

B. COM DEGREE END SEMESTER EXAMINATION : MARCH 2023**SEMESTER 2 : COMMERCE****COURSE : 19U2CRCOM05 : QUANTITATIVE TECHNIQUES FOR BUSINESS RESEARCH***(For Regular - 2022 Admission and Improvement / Supplementary – 2021/2020/2019 Admissions)*

Time : Three Hours

Max. Marks: 75

PART A**Answer any 10 (2 marks each)**

1. What is meant by the universe in statistics?
2. What do you understand by deliberate sampling?
3. State any two objectives of research report.
4. What do you understand by descriptive report?
5. There are three events A,B and C such that one of them must and only one can happen. The odds are 7 to 3 against A and 6 to 4 against B. Find the odds against C.
6. State the properties of regression lines.
7. What is the null hypothesis in analysis of variance?
8. What do you mean by a) complement of an event b) union of two events?
9. What is Chi-square test?
10. What is Research Methodology?
11. How do you interpret coefficient of correlation on the basis of probable error?
12. What do you understand by analytical report?

(2 x 10 = 20)**PART B****Answer any 5 (5 marks each)**

13. Two six-faced dice with face numbers 1, 2,3,4,5, 6 are thrown simultaneously once. Find the probability that
 - a) Both the dice would show 4
 - b) One of them would show '3' and the other '5' and
 - c) the sum of their face value works to be 8
 - d) the sum of faces is not less than 10
 - e) Equal to 10
 - f) Greater than 10
 - g) Less than 10
14. Out of 8000 graduates in a town 800 are female. Out of 1800 graduate employees 120 are females. Use Chi-Square to determine if any distinction is made in the appointment on the basis of gender?
15. What is a Scattered Diagram? From the Scatter diagram how do you infer the nature of relationship of the variables?
16. A) A die is rolled thrice. What is the probability that the sum of the rolls is at least 5?
B) A bag contains blue and red balls. Two balls are drawn randomly without replacement. The probability of selecting a blue and then a red ball is 0.2. The probability of selecting a blue ball in the first draw is 0.5. What is the probability of drawing a red ball, given that the first ball drawn was blue?

17. Write notes on (a) Business Research (b) Management Research (c) Research in Commerce (d) Marketing Research.
18. From the following data regarding the expenses on advertisement and sales, calculate the coefficient of correlation with provision for lag time. The expenditure incurred on the advertisement got an impact on sales after 3 months.

| Months | Advertisement | Sales |
|-----------|---------------|-------|
| January | 500 | 20000 |
| February | 800 | 60000 |
| March | 950 | 50000 |
| April | 1500 | 15000 |
| May | 1050 | 25000 |
| June | 1200 | 30000 |
| July | 850 | 32000 |
| August | 750 | 40000 |
| September | 500 | 35000 |
| October | 450 | 19000 |
| November | 950 | 15000 |
| December | 1000 | 14000 |

19. A company producing glass fly-roads by a new process claimed that there would be 25 defective per 100. When a sample of 500 was taken number of defectives found was 150. Test the correctness of the company's claim at 5% level of significance stating clearly the null hypothesis with which you start.
20. Explain the terms a) popular report b) summary report c) oral report

(5 x 5 = 25)

PART C

Answer any 3 (10 marks each)

21. Four identical coins are tossed 160 times and the number of heads appearing each time is recorded as follows. Test whether the coins are unbiased.

| No. of heads | 0 | 1 | 2 | 3 | 4 |
|--------------|----|----|----|----|----|
| Frequency | 14 | 30 | 70 | 35 | 11 |

22. A special fertilizer was experimented on four fields A, B, C and D .in each field 4 beds were prepared and fertilizer was used. The yields of the beds of A, B, C and D fields are given below. Find out whether the difference between the means of the yield in field is significant or not?(the table value of F at 5% level of significance for $V_2 = 3$ and $V_1 = 12$ is 8.74)

| A | B | C | D |
|----|---|---|---|
| 8 | 9 | 3 | 3 |
| 12 | 4 | 8 | 7 |
| 1 | 7 | 2 | 8 |
| 3 | 1 | 5 | 2 |

23. What is a questionnaire? What are the requisites of a good questionnaire?

24. A) At a large university, the probability that a student takes calculus and is on the dean's list is 0.042. The probability that a student is on the dean's list is 0.21. Find the probability that a student takes calculus, given that he or she is on the dean's list.
- B) A circuit to run a model railroad has 8 switches. Two are defective. If a person selects 2 switches at random and tests them, find the probability that the second one is defective, given the first one is defective.
- C) At Athens Country Club, 73% of the members play bridge and swim, and 82% play bridge. If a member is selected at random, find the probability that the member swims, given that the member plays bridge.
25. The test score and sales done by 10 selected salesmen of a company shows the following.

| | | | | | | | | | | |
|-------------------------|----|----|----|----|----|----|----|----|----|----|
| Test Score | 55 | 65 | 75 | 60 | 74 | 85 | 70 | 73 | 80 | 65 |
| Sales (Rs. In 000') | 74 | 82 | 94 | 78 | 85 | 96 | 84 | 89 | 90 | 75 |

Fit regression equation of test score on sales; and regression equation of sales on test score. Also estimate sales for the test score of 50.

(10 x 3 = 30)