(Ref No. CGC/IQAC/MST001)
Name of College: CEC & CGCCOE
Department: Applied Sciences
1st Sessional Question Paper

Subject Name and Code: Mathematics-II (BTAM 204-18) **Year/ Semester: 1st year / 2nd sem**
Time: 1hour 30minutes **Name**.....
Max Marks: 24 **Roll No**.....
Date of Exam: 22/02/2020

C109.1	Calculate averages and dispersion of different type of data.
C109.2	Recaptulate the basic concepts of probability and random variables.
C109.3	Apply the idea of various probability distribution to analyze the data.
C109.4	Find the degree of correlation of two and more variables using correlation and regression analysis.

Note: Section A is compulsory. Attempt any two questions from section B and any two questions from section C.

Section A (2*4=8 Marks) — Relevance to CO no.

Q1 Let X be a random variable such that $P(X=-2)=P(X=-1), P(X=2)=P(X=1)$ and $P(X<0)=P(X>0)=P(X=0)$. Obtain probability mass function of X. 2 — C109.2

Q2 For a moderately skewed data, arithmetic mean is 200, coefficient of variation is 8 and Karl Pearson's coefficient of skewness is 0.3. Find mode and median. 1+1 — C109.1

Q3 Calculate geometric mean of the series 2574, 475, 75, 50, 5. 2 — C109.1

Q4 Six dice are thrown 729 times. How many times do you expect three dice to show five or six? 2 — C109.3

Section B (4*2=8 Marks)

Q5. Find the values of x, y and z from the following data: — C109.1

	Group I	Group II	Group III	Combined
Number	50	x	90	200
Standard deviation	6	7	z	$\sqrt{60}$
Mean	113	y	115	116

1+1+2

Q6 Compute coefficient of skewness and kurtosis on basis of moments for following data: — C109.1

Class- Intervals	5-15	15-25	25-35	35-45	45-55
f	1	3	5	7	4

4

Q7 Two fair dice are thrown independently. Three events A, B and C are defined as follows: — C109.2
A: Even face on first die, B: Even face on second die, C: Sum of points on the two dice is odd.
Discuss the independence of events A, B and C 4

Section C (4*2=8 Marks)

Q8 If the two lines of regression are $4x-5y+30=0$ *and* $20x-9y-107=0$. Which of these is the line of regression of x on y and y on x. find the correlation coefficient and variance of Y when variance of x is 3. 2+2 — C109.4

Q9 Prove that Poisson distribution is a limiting case of Binomial distribution as $n \to \infty$ *and* $p \to 0$. 4 — C109.3

Q10 In a normal distribution, 7% of the items are under 35 and 89% are under 63. Find mean and standard deviation of the distribution. 4 — C109.3