

MT

2017 ____ ____ 1100

Seat No.

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MT- GENERAL MATHEMATICS (71)ALGEBRA- SEMI PRELIM II- PAPER- I (E)

Time : 2½ Hours

(Pages 4)

Max. Marks : 40

Note :

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

Q.1. Attempt ANY FIVE of the following :

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- (i) Check whether the following equation is a quadratic equation :

$$4y^2 + 1 = 8y$$

- (ii) Write the following statement by using the sign of variation :

The electric current (I) in a circuit is directly proportional to potential difference (V).

- (iii) Find CST for the following sale price ₹ 11500 if the rate of CST is 2%.

- (iv) Write the following quadratic equation in the form $ax^2 + bx + c = 0$.

$$m(2m + 1) = 0$$

- (v) Write down the relation of variation between the variables in the following formula :

$$D = \frac{M}{V} \quad [M \text{ is constant}]$$

- (vi) Calculate the education cess at the rate of 3% on the income tax for F.Y. 2012-13 as given below : ₹ 500

Q.2. Solve ANY FOUR of the following :

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- (i) Solve the following quadratic equation by factorization method :
 $n^2 - 36 = 0$
- (ii) If x varies inversely as y and x = 10 when y = 8 find 'y' when x = 4.
- (iii) Find the sale price for the following list price if the discount of 10% is given : ₹ 1500
- (iv) Find the value of $b^2 - 4ac$ for the following quadratic equation :
 $p^2 - 4p + 4 = 0$
- (v) The number of paper sheet is directly proportional to its weight. If the weight of 12 sheets of paper is 40 gm how many sheets of the same paper would 2500 gm weight ?
- (vi) Kumkum Stores has paid ₹ 1,00,500 as tax on purchase and collected ₹ 1,22,500 as tax on sale during the period Jan. 2012 to March 2012. Find VAT liability of Kumkum Stores during this period.

Q.3. Solve ANY THREE of the following :

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- (i) Solve the following quadratic equation by factorization method :
 $b^2 + 2b - 35 = 0$

- (ii) Complete the following table in which 'n' is directly proportional to 'm'.

m	4	5	12	-
n	16	20	-	28

- (iii) Find the selling price for the following list price if discount of 10% is given and the rate of CST is 2%.

₹ 30000

- (iv) Solve the following quadratic equation by formula method :

$$3x^2 + 5x + 3 = 0$$

- (v) 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.4. Solve ANY TWO of the following :

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- (i) Solve the following quadratic equation by completing square method :
 $4x^2 + 7 - 12x = 0$
- (ii) The length of the shadow of an object of the day and its height at a particular time varies directly with each other. At a particular time of the day, length of shadow of a shrub is 64 cm and height is 40 cm. Find the length of a shadow when the height of a tree is 8.8 metre.
- (iii) A sewing machine is sold for ₹7344 which includes 10% discount and 2% CST. Find the marked price of the sewing machine.

Q.5. Solve ANY TWO of the following :

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- (i) Dhondiba's sugarcane field is in the shape of right angled triangle and base of field exceeds its height by 10 m. If area of that field is 600 sq. m, find its base.
- (ii) The pressure of wind on a plane surface varies directly to the square of its speed. When the wind is blowing with a speed of 25 km/hr, its pressure on a plane surface is 1550 N/m². Find the pressure when the wind blows at the speed of 75 km/hr.
- (iii) Mr. A.P. Deshpande (45 years) serving in a company and earns ₹ 23,700 per month. (excluding travelling allowance). He deposited ₹ 2300 per month towards provident fund. He bought N.S.C. of ₹ 10,000 and donated ₹ 6000 to C.M. relief fund. Find the income tax he has to pay for F.Y. 2012-13.

Best Of Luck 🍀