BA-2008000206020002

Third Year B. Com. (Honuors) (Sem. VI) Examination
April - 2022
Business Statistics : Paper - VI

Time : **2** Hours]   [Total Marks : **50**

Instructions :
(1)

નીચે દર્શાવેલ ☞ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☞ signs on your answer book.
Name of the Examination :
☞| **Third Year B. Com. (Honuors) (Sem. VI)**
Name of the Subject :
☞| **Business Statistics : Paper - VI**

☞ Subject Code No. :   ☞Section No. (1, 2,......) : | **NIL**

| 2 | 0 | 0 | 8 | 0 | 0 | 0 | 2 | 0 | 6 | 0 | 2 | 0 | 0 | 0 | 2 |

Seat No. :

Student's Signature

(2) Figures to the right indicate full marks of questions.
(3) Simple calculator can be used.
(4) Statistical tables and graph papers will be provided on request.
(5) Usual notations are used.

Attempt any three questions from Question 1 to 6 :

1 (a) Explain briefly statistical decision theory. What are   **6**
          the ingredients of a decision problem?

   (b) Each unit of a product produced and sold yields a   **6**
          profit of Rs. 50 where as a unit produced but not sold
          results in a loss of Rs. 30. The probability distribution
          of the number of units demanded is as follows :

No of Units demanded	0	1	2	3	4
Probability	0.20	0.20	0.25	0.30	0.05

   How many units should be produced to maximize the
   expected profit? Also calculate EVPI.

2 (a) Explain the following terms related to decision Theory.   **4**

   (i) Acts

   (ii) Pay-off Matrix

(b) A stockist of a particular commodity makes a profit of Rs. 30 on each sale made within the same week of purchase, otherwise he incurs a loss of Rs. 30 on each item. The data on the past sales are given below :   8

No. of Items sold within the same week	5	6	7	8	9	10	11
Frequency	0	9	12	24	9	6	0

    (i) Find out the optimum number of items the stockist should buy every week in order to maximize the profit.

    (ii) Calculate the expected value of perfect information.

3   (a) For a single sampling plan [50, 10, 4] if $p' = 0.04$ then find probability of acceptance.   4

    (b) A pizza can be sold at Rs. 50 in a food park. It's production cost is Rs. 25 and its administrative cost is Rs. 5. At the end of the day the unsold pizza can be sold at the price of Rs. 10. The following is the record of sales during the last 100 days. Prepare pay-off matrix and show that EVPI = Min EOL   8

Sales	10	20	30
No. of Days	30	20	50

4   (a) Define Chi-Square Statistic. State its uses.   4

    (b) Four coins are tossed 100 times and the following data is recorded. Test hypothesis that coins are unbiased.   5

No of heads	0	1	2	3	4
Frequency	10	17	44	21	8

    (c) For a 2×2 contingency table $\chi^2 = 2/3$. Find the value of x.   3

X	1
1	x

5   (a)   Explain chi-square test for goodness of fit.   **4**

    (b)   The following data show the percentages of firms   **5**
          using computers in different aspects of their business:

Firm Size	Computer Used in (Percentage)		
	Admin	Design	Manufacture
Small	60	24	20
Medium	65	30	28
Large	90	44	50

          Test the hypothesis at 0.05 level of significance that
          there is no association between the size of the firm and
          its use of computers.

    (c)   A random sample of size 16 from normal population   **3**

          gave $\sum x = 776$ and $\sum x^2 = 37876$. Test the hypothesis that

          population variance is 25.

6   (a)   Explain AOQ and AOQ Curve.   **4**

    (b)   For the single sampling plan [2000, n, c], if $p' = 0.01$ **8**
          and ASN = 100 and consumer's risk = 0.920 then find
          the value of n and c. Draw AOQ Curve and obtain value
          of AOQL.

7   Answer any one of the following questions :

    (1)   (a)   Explain Producer's risk, Consumer's risk and ATI.   **6**

          (b)   Obtain probability of acceptance for the double   **8**
                sampling plan [500,100,100,0,1]. The proportion
                defective is 3%. Also find the values of ASN, AOQ
                and ATI.

    (2)   (a)   Write short note on :   **6**

                (i)   Decision tree

                (ii)   Decision making under uncertainty

(b) Determine the best act for the following payoff   8
table using

(i)   Laplace rule

(ii) Maxi - Min rule

(iii) Maxi - Max rule

(iv) Hurwicz rule α = 0.6

(v)   Mini - Max regret rule.

Actions	Events		
	E_1	E_2	E_3
A_1	50	70	30
A_2	-20	10	60
A_3	40	40	40

———————