

**B.B.A. Semester - 4 (CBCS) Examination****April/May -2022 [OLD COURSE]****STATISTICS FOR BUSINESS DECISION MAKING (ELECTIVE-1)****Time: 2:30 Hours****Marks: 70****Instructions:**

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

Q.1(A) Find EVPI

(10)

| Event          | Prob. | Acts           |                |                |
|----------------|-------|----------------|----------------|----------------|
|                |       | A <sub>1</sub> | A <sub>2</sub> | A <sub>3</sub> |
| S <sub>1</sub> | 0.2   | 40             | -10            | -100           |
| S <sub>2</sub> | 0.7   | 400            | 440            | 400            |
| S <sub>3</sub> | 0.1   | 650            | 720            | 760            |

Q.1(B) The manufacturing price of a commodity is Rs.50 and sales price is Rs.90.

(04)

The product is vested after a week. The past record of sales is as follows.

|                 |     |     |     |     |     |
|-----------------|-----|-----|-----|-----|-----|
| Demand per week | 20  | 21  | 22  | 23  | 24  |
| No. of week     | 200 | 300 | 400 | 600 | 500 |

**Prepare a pay-off table and calculate EMV.**

OR

Q.1 Write short notes. (any three)

(14)

- (1) EMV criterion.
- (2) Horwich's principle.
- (3) Decision theory.
- (4) Laplace principle.

Q.2(A) Explain:  $p$  and  $np$  charts?

(10)

Q.2(B) Explain: theory of runs.

(04)

OR

Q.2 The following table gives mean and range of 10 samples each of size 5.

(14)

Draw  $\bar{X}$  and R charts and state your conclusion:

|            |    |    |    |    |    |    |    |    |    |    |
|------------|----|----|----|----|----|----|----|----|----|----|
| Sample No. | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| $\bar{X}$  | 49 | 45 | 48 | 53 | 39 | 47 | 46 | 39 | 51 | 45 |
| R          | 7  | 5  | 7  | 9  | 5  | 8  | 8  | 6  | 7  | 6  |

(n=5, A<sub>2</sub>=0.577, D<sub>3</sub>=0, D<sub>4</sub>=2.115)

Q.3(A) Find trend by 5 yearly moving averages. (10)

|      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|
| Year | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
| Sale | 200  | 194  | 181  | 178  | 202  | 247  | 258  |
| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| Sale | 218  | 196  | 201  | 203  | 191  | 189  | 203  |

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

OR

Q.3 Fit a second degree parabola and estimate profit for 2003. (14)

|        |      |      |      |      |      |      |
|--------|------|------|------|------|------|------|
| Year   | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
| Profit | 10   | 12   | 18   | 15   | 13   | 16   |

Q.4(A) Explain: level of significance. (07)

Q.4(B) Explain: type I and type II errors. (07)

OR

Q.4(A) A sample of the heights of 6400 Englishmen has a mean of 170cm. and a S.D. of 6.4cm while a sample of heights of 1600 Australians has a mean of 172cm and a S.D. of 63cm. do the data indicate that Australians are on the average taller than the Englishmen. (07)

Q.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)

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

Q.5(B) The wages of 10 workers taken at random from a factory are given below. (07)  
Wages (Rs.) 570, 575, 576, 568, 577, 580, 570, 575, 590, 585  
Is it possible that the mean wages of all workers of this factory is Rs.580?

OR

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

Q.5(B) The following samples are drawn from two normal populations. Test the hypothesis that the 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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