

MT

2017 ____ 1100

Seat No.

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

$$x + 2x^3 = 7$$

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

The electric current (I) in a circuit is inversely proportional to resistance (R).

- (iii) Find CST for the sale price ₹ 20000 if the rate of CST is 2%.

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

$$3p + p^2 = 5$$

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

$$I = k \times \frac{1}{D^2} \text{ [k is constant]}$$

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

₹ 2000

Q.2. Solve ANY FOUR of the following :

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- (i) Solve the following quadratic equation by factorization method :
 $x^2 - 49 = 0$
- (ii) If x varies inversely as y and $x = 33$ when $y = 12$, find ' x ' when $y = 11$.
- (iii) Find the sale price for the following list price if the discount of 10% is given : ₹ 1250
- (iv) Find the value of $b^2 - 4ac$ for the following quadratic equation :
 $2y^2 - 2y + 2 = 0$
- (v) The number of books varies directly as the cost of the books. The cost of 10 books is ₹ 150. How many such books can be purchased for ₹ 600?
- (vi) Fatima the proprietor of a firm paid ₹ 1250 tax on purchase and collected ₹ 1475 tax on sale. Find M-VAT payable by Fatima.

Q.3. Solve ANY THREE of the following :

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- (i) Solve the following quadratic equation by factorization method :
 $y^2 - 11y + 24 = 0$

- (ii) If $a \propto \frac{1}{b}$, complete the following table :

a	20	8	-
b	4	-	5

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

₹ 28500

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

$$x^2 + 4x + 5 = 0$$

- (v) Sachin Enterprises sold two water pumps with marked price of ₹4,750 each to Suvidha Enterprises. Suvidha Enterprises sold them to Manas Brothers for ₹10,700. Manas Brothers sold them to a customer for ₹11,800. Find M-VAT payable at every stage 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 :

$$5y^2 - 4y - 1 = 0$$

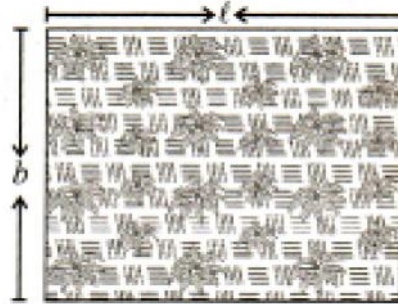
- (ii) Number of books stacked in shelf is inversely proportional to the thickness of books. In a library 180 books having thickness 3 cm each can be stacked in a shelf. If the thickness is reduced to 2 cm then how many such books can be stacked in the shelf ?

- (iii) Arunrao paid ₹1938 for an electric iron which includes 5% discount on printed price and 2% CST on sale price. Find its printed price.

Q.5. Solve ANY TWO of the following :

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- (i) The ratio of the length and breadth of a rectangular carpet is 8 : 5. If the area of the carpet is 1000 sq.m. Find its length and breadth in the adjoining figure.



- (ii) The force of attraction between two unlike poles of a magnet varies inversely as the square of the distance. When the distance between two poles is 1.4m the force of attraction is 2.5N, find the force of attraction between the same poles when the distance between them is 0.7m.
- (iii) Mr. Ganesh Thakar (63 years) is working in an advertising company. His gross annual income from all sources excluding P.T. and travelling allowances is ₹ 3,50,000 for F.Y. 2012-13. He paid ₹ 5000 to prime Minister relief fund. He bought NSC of ₹ 12,000. Compute the income tax for Mr. Ganesh Thakar.

Best Of Luck 🍀