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Name.....

Reg. No.....

**FOURTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION
APRIL 2024**

B.Com./B.B.A./B.H.A./B.T.H.M.

BCM 4C 04—QUANTITATIVE TECHNIQUES FOR BUSINESS

(2019 Admission onwards)

Time : Two Hours and a Half

Maximum : 80 Marks

*Answers should be written in English only.***Part A***Answer all questions.*

1. Define Quantitative Techniques.
2. What is linear and non-linear regression ?
3. What is Co-efficient of Determination ?
4. Define a SET.
5. What is the probability that a card drawn from a pack of 52 cards is a card of King ?
6. What is a mutually exclusive event ?
7. What is conditional probability ?
8. What is a line of best fit ?
9. A class consists of 4 girls and 3 boys is to be arranged for a photograph in a single row. In how many ways can they be seated if all the girls sit together ?
10. Write down any *three* merits and demerits of Spearman's rank correlation co-efficient.
11. What is linear programming ?
12. What are the characteristics of a Poisson Distribution ?
13. Write down any *two* properties of Binomial Distribution.
14. What do you mean by perfect correlation ?
15. What is decision-making ?

(15 × 2 = 30, maximum ceiling 25 marks)

Turn over

Part B*Answer all questions.*

16. Explain the underlying assumptions of Karl Pearson's Co-efficient of Correlation.
17. Discuss the applications of Quantitative Techniques.
18. Represent the followings by means of a Ven Diagram : $A \cup B$, $A \cap B$ and A^C .
19. Differentiate Correlation and Regression.
20. A candidate is selected for interview for three posts. For the first post there are three candidates, for the second there are four and for the third there are two. What are chances of his getting at least one post.
21. Explain the conditions under which binomial distribution is used.
22. What are the different types of decisions ?
23. Calculate Karl Pearson's correlation coefficient between X and Y from the following data :

$$N = 11, \sum X = 117, \sum X^2 = 1313, \sum Y = 260, \sum Y^2 = 6580, \sum XY = 2827.$$

 $(8 \times 5 = 40, \text{Maximum ceiling } 35 \text{ marks})$ **Part C***Answer any two questions.*

24. The following mistakes per page were noted in a book.

No. of mistakes per page	:	0	1	2	3	4	Total
No. of times the mistake occurred	:	211	90	19	5	0	325

Fit a Poisson Distribution.

25. Solve graphically the following linear programming problem :

$$\begin{aligned} &\text{Minimize } Z = 3X_1 + 5X_2 \\ &\text{subject to } -3X_1 + 4X_2 \geq 12 \\ &\quad 2X_1 - X_2 \geq -2 \\ &\quad 2X_1 + 3X_2 \geq 12 \\ &\quad X_1 \leq 4, X_2 \geq 2 \\ &\quad X_1, X_2 \geq 0. \end{aligned}$$

26. Calculate Karl Pearson's Correlation Co-efficient between marks in Accountancy and Statistics :

Marks in Accountancy	:	48	35	17	23	47
Marks in Statistics	:	45	20	40	25	45

27. Explain the application of Quantitative Technics in Business and Industries.

(2 × 10 = 20 marks)

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BCM 4C 04—QUANTITATIVE TECHNIQUES FOR BUSINESS

(2019 Admission onwards)

Time : Two Hours and a Half

Maximum : 80 Marks

Part A*Answer all questions.*

1. Define Quantitative Techniques.
2. What do you mean by decision theory ?
3. Write down any *two* limitations of Quantitative Techniques.
4. What is equally likely event ?
5. What do you mean by simple correlation ?
6. What is rank correlation co-efficient ?
7. "Normal distribution is a limiting case of binomial distribution." Explain.
8. What do you mean by line of regression ?
9. What is an experiment ?
10. A bag contains 500 bolts of which 40 are defective. Find the probability that the bolt selected at random was not defective.
11. Elucidate Baye's Theorem.
12. What is co-efficient of determination ?
13. Give the meaning of the terms ; node and branches.
14. What is decision tree ?
15. What do you mean by causation ?

(15 × 2 = 30, maximum ; Ceiling 25 Marks)

Turn over

Part B*Answer all questions.*

16. Explain the Application of Quantitative Techniques in Business.
17. Out of numbers 1 to 150, one number is selected at random, what is the probability that it is divisible by 3 or 5.
18. Discuss the characteristics of Poisson Distribution.
19. Explain the addition rule of probability.
20. Explain the nature of Quantitative Techniques.
21. What are the properties of regression co-efficient ?
22. A company knows on the basis of its past experience that 3 % of the bulbs manufactured are defective. Calculate the probability that a bulb selected at random from a sample of 100 bulb is not defective.
23. What is Linear Programing Problem ? Explain the steps in the formulation of LPP.

*(8 × 5 = 40, maximum ; Ceiling 35 Marks)***Part C***Answer any two questions.*

24. Calculate the co-efficient of correlation between the height of father and height of son from the following data.

Height of Father in centimetres	:	165	166	167	167	168	169	170	172
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Height of Son in centimetres	:	167	168	165	168	172	172	169	171
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25. Two coins are tossed. What is the probability of getting two head, given that at least one coin show a head ?
26. A person want to invest up to an amount of ₹ 50,000 in fixed income securities. His broker recommends investing in two Bonds ; Bond A yielding 8 % and Bond B yielding 12 %. After some consideration, he decided to invest at most of ₹ 25,000 in Bond B and at least ₹ 18,000 in Bond B. He also wants the amount invested in Bond A to be at least equal to the amount invested in Bond B. What should be the broker recommend if the investor want to maximize his return on investment ? Formulate this situation as a Linear Programing Problem.
27. Discuss the features of Normal Distribution.

