



THE AMERICAN COLLEGE, MADURAI

(An Autonomous Institution Affiliated to Madurai Kamaraj University)
Re-accredited (2nd Cycle) by NAAC with Grade “A”, CGPA – 3.46 on a 4-point scale

Backlog Arrear Examination, March 2021

MAT/ MAS 1221 / 1201 Arithmetic & Mathematical Logics

Duration: 2 Hrs

Marks: 60

Answer any four questions:

1. The following table gives the sales of batteries manufactured by a company over the years. Study the table and answer the questions that follow

NUMBER OF DIFFERENT TYPES OF BATTERIES SOLD BY A COMPANY OVER THE YEARS (NUMBER IN THOUSANDS)

Year	TYPES OF BATTERIES					Total
	4AH	7AH	32AH	35AH	55AH	
1992	75	144	114	102	108	543
1993	90	126	102	84	126	528
1994	96	114	75	105	135	525
1995	105	90	150	90	75	510
1996	90	75	135	75	90	465
1997	105	60	165	45	120	495
1998	115	85	160	100	145	605

- Find the type of battery which has the maximum total sales of all the seven years.
 - What is the difference in the number of 35AH batteries sold in 1993 and 1997?
 - The percentage of 4AH batteries sold to the total number of batteries sold was maximum in the year -----
 - In the case of which battery there was a continuous decrease in sales from 1992 to 1997?
 - What was the approximate percentage increase in the sales of 55AH batteries in 1998 compared to that in 1992?
2. Calculate the mode for the frequency distribution

Class	Frequency	Class	Frequency
0-9	6	50-59	263
10-19	29	60-69	133
20-29	87	70-79	43
30-39	181	80-89	9
40-49	247	90-99	2

3. Prove by induction that : $1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$

