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**GRAND
TEST**

**SSC EXAMINATION
ALGEBRA (SET-A)**

**Marks : 40
Duration : 2 Hrs.**

Instruction : All questions are compulsory.

Use of calculator is not allowed.

Do not change the order of the subquestions.

Q.1 Attempt any five sub-questions of the following.

[5M]

- For an A.P. if $S_{10} = 200$ and $S_9 = 180$, then what is t_{10} ?
- If α and β are the roots of the equation $x^2 + 5x - 2 = 0$, then find $\alpha + \beta$
- Solve by factorization method $m^2 - 64 = 0$.
- Find value of $x + y$, if $2x + 3y = 5$ and $3x + 2y = 10$.
- Write the sample space S, if two digit odd number formed from the digit 3, 7, 9 without repetition.
- If $\bar{d} = 2.18$, $\sum f_i = 50$ find $\sum f_i d_i$.

Q.2 Attempt any four sub-questions from the following.

[8M]

- If the value of determinant $\begin{vmatrix} m & 2 \\ -5 & 7 \end{vmatrix}$ is 31.

Find the value of m .

- $L = 20$, $fm = 15$, $f_1 = 12$, $f_2 = 8$, $h = 10$ calculate the mode.
- Following is the frequency distribution with unknown frequencies.

Class	20-30	30-40	40-50	50-60	Total
Frequency	a	$2a$	$3a$	a	70

Find the value of a . Hence find all the frequencies.

- If one root of the quadratic equation $x^2 - 7x + k = 0$ is 4, then find the value of k .
- The sum of the first 55 terms of an A.P. is 3300. Find the 28th term
- A coin is tossed, find the probability of the event of getting no head.

Q.3 Attempt any three sub-questions from the following.

[9M]

- The number of hours, spent daily by a school boy in different activities in a day is given below.

Activity	Sleep	School	Play	Home work	Other	Total
No. of hours	8	7	2	4	3	24

Represent the above information using pie diagram.

2. Solve equation $4p^2 + 7 = 12p$, by completing square method.
3. There are three girls and two boys. A committee of two is to be formed, find the probability of events that the committee contains.
 - (i) atleast one girl. (ii) only boys
4. The measurements (in mm) of the diameters of the head of screws are given below.

Diameter (in mm)	33-35	36-38	39-41	42-44	45-47
No. of Screws	10	19	23	21	27

Calculate mean diameter of head of a screws by 'Assumed Mean Method.'

5. Following table shows the age distribution of persons in a particular region.

Age (in years)	Number of persons (in thousand)
Below 20	5
Below 30	9
Below 40	12
Below 50	18

Draw frequency polygon.

Q.4 Attempt any two of the following sub-questions. [8M]

1. In a certain race there are three boys A, B, C. The winning probability of A is twice than B and the winning probability of B is twice as C. Find the probability of A, B, C winning race.
2. Solve $\frac{14}{x+y} + \frac{3}{x-y} = 5$; $\frac{21}{x+y} - \frac{2}{x-y} = 1$
3. Find the sum of first 11 positive numbers which are multiples of 6.

Q.5 Attempt any two of the following. [10M]

1. The angles of the quadrilateral are in A.P. and the greatest angle is double the least find the angles of a quadrilateral.
2. The product of four consecutive natural numbers which are multiples of five is 15,000. Find those natural numbers.
3. When the son will be as old as his father today, the sum of their ages then will be 126. When the father was as old as his son is today, the sum of their ages then was 38. Find their present ages.