

21U455

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Name: .....

Reg.No: .....

**FOURTH SEMESTER B.Com. DEGREE EXAMINATION, APRIL 2023**

(CBCSS - UG)

(Regular/Supplementary/Improvement)

**CC19U BCM4 C04 - QUANTITATIVE TECHNIQUES FOR BUSINESS**

(Commerce: Finance/Taxation - Complementary Course)

(2019 Admission onwards)

Time : 2.5 Hours

Maximum : 80 Marks

Credit : 4

**Part A** (Short answer questions)

Answer *all* questions. Each question carries 2 marks.

1. State four operation research technique in QT.
2. Define correlation.
3. Explain what is meant by lead and lag correlation?
4. Write notes on scatter diagram.
5. Under what circumstances is the rank correlation used?
6. Why are there two regression line?
7. What is null set?
8. Explain the classical definition of probability.
9. The letters of the word 'STATISTICS' are written on 10 identical cards. If two cards are drawn at random, what is the probability that (1) one 'S' and one 'T' will occur (2) two 'T' will occur?
10. Write a note on axiomatic definition of probability.
11. State addition rule of probability.
12. What is conditional probability?
13. What is EMV?
14. Write a note on decision tree.
15. What are static and dynamic models?

**(Ceiling: 25 Marks)**

**Part B** (Paragraph questions)

Answer *all* questions. Each question carries 5 marks.

16. 20% of all students in a university are graduates and 80% are undergraduates. The probability that graduate students is married is 0.50 and the probability that an undergraduate student is married is 0.10. One student is selected at random, what is the probability that the student selected is married?

17. If the probability of a horse A winning a race is  $\frac{1}{5}$  and the probability of a horse B winning the same is  $\frac{1}{6}$ . What is the probability that one of the horses will win?
18. Explain the types of probability distribution.
19. If the chance of workers suffering from occupational hazards is 25%, what is the probability that out of 6 workers selected at a random, 4 or more will suffer from the hazards?
20. For a Binomial distribution, with  $n=6$ , the third term is nine times the fifth term. Find P.
21. A car hire firm has 2 cars which hires out day by day. The number of demands for a car on each day is distributed as a poisson variate with a mean 1.5. Calculate the proportion of days on which (1) neither car is used (2) some demand is refused.
22. Assume that a variate X is normally distributed with mean 80 and S.D 20. Find the area under the normal distribution between 80 and 100. What is the area under normal distribution between 50 and 120.
23. A home resourceful decorator manufacturer two types of lamps say A and B. Both lamps go through two technicians first a cutter and second a finisher. Lamp A requires 2 hours of cutter's time and one hour of the finisher's time; Lamp B requires 1 hour of cutter's and 2 hours of finishers time. The cutter has 104 hours and finisher has 76 hours of available time each month. Profit on the lamp A is Rs. 6 and on one B lamp is Rs 11. Formulate a mathematical model.

**(Ceiling: 35 Marks)**

**Part C (Essay questions)**

Answer any *two* questions. Each question carries 10 marks.

24. Find out the coefficient of correlation between price and sales from following data. And also find probable error.
 

Price :	100	90	85	92	90	84	88	90	93	95
Sales :	600	610	700	630	670	800	800	750	700	680
25. Establish correlation between the following pair of series and find out the probable error. Also interpret.
 

X :	17	19	20	22	24	27	29	30	33	35
Y :	87	85	80	78	75	72	70	65	62	60
26. A bag contains 2 white and 3 black balls another contains 3 white and 2 black balls. A ball is drawn from one of the bags and found to be white. What is the probability that it is from first bag?
27. Solve graphically
 

Maximise  $z=X+3y$

St.  $X \geq 0$

$2x + y \leq 20$

$X + 2y \leq 20$

**(2 × 10 = 20 Marks)**

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