(2 × 10 = 20 marks)

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BCM 4C 04—QUANTITATIVE TECHNIQUES FOR BUSINESS

(2019 Admission onwards)

Time : Two Hours and a Half

Maximum : 80 Marks

Section A*Answer at least ten questions.**Each question carries 3 marks.**All questions can be attended.**Overall Ceiling 30.*

1. Define Correlation.
2. What is a dot chart ?
3. What is co-efficient of determination ?
4. What is Regression Analysis ?
5. What is a random experiment ?
6. What is inverse probability ?
7. What is Null hypothesis ?
8. What is multiplication theorem of probability ?
9. Queuing theory deals with mathematical study of queues. It aims at minimizing both servicing and waiting.
10. What is a quantitative technique and what are its functions ?
11. What is probability distribution and what are the classifications ?
12. What is Hypothesis ?
13. In how many ways 3 people are seated on a bench if only two seats are available.
14. A basket contains 10 mangoes. In how many ways 4 mangoes from the basket can be selected.
15. A die is thrown. Find the probability of getting (1) a '4' (2) an even number.

(10 × 3 = 30 marks)

Turn over

Section B

Answer at least five questions.

Each question carries 6 marks.

All questions can be attended.

Overall Ceiling 30.

16. What are the functions of quantitative techniques ?
17. Describe the significance of correlation analysis.
18. List the assumptions of Binomial Distribution.
19. For a Binomial Distribution, mean is 6 and Standard Deviation is $\sqrt{2}$. Find the parameters.
20. A ball is drawn from a bag containing 4 white, 6 black and 5 yellow balls. Find the probability that a ball drawn is :— (1) White (2) Yellow (3) Black (4) Not yellow (5) Yellow or white.
21. What are the possible decisions is to accept or reject a null hypothesis ?
22. For a given set of bivariate data, the following results were obtained :
Mean $x = 53.2$, Mean $y = 27.9$, $b_{yx} = -1.5$ and $b_{xy} = -0.2$
Find the most probable value of y when $x = 60$. Also find 'r'.
23. What is a Scatter diagram ? What are its merits ?

(5 × 6 = 30 marks)

Section C

Answer any two questions.

Each question carries 10 marks.

24. Describe in detail various programming techniques.
25. What is quantitative technique ? What are the use and limitations of quantitative technique in business and industry ?
26. From the following data, compute Pearson's correlation co-efficient by direct method :

Price	:	10	12	14	15	19
Demand (Qty)	:	40	41	48	60	50

27. Find regression equations x and y and y on x from the following :

X	:	25	30	35	40	45	50	55
Y	:	18	24	30	36	42	48	54

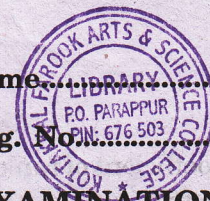
(2 × 10 = 20 marks)

C 3463

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**FOURTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION
APRIL 2021**

B.Com.

BCM 4C 04—QUANTITATIVE TECHNIQUES FOR BUSINESS

Time : Two Hours and a Half

Maximum : 80 Marks

Section A

Answer at least ten questions.

Each question carries 3 marks.

All questions can be attended.

Overall Ceiling 30.

1. What are the different types of Quantitative Techniques ?
2. What is meant by Combination ?
3. What is Differentiation ?
4. Distinguish between correlation and regression analysis.
5. What is Scatter diagram ?
6. What is regression line ?
7. What is random experiment ?
8. What is inverse probability ?
9. What is discrete probability distribution ?
10. What is standard error ?
11. A factory manager purchased 3 new machines, A, B and C. How many numbers of times he can arrange the 3 machines ?
12. How many different sets of 5 students can be chosen out of 20 qualified students to represent a school in an essay context ?
13. What is the probability of picking a card that was red or black ?
14. Calculate coefficient of determination and non-determination if coefficient of correlation is 0.8.

Turn over

15. The coefficient of rank correlation between marks in English and Maths obtained by group students is 0.8. If the sum of the squares of the difference in ranks is given to be 33, find the number of students in the group.

(10 × 3 = 30 marks)

Section B

Answer at least five questions.

Each question carries 6 marks.

All questions can be attended.

Overall Ceiling 30.

16. What are the merits and demerits of concurrent deviation method ?
17. What is classical definition of probability ? What are its limits ?
18. Describe the practical use of Poisson distribution.
19. What is Parametric test ? What are the different types of it ?
20. The Coefficient of rank correlation of the marks obtained by 10 students in Statistics and English was 0.2. It was later discovered that the difference in ranks of one of the students was wrongly taken as 7 instead of 9. Find the correct result.
21. What is the probability of getting 3 red balls in a draw of 36 balls from a bag contains 5 red balls and 46 black balls ?
22. Find out coefficient of correlation between size and defect in quality of shoes :

Size	:	15-16	16-17	17-18	18-19	19-20	20-21
No. of shoes Produced	:	200	270	340	360	400	300
No. of defectives	:	150	162	170	180	180	114

23. Calculate coefficient of correlation by concurrent deviation method :—

Year	:	2003	2004	2005	2006	2007	2008	2009	2010	2011
Supply	:	160	164	172	182	166	170	178	192	186
Price	:	292	280	260	234	266	254	230	190	200

(5 × 6 = 30 marks)