BOARD QUESTION PAPER :OCTOBER 2013
MATHS

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

Note:

i. *All* questions are compulsory.

ii. Use of calculator is not allowed.

1. Attempt any six of the following subquestions: **[6]**

i. Find the next two terms in the sequence:
1, 2, 4, 7, 11, ……

ii. Decide whether $(y - 2)(y + 2) = 0$
is a quadratic equation.

iii. Write the sample space S when two coins are tossed simultaneously.

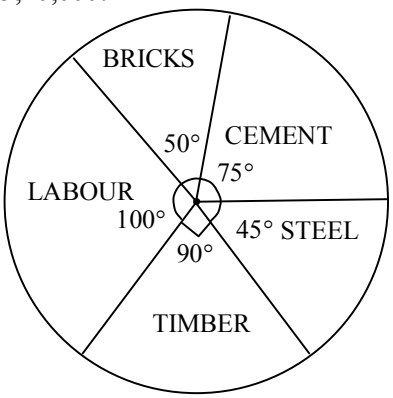
iv. Find the value of the following determinant: $\begin{vmatrix} 7 & 2 \\ 5 & 4 \end{vmatrix}$.

v. From the given frequency distribution table :

Age (in years)	No. of persons
15 – 19	16
20 – 24	60
25 – 29	50
30 – 34	30
35 – 39	5

Find the mid-point of the class 30 – 34.

vi. From the given pie diagram find the expenditure on timber in rupees, when the total expenditure on construction is ₹ 5,40,000.



vii. Write the quadratic equation in the standard form :
$y^2 - 9 = 13y$

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

i. If $33x + 12y = 123$ and $12x + 33y = 102$, then find the value of $x + y$.

ii. Solve by factorization method :
$49x^2 = 36$.

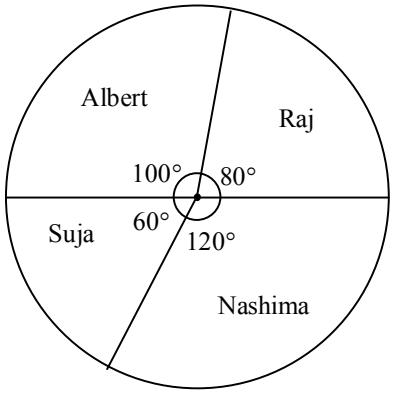
iii. Find the 12^{th} term of the A.P. 9,13, 17, 21, ……..

iv. Form 2 digit numbers using 0, 1, 2, 3, 4, 5 without repeating the digits, write the sample space S, number of sample points n(S), U, n(U) for U is the event that the number so formed is divisible by 5.

v. From the given information prepare the frequency table showing the values of x_i, f_i, and $f_i x_i$:

IQ x_i	**No. of Students** f_i
70 – 80	7
80 – 90	16
90 – 100	20
100 – 110	17

vi. The following pie diagram represents the number of valid votes secured by four students. The total number of valid votes is 720. Answer the following questions :



a. By how many votes did Nashima defeat suja?

b. Who got the minimum number of votes?

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

*i. Find the sum of first six terms (S_6) of the following G.P. :
1, 3, 9, ……..

ii. Solve by factorization method :
$7y^2 - 32y + 16 = 0$

iii. Solve the following simultaneous equations by using Cramer's Rule :
$3x + y = 1$;
$2x - 11y = 3$.

iv. The sum of two numbers is 60. The greater number is three times the smaller number. Find the numbers.

v. A coin is tossed three times. Then find the probability of the following events :
1. getting tail in the middle toss; and
2. getting all heads.

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

i. How many terms have to be considered for getting the sum 5740 in the A.P. 7, 14, 21, ……..

ii. Solve the following quadratic equation by using formula method :
$3y^2 + 7y + 4 = 0$.

iii. Solve the following simultaneous equations using graphical method :
$4x = y - 5$;
$y = 2x + 1$.

*iv. In a class of 100 students, 60 students drink tea, 50 students drink coffee and 30 students drink both tea and coffee. A student from this class is selected at random. Find the probability that the student takes at least one of the two drinks.

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

*i. Draw less than type cumulative frequency curve and find the median from the following table :

Marks Scored	Number of Students
Below 20	6
Below 40	10
Below 60	20
Below 80	36
Below 100	50

ii. The following table gives frequency distribution of time (in minutes) taken by a person in watching TV in a day :

Time (in min.)	No. of Persons
30 – 40	4
40 – 50	6
50 – 60	19
60 – 70	14
70 – 80	8
80 – 90	7
90 – 100	2

Find the modal time taken for watching a TV by person in a day.

iii. The speed of a boat in still water is 15 km/hr. It can go 45 km upstream and return downstream to the original point in 6 hrs. and 45 min. Find speed of the stream.

iv. Solve :

$$\frac{33}{u+2}+\frac{12}{v-3}=123$$

and $\frac{12}{u+2}+\frac{33}{v-3}=102.$

*v. The sum of first n terms of a sequence is $\frac{n^2(n+1)}{4}$. Find its n^{th} term. Examine whether the sequence is an A.P. or a G.P.