1 = 10)

1 Which one of the following is the positional measure of central tendency?
(i) Geometric mean (ii) Median
(iii) Harmonic Mean (iv) Mean

2 When coefficient of skewness is zero, the distribution is
(i) J-shaped (ii) U-shaped
(iii) symmetrical (iv) L-shaped

3 Who developed the rank correlation coefficient?
(i) Spearmen (ii) Karl Pearson
(iii) Bowley (iv) Lorenz

4 When $l/_{xy}$=-0.5 and $b_{yx}$=-0.8, the correlation coefficient would be
(i) 1 (ii) 0.4
(iii) 0.633 (iv) -0.633

5 Identify the correct option for the time reversal test.
(i) **PoixP$_{,0}$=0** (ii) **PoixP$_{10}$=l**
(iii) **Poi x** $Q_{10}$~l (iv) **P$_0$ixPi$_0$=oo**

6 Find out the factor which affects seasonal variation is
(i) climate and weather (ii) war
(iii) traditional habits (iv) both (i) & (ii)

7 Match the correct answer. The method for finding an optimum solution to the given transportation problem is
(i) NWC method (ii) Least cost method
(iii) VAM method (iv) MODI method

8 In a queueing model (M|M|I):( oojFIFO), identify the meaning of the symbol FIFO.
(i) Inter arrival time (ii) Number of servers
(iii) Capacity of the system (iv) Queue discipline

9 When two coins are thrown simultaneously, the probability for getting one head is
(i) *Vx* (ii) 1
(iii) $^{l}A$ (iv) $^{3}A$

10 What is the range of probability?
(i) -1to+1 (ii) -oo to +oo
(iii) 0 to 1 (iv) -30 to +30

**Cont..**

## SECTION - B (35 Marks)

Answer **ALL** Questions
**ALL** Questions Carry **EQUAL** Marks ( 5 x 7 = 35)

11 a Briefly explain the various methods of collecting data.

OR

b Calculate coefficient of variation for the following data:

| x: | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|
| f: | 3 | 12 | 18 | 12 | 3 |

12 a Describe the scatter diagram method of finding correlation.

OR

b The following data relate to the prices and supplies of a commodity during a period of eight years:

| Price (Rs./kg): | 10 | 12 | 18 | 16 | JL, | 18 | 17 |
|---|---|---|---|---|---|---|---|
| Supply (100 kg): | 30 | 35 | 45 | 44 | 42 48 | 47 | 46 |

Calculate the coefficient of correlation between the two series.

13 a Compute the cost of living index number using the family budget method from the following information:

| Commodity | Unit Consumption in 2004 | Price in 2004 | Price in 2005 |
|---|---|---|---|
| ~AT | 6 | 10 | 12 |
| B | 6 | 11 | 14 |
| C | 1 | 14 | 15 |
| D | 6 | 8 | 10 |
| E | 4 | 12 | 14 |
| F | 1 | 15 | 16 |

.OR

b Estimate the trend values using the data given by applying a four-yearly moving average:

| Year: | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|---|---|---|---|
| Value: | 12 | 20 | 24 | 26 | 27 | 30 | 35 | 40 | 46 | 50 |

14 a Solve the following assignment problem:

| Task | Men | | | |
|---|---|---|---|---|
| | E | F | G | H |
| A | 18 | 26 | 17 | 11 |
| B | 13 | 28 | 14 | 26 |
| C | 38 | 19 | 18 | 15 |
| D | 19 | 26 | 24 | 10 |

OR

b Explain the basic elements of a queueing system.

15 a A bag contains 30 balls numbered from 1 to 30. One ball is drawn at random. Find the probability that the number of the ball drawn will be multiple of (a) 5 or 7 and (b) 3 or 7.

OR

b Define random sampling. Describe the various methods of it.

## SECTION - C (30 Marks)

Answer any **THREE** Questions
**ALL** Questions Carry **EQUAL** Marks (3 x 10 = 30)

16 Calculate coefficient of skewness based on quartiles and median from the following data:

| Sales (in lakhs): | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 |
|---|---|---|---|---|---|---|---|---|
| No. of Companies | 12 | 16 | 26 | 38 | 22 | 15 | 7 | 4 |

17 The following data relate to the scores obtained by a salesman of a company in an intelligence test and their weekly sales in thousand rupees:

| Salesman: | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| Test Scores: | 50 | 60 | 50 | 60 | 80 | 50 | 80 | 40 | 70 |
| Weekly Sales: | 30 | 60 | 40 | 50 | 60 | 30 | 70 | 50 | 60 |

a) Obtain the regression equation of sales on intelligence test scores of the salesman.

b) If the^ intelligence test score of a salesman is 65, what would be his expected weekly sales?

18 Construct index numbers of price from the following data by applying:

(i) Laspeyres method (ii) Paasche's method and (iii) Fisher's ideal method.

| Item | Base Year | | Current Year | |
|---|---|---|---|---|
| | Price (Rs.) | Quantity | Price (Rs.) | Quantity |
| A | 5 | 25 | 6 | 30 |
| B | 3 | 8 | 4 | 10 |
| C | 2 | 10 | 3 | 8 |
| D | 10 | 4 | 3 | 5 |

19 Solve the following transportation problem:

| Origin | Destination | | | | Availability |
|---|---|---|---|---|---|
| | Di | $D_2$ | $D_3$ | $D_4$ | |
| Oj | 1 | 2 | 1 | 4 | 30 |
| $o_2$ | 3 | 3 | 2 | 1 | 50 |
| $o_3$ | 4 | 2 | 5 | 9 | 20 |
| Requirement | 20 | 40 | 30 | 10 | 100 |

20 a) Suppose that a manufactured product has an average of 2 defects per unit of product inspected. Using Poisson distribution, calculate the probabilities of finding a product without any defect, 3 defects and 4 defects.

b) Highlight the important properties of normal distribution.

Z-Z-Z END