

**B.B.A. Semester - 4 (CBCS) Examination**  
**March/April-2025 [NEW COURSE]**  
**Statistics for Business Decision Making(Allied)**

Time: 2:30 Hours

Marks: 70

**Instructions:**

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

Que.1(A) Explain the following: (07)

1. Null Hypothesis & Alternative Hypothesis
2. Type I and Type –II Error

Que.1(B) Give the difference Between Large Sample Test and Small sample Test (07)

OR

Que.1(A) In one district of a state 480 persons were found as Cancer patients out of a sample of 8000 persons. In other district 660 persons were Cancer patients in sample of 12000 persons .it is known that the percentage of Cancer patients in the state is 6%.Can it be concluded that proportion of Cancer patients in the two districts is same? (07)

Que.1(B) 100 observation of a sample gave the result  $\sum x_i = 3000, \sum X^2 = 1,80,000$ .Test the hypothesis that the mean of population is 31.2 (07)

Que.2(A) Explain t test. (07)

Que.2(B) Explain (07)

1. Degree of freedom
2. Critical value
3. Level of Significance

OR

Que.2(A) Below are given the gain in weights (in lbs) of Horses fed on two diets x and Y (07)

|        |    |    |    |    |    |    |    |    |    |
|--------|----|----|----|----|----|----|----|----|----|
| Diet X | 25 | 32 | 32 | 24 | 14 | 32 |    |    |    |
| Diet Y | 24 | 34 | 30 | 42 | 31 | 40 | 30 | 32 | 35 |

Test at 5% level whether the two diets differ as regards their effects on mean increase in weight.

Que.2(B) The following are samples drawn from two normal population test the hypothesis that population variance are equal? (07)

| Sample | Size | Sample Mean | Sum of square of deviation from mean |
|--------|------|-------------|--------------------------------------|
| 1      | 10   | 12          | 120                                  |
| 2      | 12   | 15          | 314                                  |

Que.3(A) What is Business forecasting? Explain its importance. (07)

Que.3(B) Explain moving average method. (07)

OR

Que.3(A) The price of a commodity for the years 1970 -75 are given below. Fit a liner trend to these data. estimate the price of 1976. (07)

|       |      |      |      |      |      |      |
|-------|------|------|------|------|------|------|
| Year  | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 |
| Price | 596  | 688  | 740  | 812  | 857  | 935  |

Que.3(B) Taking  $\alpha = 0.4$  and initial estimate as 400, determine the sales forecast of different years. (07)

|                   |      |      |      |      |      |      |
|-------------------|------|------|------|------|------|------|
| year              | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
| Sale(in lakh rs.) | 345  | 363  | 383  | 401  | 456  | 473  |

Que.4(A) Explain (07)

- 1) Theory of Run
- 2) Control limits

Que.4(B) Give the difference between the charts for variables and charts for attributes. (07)

OR

- Que.4(A) Samples each of 250 radios are inspected for 12 days. The number of defective radios found in different samples are given below. prepare np chart and state your conclusion. (07)

|                        |    |    |    |    |    |    |    |    |    |    |    |    |
|------------------------|----|----|----|----|----|----|----|----|----|----|----|----|
| Sample                 | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 |
| No. of defective items | 25 | 47 | 23 | 30 | 24 | 34 | 39 | 32 | 35 | 22 | 45 | 40 |

- Que.4(B) The following table gives the information regarding life hours of 5 fluorescent lamps of 10 different samples. Draw Mean and Range charts and state your conclusions. (07)

|        |    |    |    |    |    |    |    |    |    |    |
|--------|----|----|----|----|----|----|----|----|----|----|
| sample | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| Mean   | 40 | 42 | 41 | 40 | 42 | 43 | 40 | 40 | 42 | 45 |
| Range  | 3  | 2  | 5  | 2  | 1  | 4  | 3  | 2  | 5  | 4  |

- Que.5(A) Write a Short note on decision Theory. (07)

- Que.5(B) write short notes on: (07)

- 1) Maxi – min Principle
- 2) Maxi-max principle

OR

- Que.5(A) A baker produces a certain type of special pastry at a total average cost of Rs.30 and sell it at a price of Rs.50. This pastry is produced over the weekend and is sold during the following week : such pastry being produced but not sold during a week's time are totally spoiled and have to be thrown. According to past experience the weekly demand for these pastries is never less than 78 or greater than 80. you are required so formulate pay off table and give your decision using (07)

- 1) maximax criteria
- 2) minmax regret criteria

- Que.5(B) A retailer purchases mangoes every morning at rs. 500 a case and sell for rs.800 a case. Any case remaining unsold at the end of the day can be disposed of next day at a salvage value of rs. 200 per case. past sales have ranged from 15 to 18 cases per day. The following is the record of sales for past 120 days : (07)

|             |    |    |    |    |
|-------------|----|----|----|----|
| cases       | 15 | 16 | 17 | 18 |
| No. of days | 12 | 24 | 48 | 36 |

Find how many cases the retailer should purchase per day to maximize profit.

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