

## BOARD QUESTION PAPER: MARCH 2020

### Mathematics Part - 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) of answers with subquestion number is to be written as an answer.

**Q.1. A. For every subquestion 4 alternative answers are given. Choose the correct answer and write the alphabet of it:** [4]

- i. In the format of GSTIN there are \_\_\_\_\_ alpha-numerals.  
 (A) 15 (B) 10  
 (C) 16 (D) 9
- ii. From the following equations, which one is the quadratic equation?  
 (A)  $\frac{5}{x} - 3 = x^2$  (B)  $x(x + 5) = 4$   
 (C)  $n - 1 = 2n$  (D)  $\frac{1}{x^2}(x + 2) = x$
- iii. For simultaneous equations in variables  $x$  and  $y$ , if  $D_x = 49$ ,  $D_y = -63$ ,  $D = 7$ , then what is the value of  $x$ ?  
 (A) 7 (B) -7  
 (C)  $\frac{1}{7}$  (D)  $-\frac{1}{7}$
- iv. If  $n(A) = 2$ ,  $P(A) = \frac{1}{5}$ , then  $n(S) = ?$   
 (A)  $\frac{2}{5}$  (B)  $\frac{5}{2}$   
 (C) 10 (D)  $\frac{1}{3}$

**Q.1. B. Solve the following subquestions:** [4]

- i. Find second and third term of an A.P. whose first term is  $-2$  and common difference is  $-2$ .
- ii. 'Pawan Medicals' supplies medicines. On some medicines the rate of GST is 12%, then what is the rate of CGST and SGST?
- iii. Find the values of  $a$  and  $b$  from the quadratic equation  $2x^2 - 5x + 7 = 0$ .
- iv. If  $15x + 17y = 21$  and  $17x + 15y = 11$ , then find the value of  $x + y$ .

**Q.2. A. Complete and write any two activities from the following:** [4]

- i. Complete the following table to draw the graph of  $2x - 6y = 3$ :

$x$	$-5$	<input style="width: 40px; height: 20px;" type="text"/>
$y$	<input style="width: 40px; height: 20px;" type="text"/>	$0$
$(x, y)$	<input style="width: 40px; height: 20px;" type="text"/>	<input style="width: 40px; height: 20px;" type="text"/>

- ii. First term and common difference of an A.P. are 6 and 3 respectively. Find  $S_{27}$ .

**Solution:**

First term =  $a = 6$ , common difference =  $d = 3$ ,  $S_{27} = ?$

$$S_n = \frac{n}{2} [ \boxed{\phantom{00}} + (n-1)d ] \text{ - formula}$$

$$S_{27} = \frac{27}{2} [ 12 + (27-1) \boxed{\phantom{00}} ]$$

$$= \frac{27}{2} \times \boxed{\phantom{00}}$$

$$= 27 \times 45$$

$$\therefore S_{27} = \boxed{\phantom{00}}$$

- iii. A card is drawn from a well shuffled pack of 52 playing cards. Find the probability of the event, the card drawn is a red card.

**Solution:**

Suppose 'S' is sample space.

$$\therefore n(S) = 52$$

Event A: Card drawn is a red card.

$$\therefore \text{Total red cards} = \boxed{\phantom{00}} \text{ hearts} + 13 \text{ diamonds}$$

$$\therefore n(A) = \boxed{\phantom{00}}$$

$$\therefore p(A) = \frac{\boxed{\phantom{00}}}{n(S)} \text{ - formula}$$

$$\therefore p(A) = \frac{26}{52}$$

$$\therefore p(A) = \boxed{\phantom{00}}$$

**Q.2. B. Solve any four subquestions from the following:**

**[8]**

- i. Find the value of the determinant:

$$\begin{vmatrix} 7 & 5 \\ 3 & 3 \\ 3 & 1 \\ 2 & 2 \end{vmatrix}$$

- ii. Solve the quadratic equation by factorisation method:

$$x^2 - 15x + 54 = 0$$

- iii. Decide whether the following sequence is an A.P. if so, find the 20<sup>th</sup> term of the progression:

$$-12, -5, 2, 9, 16, 23, 30, \dots\dots\dots$$

- iv. A two digit number is formed with digits 2, 3, 5, 7, 9 without repetition. What is the probability that the number formed is an odd number?

- v. If  $L = 10, f_1 = 70, f_0 = 58, f_2 = 42, h = 2$ , then find the mode by using formula.

Q.3. A. Complete and write any *one* activity from the following:

[3]

i.

Age group (in years)	No. of Persons	Measure of central angle
20 – 25	80	$\frac{\square}{200} \times 360 = \square$
25 – 30	60	$\frac{60}{200} \times 360 = \square$
30 – 35	35	$\frac{35}{200} \times \square = 63^\circ$
35 – 40	25	$\frac{25}{200} \times 360 = \square$
Total	200	$\square$

ii. Shri Shantilal has purchased 150 shares of FV ₹ 100, for MV of ₹ 120, Company has paid dividend at 7%, then to find the rate of return on his investment, complete the following activity:

**Solution:** FV = ₹ 100; Number of shares = 150

Market value = ₹ 120

1. Sum investment = MV × No. of Shares

$$= \square \times \square$$

∴ Sum investment = ₹ 18,000

2. Dividend per share = FV × Rate of dividend

$$= \square \times \frac{\square}{100}$$

$$= ₹ 7$$

∴ Total dividend received = 150 × 7

$$= \square$$

3. Rate of return =  $\frac{\text{Dividend income}}{\text{Sum invested}} \times 100$

$$= \frac{1050}{18000} \times 100$$

$$= \square$$

Q.3. B. Attempt any *two* subquestions from the following:

[6]

i. A balloon vendor has 2 red, 3 blue and 4 green balloons. He wants to choose one of them at random to give it to Pranali. What is the probability of the event that Pranali gets:

1. a red balloon.
2. a blue balloon.

ii. The denominator of a fraction is 4 more than twice its numerator. Denominator becomes 12 times the numerator, if both the numerator and the denominator are reduced by 6, find the fraction.

- iii. A milk centre sold milk to 50 customers. The table below gives the number of customers and the milk they purchased. Find the mean of the milk sold by direct method:

Milk Sold (litre)	No. of Customers
1–2	17
2–3	13
3–4	10
4–5	7
5–6	3

- iv. In an A.P. sum of three consecutive terms is 27 and their products is 504. Find the terms.  
(Assume that three consecutive terms in an A.P. are  $a - d$ ,  $a$ ,  $a + d$ .)

**Q.4. Attempt any two subquestions from the following:**

[8]

- i. Represent the following data by histogram:

Price of Sugar (per kg in ₹)	Number of Weeks
18–20	4
20–22	8
22–24	22
24–26	12
26–28	6
28–30	8

- ii. One person borrows ₹ 4,000 and agrees to repay with a total interest of ₹ 500 in 10 instalments. Each instalment being less than the preceding instalment by ₹ 10. What should be the first and the last instalments?
- iii. The sum of the areas of two squares is 400 sq.m. If the difference between their perimeters is 16 m, find the sides of two squares.

**Q.5. Attempt any one subquestion from the following:**

[3]

- i. Convert the following equations into simultaneous equations and solve:

$$\sqrt{\frac{x}{y}} = 4, \frac{1}{x} + \frac{1}{y} = \frac{1}{xy}$$

- ii. A dealer sells a toy for ₹ 24 and gains as much percent as the cost price of the toy. Find the cost price of the toy.