

**647510****BBA4sbdE0110****Seat No: \_\_\_\_\_****B.B.A. Semester - 4 (CBCS) Examination****March/April- 2018****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 Write short notes (Any Three) (14)

- (1) Decision theory (2) Maxi-max principle  
(3) Laplace principle (4) EMV criterion

**OR**

Que-1 (A) Calculate EMV and EVPI of the following pay-off table (07)

| Event          | Prob. | Acts           |                |                |
|----------------|-------|----------------|----------------|----------------|
|                |       | A <sub>1</sub> | A <sub>2</sub> | A <sub>3</sub> |
| E <sub>1</sub> | 0.20  | 10             | -10            | -20            |
| E <sub>2</sub> | 0.50  | 200            | 400            | 200            |
| E <sub>3</sub> | 0.30  | 400            | 600            | 700            |

Que-1 (B) Calculate the loss from the following pay off table. (07)

| Action         | Events         |                |                |                |
|----------------|----------------|----------------|----------------|----------------|
|                | E <sub>1</sub> | E <sub>2</sub> | E <sub>3</sub> | E <sub>4</sub> |
| A <sub>1</sub> | 50             | 300            | -150           | 50             |
| A <sub>2</sub> | 400            | 0              | 100            | 0              |
| A <sub>3</sub> | -50            | 200            | 0              | 100            |
| A <sub>4</sub> | 0              | 300            | 300            | 0              |
| Prob.          | 0.15           | 0.45           | 0.25           | 0.15           |

Calculate expected loss of each action.

Que-2 (A) Give the difference between the charts for variables and charts for attributes. (07)

Que-2 (B) Explain :  $\bar{p}$  and  $np$  charts (07)

**OR**

Que-2 Draw  $\bar{x}$  and R charts for the following data and state your conclusions: (14)

| Sample No. | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   |
|------------|------|------|------|------|------|------|------|------|------|------|
| Mean       | 12.8 | 13.1 | 13.5 | 12.9 | 13.2 | 14.1 | 12.1 | 15.5 | 13.9 | 14.2 |
| Range      | 2.1  | 3.1  | 3.9  | 2.1  | 1.9  | 3.0  | 2.5  | 2.8  | 2.5  | 2.0  |

[ For  $n=5$ ,  $A_2=0.577$ ,  $D_3=0$ ,  $D_4=2.115$  ]

Que-3 (A) Explain any two methods for forecasting. (07)

Que-3 (B) Fit a straight line to the following data: (07)

| Year | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|------|------|------|------|------|------|------|------|
| y    | 80   | 90   | 92   | 83   | 94   | 99   | 92   |

**OR**

(14)

Que-3 Fit a second degree parabola & estimate profit for 2006:

|                 |      |      |      |      |      |      |      |
|-----------------|------|------|------|------|------|------|------|
| Year            | 1992 | 1994 | 1996 | 1998 | 2000 | 2002 | 2004 |
| Profit (in'000) | 10   | 12   | 18   | 15   | 13   | 16   | 14   |

Que-4(A) A random sample of 400 items gave mean 4.45 and variance 4. Can the sample be regarded as drawn from a normal population with mean 4 ? (07)

**OR**

Que-4(B) Intelligence test given to two groups of students gave the following information. (07)

|       | Number | Mean Score | S.D. |
|-------|--------|------------|------|
| Girls | 50     | 75         | 10   |
| Boys  | 100    | 70         | 12   |

Is the difference in the mean score of boys & girls statistically significant?

Que-4(A) In a large consignment of apples, 64 fruits out of a sample of 400 fruits are found to be bad. Test the hypothesis that the population proportion of bad apples in the consignment is 20%. (Use 1% level of significance) (07)

Que-4(B) The proportions of literates in two towns A and B are 30% and 25%. If samples of 1200 and 900 are taken from these populations, will the difference between the proportion remain hidden ? (07)

Que-5(A) Give the difference between large sample tests and small sample tests. (07)

Que-5(B) The following is a random sample obtained from a normal population. Find 95% confidence limits for the mean of the population. (07)  
65, 72, 68, 71, 77, 61, 63, 69, 73, 71

**OR**

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

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

|           |                      |
|-----------|----------------------|
| Sample I  | 20 16 26 27 23 22    |
| Sample II | 27 33 42 35 32 34 38 |

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