

<b>Q.P. SET CODE</b>
<b>B</b>

# MT - X

Seat No.

2017 \_\_ \_\_ 1100 - MT - X - GENERAL MATHEMATICS (71)ALGEBRA- SET - B (E)

**Time : 2 Hours**

**(Pages 4)**

**Max. Marks : 40**

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**Note :**

- (i) All questions are compulsory.
- (ii) Use of calculator is not allowed.

**Q.1. Solve ANY FIVE of the following :**

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- (i) Write any two Arithmetic progressions with common difference 2.
- (ii) Check whether the following equation is a quadratic equation.  
Justify :  $y^2 + y^3 + 2 = 0$ .
- (iii) Is  $5x^2 + 3y^3 = 29$  a linear equation in two variables ? Justify ?
- (iv) Find M.P when S.P = ₹ 99 and discount = ₹ 11.
- (v) If sale price is ₹ 32000 and rate of CST is 2%, then find CST and selling price.
- (vi) Determine whether the given sequence is an Arithmetic progression :  
11, 16, 21, 26, .....

**Q.2. Solve ANY FOUR of the following :****8**

- (i) The  $n^{\text{th}}$  term of a sequence is given below. Find the first five terms of the sequence :  $t_n = n^3 - 3$ .
- (ii) Write the following quadratic equation in the form  $ax^2 + bx + c = 0$   
 $(n + 1)(n - 3) = 0$
- (iii) Find  $x + y$  for the following simultaneous equations :  
 $3x + 5y = 9$ ,  $5x + 3y = 7$ .
- (iv) Observe the following table and determine which table represents direct variation.

(a)

p	12	15	24
q	8	10	16

(b)

m	4	6	2
n	$\frac{1}{3}$	$\frac{1}{2}$	$\frac{1}{4}$

- (v) An agent earn 5% commission on the sales. If his sale is ₹ 25000, find his commission.
- (vi) Qureshi Gas Agencies purchased commercial gas cylinders for ₹ 14500 and sold them to customer for ₹ 16500. Calculate M-VAT as per subtraction method if VAT rate is 12.5%.

**Q.3. Solve ANY THREE of the following :****9**

- (i) Find  $S_{25}$  of an A.P. 4, 8, 12, 16, ..... .

- (ii) Solve the following quadratic equation by factorization method :  
 $y^2 - 11y + 24 = 0$
- (iii) 'y' varies inversely as x and  $y = 48$  when  $x = 5$  find (a) The value of x when  $y = 15$ . (b) The value of y when  $x = 8$ .
- (iv) A small scale industry gives 9% commission and 5% del-credere to his agent. If the agent sells the goods of ₹95000 find the total earning of the agent.
- (v) Prabhat Tea Depot sold 10 kg coffee at the rate ₹ 540 per kg to Vijay Tea Depot which was sold to Mohan Tea Depot for ₹5,600 and finally to the customer for ₹ 6,000. Find the VAT payable at each stage of trading at the rate of 5% by invoice method.

**Q.4. Solve ANY TWO of the following :****8**

- (i) Solve the following quadratic equation by completing square method :  
 $p^2 + 8p + 4 = 0$
- (ii) The electric current (I) flowing through a circuit is directly proportional to the potential difference (V) in it. When the potential difference is 60 volts, the electric current is 1.5 amperes. Find the electric current flowing through the circuit when the potential difference is 100 volts.
- (iii) A wholesaler purchased electric material for ₹ 1,50,000. He sold it to a retailer for ₹ 1,80,000. Retailer sold the same material to customer for ₹ 2,20,000. Find the M-VAT payable at every stage of trading at the rate of 12.5%.

**Q.5. Solve ANY TWO of the following :**

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(i) If the first term of an A.P. is 25 and common difference is 7 then find  $S_{40}$ .

(ii) Solve the following simultaneous equations :

$$\frac{x}{2} + \frac{2y}{3} = 1, \quad \frac{2x}{3} - y = 7$$

(iii) A ceiling fan is marked at ₹ 1940 cash or for ₹ 420 cash down payment and balance payment followed by 3 equal monthly instalments. If the rate of interest charged under the instalment plan is 16% per annum, find the amount of monthly instalment.