# N 362

Seat No. 8 6 6 9 3 2 3

2020 III 12 1100 -N 362- MATHEMATICS (71) ALGEBRA-PARTI (E)

Time : 2 Hours(Pages 10)Max. Marks : 40

Note :— (i) All questions are compulsory.

- (ii) Use of a 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.
- 1. (A) For every subquestion 4 alternative answers are given. Choose the correct answer and write the alphabet of it : 4

**Previous Pathshala** 

- (i) In the format of GSTIN there are ..... alpha-numerals.
  - (A) 15
  - (B) 10
  - (C) 16
  - (D) 9

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(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)  $7_x$   
(B)  $-7$   
(C)  $\frac{1}{7}$   
(D)  $-\frac{1}{7}$   
(iii) If  $n(A) = 2$ ,  $P(A) = \frac{1}{5}$ , then  $n(S) = ?$   
(A)  $\frac{2}{5}$   
(B)  $\frac{5}{2}$   
(C) 10  
(D)  $\frac{1}{3}$ 

## (B) Solve the following subquestions :

- (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

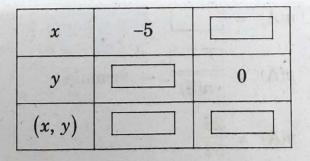
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- (iv) If 15x + 17y = 21 and 17x + 15y = 11, then find the value of x + y.
- 2. (A) Complete and write any two activities from the following :
  - (i) Complete the following table to draw the graph of

2x-6y=3:

5x +

7 = 0



## P.T.O.

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(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,  $S_{27} = ?$ 

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

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

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

$$= 27 \times 45$$

$$S_{27} = \boxed{ 0005}$$

(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.

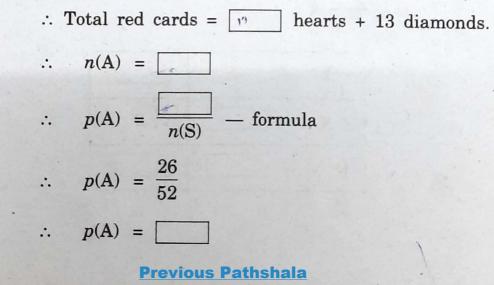
## Solution :

...

Suppose 'S' is sample space.

$$n(S) = 52$$

Event A : Card drawn is a red card.



## (B) Solve any four subquestions from the following :

(i) Find the value of the determinant :



(ii)

Solve the quadratic equation by factorisation method :

-15x + 54 = 0.5

(*iii*) Decide whether the following sequence is an A.P.; if so, find the

20th term of the progression :

-12, -5, 2, 9, 16, 23, 30, .....

(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.

#### **Previous Pathshala**

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### 3.

## (A) Complete and write any one activity from the following : 3

2.33
1 . 1
100
2.0.0

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

(ii)

Shri Shantilal has purchased 150 shares of FV  $\gtrless$  100, for MV of  $\gtrless$  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

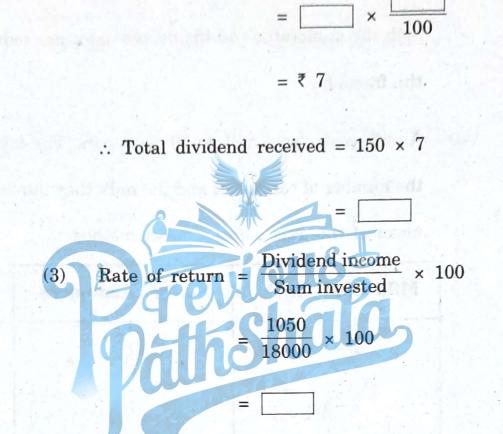
Market value = ₹ 120

(1)  $\therefore$  Sum investment = MV × No. of Shares

=

×

∴ Sum investment = ₹ 18,000



(2) Dividend per share =  $FV \times Rate$  of dividend

## (B) Attempt any two subquestions from the following :

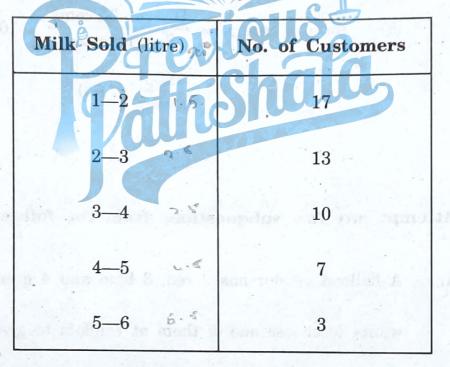
- (i) A balloon vendor has 2 red, 3 blue and 4 green balloons. He wants to choose one of them at random to give it to Pranali.
   What is the probability of the event that Pranali gets :
  - (1) a red balloon
  - (2) a blue balloon.

#### **Previous Pathshala**

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- (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 :

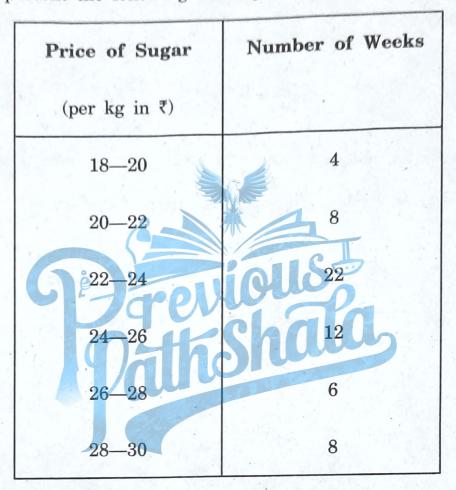


- (iv)
  - In an A.P. sum of three consecutive terms is 27 and their products is 504. Find the terms.

(Assume that three consecutive terms in an A.P. are a - d, a, a + d.)

## 4. Attempt any two subquestions from the following :

(i) Represent the following data by histogram :



- (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.

P.T.O.

## 5. Attempt any one subquestion from the following :

 (i) Convert the following equations into simultaneous equations and solve :

3

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

(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.

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