BOARD QUESTION PAPER : JULY 2015
ALGEBRA

Time: 2 Hours **Max. Marks: 40**

Note:

i. *All* questions are compulsory.

ii. Use of calculator is not allowed.

1. Attempt any five of the following subquestions: **[5]**

i. Find the first two terms of the following sequence:
$t_n = n + 2$.

ii. Write the quadratic equation $3y^2 = 10y + 7$ in the standard form
$ax^2 + bx + c = 0$

iii. Find the value of the following determinant: $\begin{vmatrix} 4 & 3 \\ 2 & 7 \end{vmatrix}$

iv. Write the sample space if two coins are tossed.

v. State whether the following sequence is an A.P. or not.
1, 3, 6, 10, …

vi. The perimeter of a rectangle is 36 cm. Write the equation for this statement using two variables.

2. Attempt any four of the following subquestions: **[8]**

i. If one root of the quadratic equation, $x^2 - 7x + k = 0$ is 4, then find the value of k.

ii. Find the eighteenth term of the A.P. 7, 13, 19, 25, …

iii. A die is thrown. Write the sample space. If P is the event of getting an odd number, then write the event P using set notation.

iv. If $D_x = 18$, $D_y = 15$ and $D = 3$ are the values of the determinants for certain simultaneous equations in x and y, then find the values of x and y.

v. Form the quadratic equation if its roots are 5 and 7.

vi. If for a certain frequency distribution, Median = 156 and Mode = 180, find the value of the Mean.

3. Attempt any three of the following subquestions : **[9]**

i. Solve the quadratic equation $2x^2 + 5x + 2 = 0$ using formula method.

ii. There are 30 tickets numbered from 1 to 30 in box and a ticket is drawn at random. If A is the event that the number on the ticket is a perfect square, then write the sample space S, n(S), the event A and n(A).

iii. Obtain the sum of the first 56 terms of an A.P. whose 18^{th} and 39^{th} terms are 52 and 148 respectively.

iv. Draw the graph of the equation $3x - y = -6$ and write the points of intersection of the graph with X-axis and Y-axis.

v. Electricity used by farmers during different parts of a day for irrigation is as follows:

Part of the Day	Morning	Afternoon	Evening	Night
Percentage of Electricity Used	30	40	20	10

Draw a pie diagram to represent this information.

4. Attempt any two of the following subquestions: **[8]**

i. A card is drawn at randonm from a well-shuffled pack of 52 playing cards. Find the probability of the events that the card drawn is:

a. a king b. a face card.

ii. Solve the quadratic equation: $3x^4 - 13x^2 + 10 = 0$

iii. The maximum bowling speed (km/hour) of 33 players at a cricket coaching centre is given below:

Bowling Speed (km/hr)	85-100	100-115	115-130	130-145
Number of Players	9	11	8	5

Find the modal bowling speed of players.

5. Attempt any two of the following subquestions : **[10]**

i. Students of a school were made to stand in rows for drill. If 3 students less were standing in each row, 10 more rows would be required and if 5 students more were standing in each row, then the number of rows would be reduced by 10. Find the number of students participating in the drill.

ii. In winter, the temperatures at a hill station from Monday to Friday are in A.P. The sum of the temperatures of Monday, Tuesday and Wednesday is 0°C and the sum of the temperatures of Thursday and Friday is 15°C. Find the temperature of each of the five days.

iii. Draw the Histogram and hence, the Frequency polygon for the following frequency distribution:

House Rent (in ₹ per month)	400-600	600-800	800-1000	1000-1200
Number of families	200	240	300	50