	ADAMAS UNIVERSITY		
	END-SEMESTER EXAMINATION : JANUARY 2021		
	(Academic Session: 2020 – 21)		
Name of the Program:	BCA	**Semester:**	III
Paper Title :	Probability & Statistics	**Paper Code:**	SMA32141
Maximum Marks :	40	**Time duration:**	3 hours
Total No of questions:	8	**Total No of Pages:**	2
(Any other information for the student may be mentioned here)			

Answer all the Groups
Group A
Answer all the questions of the following $5 \times 1 = 5$

1. **a)** Write Bayes' theorem.
   b) Draw a frequency curve for the following data.

Class Interval	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
Frequency	25	35	70	55	30	20

   c) Find the arithmetic mean of first n natural numbers
   d) Write down the formula for combined mean of two series
   e) Find the median from the following frequency distribution

Size	3	5	7	9	11	13	15
Frequency	7	3	12	28	10	9	6

GROUP –B
Answer *any three* of the following $3 \times 5 = 15$

2. Build a grouped frequency distribution from the following data by inclusive method taking 4 as the magnitude of class intervals
31, 23, 19, 29, 22, 20, 16, 10, 13, 34, 38, 33, 28, 21, 15, 18, 36, 24, 18, 15, 12, 30, 27, 23, 20, 17, 14, 32, 26, 25, 18, 29, 24, 19, 16, 11, 22, 15, 17, 10
Draw the ogive plots and hence identify the median of the distribution.

3. A five figured number is formed by the digits 0, 1, 2, 3, 4, without repetition. Find the probability that the number formed is divisible by 4.

4. Three urns are given, each containing red and black balls as indicated below:
Urn 1: 6 red and 4 black balls
Urn 2: 2 red and 6 black balls
Urn 3: 1 red and 8 black balls
An urn is chosen at random and a ball is drawn from the urn. The ball drawn is red. Find the probability that the ball is drawn from urn 2 or 3.

5. A random variable X has the following probability function.

Values of X	0	1	2	3	4	5	6	7

p(x)	0	k	2k	2k	3k	k^2	$2k^2$	$7k^2 + k$

(i)   Find k
(ii)   Evaluate P(X<6), P(0<X<5)
(iii) If $P(X \le a) > \frac{1}{2}$, find the minimum value of a.   1+2+2=5

GROUP –C
Answer *any two* of the following $2 \times 10 = 20$

6.   (i) Let *X* be a random variable with the following probability distribution.

x	-3	6	9
P(X=x)	1/6	1/2	1/3

Find $E(X)$, and $E(X^2)$, and using the laws of expectation, evaluate $E(2X + 1)^2$.
(ii) A manufacturer of cotter pins knows that 5% of his product is defective. If he sells cotter pins in boxes of 100 and guarantees that not more than 10 pins will be defective, what is the approximate probability that a box will fail to meet the guaranteed quality?   6+4=10

7.   Construct the line of regression of the following data

x	1	2	3	4	5	6	7
y	9	8	10	12	11	13	14

Solve *x* for *y*=15

8.   The scores obtained by two batsman A and B in 10 matches are given as follows:

A	30	44	66	62	60	34	80	46	20	38
B	34	46	70	38	55	48	60	34	45	30

Find out which team is more consistent?

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