BOARD QUESTION PAPER : MARCH 2013

Time: 2 $\frac{1}{2}$ Hours **Max. Marks: 60**

Note:
i. *All* questions are compulsory.
ii. Use of calculator is not allowed.

Q.P. SET CODE
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1. Attempt any six of the following subquestions: [6]

i. Find the next two terms in the sequence:

1, 3, 7, 15, 31, ……

ii. Decide whether $\frac{3}{y} - 4 = y$

is a quadratic equation or not.

iii. Write the sample space when a die is thrown.

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

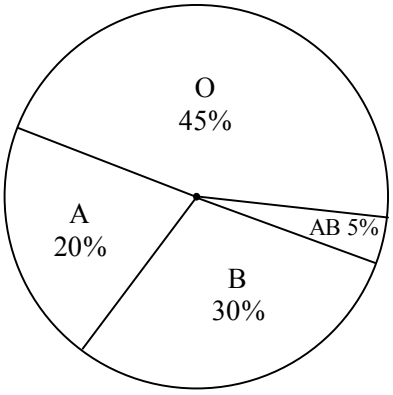
v. The frequency distribution of the age of persons (in years) attending trekking camp is given below:

Age (in years)	Number of persons
15 – 19	16
20 – 24	60
25 – 29	50
30 – 34	30
35 – 39	5

Find the mid-point of the class 20 – 24.

vi. Write the following quadratic equation $7 - 4x - x^2 = 0$ in the standard form.

vii. The pie diagram shows percentage of persons according to the blood group. Answer the following question:



Find the measure of central angle for blood group A.

2. Attempt any five of the following subquestions: [10]

i. Find first two terms of the sequence whose n^{th} term is $t_n = 2n - 5$.

ii. Solve by factorization method:
$y^2 - 36 = 0$.

iii. Solve the following simultaneous equations by using Cramer's rule:
$x + y = 10$;
$x - y = 2$.

iv. Find the sample space S and number of sample points n(S) when two coins are tossed.

v. Find the mean of the data whose median is 128 and mode is 90.

vi. If the following information is to be shown in the form of pie diagram, then find the measures of the central angles corresponding to the age groups 5 – 15 years and 15 – 35 years:

Age (in years)	Population
0 – 5	10%
5 – 15	20%
15 – 35	40%
35 – 65	25%
65 and more	5%

3. Attempt any four of the following subquestions: [12]

i. For a given A.P. if a = 6 and d = 3, find S_8.

ii. Solve the following quadratic equation by the method of completing square :
$z^2 + 6z - 8 = 0$.

iii. Solve the following simultaneous equations by using graphical method:
$x + y = 3$;
$x - y = 1$.

iv. The perimeter of an isosceles triangle is 44 cm. The length of its congruent sides is 4 cm more than its base. Find the lengths of all the sides.

v. A die is thrown. Find the probability of the following events:
   a. getting a number greater than 3 on the upper surface
   b. getting an even number on the upper surface.

4. Attempt any three of the following subquestions: [12]

*i. Find three consecutive terms in a G.P. such that the sum of the first two terms is 9 and the product of all the three terms is 216.

ii. Solve the quadratic equation by using the formula method:
$4x^2 + 7x + 2 = 0$.

iii. Solve the following simultaneous equations:
$\frac{1}{x} + \frac{1}{y} = 8$; $\frac{4}{x} - \frac{2}{y} = 2$.

*iv. Out of 100 students in a certain class, 70 students like Mathematics, 40 students like Science and 15 students like both Mathematics and Science. A student is selected at random. Find the probability that the student like Mathematics or Science.

5. Attempt any four of the following subquestions: [20]

i. Solve : $30\left(x^2+\frac{1}{x^2}\right)-77\left(x-\frac{1}{x}\right)-12=0$

*ii. The following is the frequency distribution of diameter of neem trees measured at 1 metre height from ground :

Diameter (cm)	**No. of Trees**
Below 25	0
Below 50	26
Below 75	68
Below 100	203
Below 125	215
Below 150	220

Prepare frequency distribution. Draw less than type cumulative frequency curve, more than cumulative frequency curve on the same graph paper. Also find the median.

*iii. The sum of first n terms of a sequence is $\frac{6^n-5^n}{5^n}$. Find its *n*th term. Examine whether the sequence is an A.P. or G.P.

iv. Solve the following simultaneous equations:

$$\frac{10}{x+y}+\frac{2}{x-y}=4;$$

$$\frac{5}{x+y}-\frac{5}{3(x-y)}=\frac{-2}{3}.$$

v. The following frequency distribution gives the monthly consumption of electricity of 70 consumers of a locality :

Monthly Consumption (Units)	**No. of Consumers**
65 – 85	04
85 – 105	05
105 – 125	13
125 – 145	22
145 – 165	14
165 – 185	08
185 – 205	04

Find its mean and median.