



# BOARD QUESTION PAPER: NOVEMBER 2020

## Maths - I

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

- i. All questions are compulsory.
- ii. Use of calculator is not allowed.
- iii. The numbers to the right of the questions indicate full marks.
- iv. In case of MCQ's (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.
- v. For every MCQ, the correct alternative (A), (B), (C) or (D) with sub-question number is to be written as an answer.

**Q.1. (A) Four alternative answers are given for every sub-question. Choose the correct alternative and write its alphabet with sub-question number:**

**[4]**

- i. To draw graph of  $4x + 5y = 19$ , what will be the value of  $y$  when  $x = 1$ :  
(A) 4      (B) 3      (C) 2      (D) -3
- ii. What is the sum of the first 10 natural numbers?  
(A) 55      (B) 20      (C) 65      (D) 11
- iii. From the following equations, which one is the quadratic equation?  
(A)  $\frac{5}{x} - 3 = x^2$       (B)  $x(x + 5) = 2$       (C)  $n - 1 = 2n$       (D)  $\frac{1}{x^2}(x + 2) = x$
- iv. In the format of GSTIN there are \_\_\_\_\_ alpha-numerals.  
(A) 9      (B) 10      (C) 16      (D) 15

**Q.1. (B) Solve the following subquestions:**

**[4]**

- i. For simultaneous equations in variable  $x$  and  $y$ , if  $D_x = 25$ ,  $D_y = 40$ ,  $D = 5$ , then what is the value of  $x$ ?
- ii. Find the first term and common difference for the following A.P:  
127, 135, 143, 151, .....
- iii. A die is rolled then write sample space 'S' and number of sample point  $n(S)$ .
- iv. If  $\sum f_i d_i = 108$  and  $\sum f_i = 100$ , then find  $\bar{d} = ?$

**Q.2. (A) Complete the following activities and rewrite it (any two):**

**[4]**

i. **Activity:**

$$\begin{vmatrix} 3 & 2 \\ 4 & 5 \end{vmatrix} = 3 \times \boxed{\phantom{00}} - \boxed{\phantom{00}} \times 4$$
$$= \boxed{\phantom{00}} - 8$$
$$= \boxed{\phantom{00}}$$

- ii. One of the roots of quadratic equation  $5m^2 + 2m + k = 0$  is  $-\frac{7}{5}$ .

Complete the following activity to find the value of  $k$ .

**Activity:**

$-\frac{7}{5}$  is a root of quadratic equation

$$5m^2 + 2m + k = 0$$





Put  $m = \boxed{\quad}$  in the equation

$$\therefore 5 \times \left(-\frac{7}{5}\right)^2 + 2 \times \boxed{\quad} + k = 0$$

$$\therefore \boxed{\quad} + \left(-\frac{14}{5}\right) + k = 0$$

$$\therefore k = \boxed{\quad}$$

- iii. Complete the activity to prepare a table showing the co-ordinates which are necessary to draw a frequency polygon:

<b>Class</b>	18 – 19	19 – 20	20 – 21	<input type="text"/>
<b>Class Mark</b>	18.5	19.5	<input type="text"/>	21.5
<b>Frequency</b>	4	<input type="text"/>	15	19
<b>Co-ordinates of point</b>	<input type="text"/>	(19.5, 13)	(20.5, 15)	(21.5, 19)

**Q.2. (B) Solve the following sub-questions (any four):**

[8]

- Sum of two numbers is 7 and their difference is 5. Find the numbers.
- Solve the quadratic equation by factorisation method:  
 $x^2 + x - 20 = 0$
- Find the 19th term of the following A.P.:  
 7, 13, 19, 25, ....
- For the following experiments, write sample space ‘S’ and number of sample points  $n(S)$ :  
 Two digit numbers are formed using digits 2, 3 and 5 without repeating a digit.
- The following table shows causes of noise pollution. Find the measure of central angles for each, to draw a pie diagram:

Construction	Traffic	Aircraft take offs	Industry
10%	50%	15%	25%

**Q.3. (A) Complete the following activity and rewrite it (any one):**

[3]

- In an A.P. the first term is  $-5$  and last term is  $45$ . If sum of ‘n’ terms in the A.P. is  $120$ , then complete the activity to find  $n$ .

**Activity:**

$$t_1 = -5, t_n = \boxed{\quad}, S_n = \boxed{\quad}$$

$$S_n = \frac{n}{2} [t_1 + \boxed{\quad}]$$

$$\boxed{\quad} = \frac{n}{2} [-5 + 45]$$

$$240 = n \times \boxed{\quad}$$

$$\therefore n = \boxed{\quad}$$

- A card is drawn from a well shuffled pack of 52 playing cards.  
 Complete the activity to find the probability of the event that the card drawn is a red card.

**Activity:**

‘S’ is the sample space.

$$n(S) = 52$$

Event A: Card drawn is a red card.

$$\text{Total number of red cards} = \boxed{\quad} \text{ hearts} + \boxed{\quad} \text{ diamonds}$$

$$\therefore n(A) = \boxed{\quad}$$





$$p(A) = \frac{\boxed{\phantom{0}}}{n(S)}$$

$$\therefore p(A) = \frac{\boxed{\phantom{0}}}{52}$$

$$\therefore p(A) = \boxed{\phantom{0}}$$

**Q.3. (B) Solve the following subquestions (any two):****[6]**

- Solve the following simultaneous equations graphically:  
 $x + y = 5; x - y = 1.$
- Solve quadratic equation using formula method:  
 $5m^2 + 13m + 8 = 0.$
- A retailer sold 2 tins of lustre paint and taxable value of each tin is ₹ 2,800. If the rate of GST is 28%, then find the amount of CGST and SGST charged in the tax invoice.
- Time allotted for the preparation of an examination by some students is shown in the table. Draw a histogram to show this information:

Time (minutes)	No. of Students
60-80	14
80-100	20
100-120	24
120-140	22

**Q.4. Solve the following subquestions (any two):****[8]**

- If one root of the quadratic equation  $ax^2 + bx + c = 0$  is half of the other root, show that,  
 $b^2 = \frac{9ac}{2}.$
- Bhujangrao invested ₹ 2,50,590 in shares of F.V. ₹ 10 when M.V. is ₹ 250. Rate of brokerage is 0.2% and GST is 18%, then find:
  - the number of shares purchased,
  - the amount of brokerage paid, and
  - GST paid for the trading.
- The following table shows frequency distribution of number of trees planted by students in the school:

No. of Trees Planted	No. of Students
0-10	30
10-20	70
20-30	100
30-40	70
40-50	40

Find the mode of trees planted.

**Q.5. Solve the following subquestions (any one):****[3]**

- Six faces of a die are as shown below:



If the die is rolled once, find the probability of event 'M' that 'English vowel appears on upper face'.

- Construct any one linear equation in two variables. Obtain another equation by interchanging only coefficients of variables. Find the value of the variables.

