

21U448S

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Name: .....

Reg. No: .....

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

(CUCBCSS-UG)

**CC17U BC4 C04 - QUANTITATIVE TECHNIQUES FOR BUSINESS**

(Commerce – Complementary Course)

(2017 to 2018 Admissions – Supplementary/Improvement)

Time: Three Hours

Maximum: 80 Marks

**Part – A**

Answer *all* questions. Each question carries 1 mark.

Choose the correct answer:

1.  $P(A/B)$  is equal to:

a)  $\frac{P(A \cap B)}{P(A)}$

b)  $\frac{P(A \cap B)}{P(B)}$

c)  $\frac{P(A \cup B)}{P(A)}$

d)  $\frac{P(A \cup B)}{P(B)}$

2. Mean of the binomial distribution is

a)  $n$

b)  $np$

c)  $npq$

d)  $nPn$

3. If A and B are two mutually exclusive events; then probability of  $(A \cup B)$  is equal to

a)  $P(AB)$

b)  $P(A+B)$

c)  $P(A) + P(B)$

d)  $P(AB)/P(B)$

4. Coefficient of correlation lies between -----

a) 0 and 1

b) 0 and -1

c) +1 and -1

d) None of these

5. In Poisson distribution, mean is denoted by -----

a)  $np$

b)  $npq$

c)  $e$

d)  $m$

Fill in the blanks:

6. Probability of an impossible event is -----

7. Let 'S' denote the sample space, then  $P(S) =$  -----

8.  $P(A/B) =$  -----

9. When the amount of change in one variable leads to a constant ratio of change in another variable, it is known as – -----

10. If A and B are mutually exclusive disjoint events,  $P(A \cap B) =$  -----

**(10 × 1 = 10 Marks)**

**Part – B**

Answer any *eight* questions in two or three sentences. Each question carries 2 marks.

11. Define probability.

12. What is a random experiment?

13. What is the chance that a non leap year will contain 53 Mondays?

(1)

**Turn Over**

14. What is the probability of selecting 2 M from the letters of the word 'Management'?
15. What do you mean by Line of best fit?
16. A student calculates the value of 'r' as 0.72 for a question comprising 5 pairs of observations and concludes that there is high degree of correlation between the variables. Do you agree?
17. Four coins are tossed simultaneously. What is the probability of getting 2 heads?
18. A speaks the truth in 80% of cases and B in 90%. In what percentage of case are they likely to contradict each other in stating the same fact?
19. What is ANOVA?
20. What is Type II error?

(8 × 2 = 16 Marks)

**Part – C**

Answer any *six* questions. Each question carries 4 marks.

21. Distinguish between correlation and regression
22. What are the properties of binomial distribution?
23. A husband and wife appear in an interview for two vacancies in the same post. The probability of husband's selection is 1/7 and that of wife's selection is 1/5. What is the probability that?
  - a. Both of them will be selected
  - b. Only one of them will be selected
  - c. None of them will be selected
24. Out of 500 items selected for inspection, 0.2% are found to be defective. Find how many lots will contain exactly no defective if there are 1000 lots.
25. If a keyboard operator averages two errors per page of newsprint, and if these errors follow Poisson process, what is the probability that exactly four errors will be found on a given page?
26. The weekly wages of 1000 workmen are normally distributed around a mean of Rs. 70 and with a S.D of Rs.5. Estimate the number of workers whose weekly wages will be (i) between Rs.70 and Rs.72. Also estimate the lowest wages of the 100 highest paid workers.
27. It is claimed that a random sample of 100 tyres with mean life of 15269 km is drawn from a population of tyres which has a mean life of 15200 km and S.D of 1248 km. To test the validity of the claim.
28. Find the coefficient of correlation between age and playing habit of the following students.

Age	:	14.5 - 15.5	15.5 - 16.5	16.5 - 17.5	17.5 - 18.5	18.5 - 19.5	19.5 - 20.5
No. of students	:	250	200	150	120	100	80
Regular players	:	200	150	90	48	30	12

(6 × 4 = 24 Marks)

**Part – D**

Answer any *two* questions. Each question carries 15 marks.

29. Calculate rank correlation coefficient from the following data.
 

X:	68	64	75	50	64	80	75	40	55	64
Y:	62	58	68	45	81	60	68	48	50	70
30. In a bolt factory machine A, B, C manufacture respectively 25%, 35% and 40% of the total. Of their output 5%, 4% and 2% are defective bolts. A bolt is drawn at random from the product and is found to be defective. What is the probability that it was manufactured by machine A?
31. To study the performance of 3 detergents and 3 different water temperatures. The followings 'whiteness' reading were obtains with special designed equipment.

Water Temperature	Detergent A	Detergent B	Detergent C
COLD	57	55	67
WARM	49	52	68
HOT	54	46	58

Perform a two-way analysis of ANOVA. (@ 5%)

(2 × 15 = 30 Marks)

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