

## B.B.A. Semester - 4 (CBCS) Examination

March/April- 2019

## STATISTICS FOR BUSINESS DECISION MAKING

Time: 2:30 Hours

Marks: 70

## Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

- Que-1 (A) A Special concession rate of 35 paise per copy against the selling price of 50 paise any unsold copies are however a deal loss. A vendor has estimate the following prob. Distribution for the number of copies demanded. (10)

| No. of copies dem | 20   | 21   | 22   | 23   | 24   | 25   |
|-------------------|------|------|------|------|------|------|
| Prob.             | 0.04 | 0.19 | 0.33 | 0.26 | 0.11 | 0.07 |

How many copies should be ordered so that his expected profit will be maximum? Also compute EVPI.

- Que-1 (B) Calculate expected opportunity loss (EOL) from the following pay-off table: (04)

| Event.         | Prob. | Acts           |                |                |
|----------------|-------|----------------|----------------|----------------|
|                |       | A <sub>1</sub> | A <sub>2</sub> | A <sub>3</sub> |
| E <sub>1</sub> | 0.1   | 25             | -10            | -125           |
| E <sub>2</sub> | 0.7   | 400            | 440            | 400            |
| E <sub>3</sub> | 0.2   | 650            | 740            | 750            |

OR

- Que-1 Write short notes. (Any three) (14)
- (1) EOL Criterion
  - (2) Decision Theory.
  - (3) Maxi-min principle.
  - (4) Horwich's principle

- Que-2 (A) Give the difference between variable charts and attribute charts. (10)

- Que-2 (B) Explain : Theory of runs. (04)

OR

- Que-2 The following table gives mean and range of 10 samples each of size 5. Draw  $\bar{x}$  and R charts and state your conclusion: (14)

| Sample No. | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
|------------|----|----|----|----|----|----|----|----|----|----|
| $\bar{x}$  | 52 | 50 | 50 | 51 | 47 | 52 | 49 | 54 | 51 | 54 |
| R          | 6  | 7  | 6  | 5  | 6  | 9  | 8  | 7  | 7  | 4  |

- Que-3 (A) For the following time series find trend by 3 yearly moving averages. (10)

| Year                        | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|-----------------------------|------|------|------|------|------|------|------|
| Production (thousand units) | 12   | 15   | 18   | 16   | 20   | 24   | 22   |
| Year                        | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| Production (thousand units) | 25   | 28   | 26   | 30   | 34   | 32   | 34   |

- Que-3 (B) Explain the method of exponential smoothing. (04)

OR

- Que-3 Fit a second degree parabola to the following data and forecast the production for the year 2018. (14)

| Year                      | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---------------------------|------|------|------|------|------|------|------|------|------|
| Production (In '000 tons) | 2    | 6    | 7    | 8    | 10   | 11   | 11   | 10   | 9    |

Que-4 (A) Explain : Type I and Type II errors. (07)

Que-4 (B) Explain the meaning of Null Hypothesis and Alternative Hypothesis. (07)

OR

Que-4 (A) The average life of 150 electric bulbs of a company A is 1400 hours with a S.D. of 120 hours while the average life of 200 electric bulbs of company B is 1200 hours with a S.D. of 80 hours. Is the difference between the average lives of the bulbs significant? (07)

Que-4 (B) The average marks of 80 boys is 78 with S.D. of 12 and the average marks of 120 girls is 75 with S.D. of 15. Can it be said that the average marks of boys is more than that of girls? (07)

Que-5 (A) Explain :  $t$ -test. (07)

Que-5 (B) The following information is obtained from a sample of 5 observations. (07)

$$\Sigma x = 18, \Sigma x^2 = 80.$$

Test the hypothesis that the mean of population is 4.

OR

Que-5 (A) Explain:  $F$ -test. (07)

Que-5 (B) The following samples are drawn from two normal populations. Test the Hypothesis that the population variances are equal. (07)

|           |    |    |    |    |    |    |    |
|-----------|----|----|----|----|----|----|----|
| Sample I  | 8  | 10 | 14 | 10 | 13 |    |    |
| Sample II | 12 | 15 | 11 | 16 | 14 | 14 | 16 |

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