



DY-19BBA403

Seat No. _____

B. B. A. (Sem. IV) Examination

April – 2022

**Statistics for Business Decisions
(New Course)**

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instructions :

- (1) Figures to the right side indicate mark of questions.
- (2) Show working as a part of your answer.
- (3) There are eight questions each of equal marks.
- (4) Attempt any four questions.

- 1 (a) Explain moving average method. 7.5
 (b) Fit a straight line to the following data and forecast 10
 the sale for the year 1996 :

Year	1990	1991	1992	1993	1994	1995
Sale (in '000 units)	12	16	20	25	29	36

- 2 Taking initial forecast 100 and $\alpha = 0.60$, obtain the 17.5
 forecast values of different year :

Year	1998	1999	2000	2001	2002	2003	2004
Production ('000 kgs)	120	130	145	160	175	205	220

- 3 The following table gives mean and range of 10 samples 17.5
 each of size 5. Draw \bar{X} and R chart and state your conclusion.

$n = 5, A_2 = 0.58, D_3 = 0, D_4 = 2.11$

Sample	1	2	3	4	5	6	7	8	9	10
\bar{X}	3290	3180	3350	3370	3280	3240	3260	3410	3310	3510
R	360	210	50	100	50	400	500	200	300	600

- 4 Samples were taken for 10 days during production in a factory and number of defectives were observed as under : **17.5**

Day	1	2	3	4	5	6	7	8	9	10
Sample size	50	50	50	50	50	50	50	50	50	50
Defective	3	2	7	4	0	2	2	3	2	1

Draw np chart, state your comment and draw P chart, state your comment.

- 5 A beer distributor buys a tin at the rate of Rs. 8 and sales it at the rate of Rs. 12 per day. At the end of day, tins which are unsold are useless. He obtains following distribution from the sales made during last 100 days : **17.5**

Tin sold	20	21	22	23	24
No. of days	5	20	30	35	10

Show that the optimum decision taken by EMV and EOL is same.

- 6 (a) Write a note : **7.5**
 (i) EMV (ii) EVPI (iii) EOL.
 (b) Determine the best act for following pay off matrix **10**
 by applying :
 (i) Maxi. - Min. principle
 (ii) Maxi. - Max. principle
 (iii) Horwich's principle (with $\alpha = 0.4$)
 (iv) Laplace principle
 (v) Mini. - max. regret principle.

Events	Act			
	A ₁	A ₂	A ₃	A ₄
S ₁	10	6	3	-2
S ₂	5	-2	4	8
S ₃	-3	7	-1	6

- 7 Explain method of sampling. **17.5**
- 8 (a) Explain theory of estimation and types of estimates. **7.5**
 (b) Explain properties of good estimator. **10**