

MT

2017 ____ ____ 1100

Seat No.

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MT GENERAL MATHEMATICS (71) ALGEBRA - SEMI PRELIM - I - PAPER - 1 (E)

Time : 2½ Hours

(Pages 3)

Max. Marks : 40

Q.1. Solve the following : (Any 5)

5

- (i) Find the next three terms of the sequence given below :
0, 1, 4, 9, 16,
- (ii) Determine whether $x = 5$ and $y = 3$ is the solution of the equation
 $2x + 5y = 25$.
- (iii) Determine whether the given sequence is an Arithmetic progression :
1, 3, 5, 7,
- (iv) Namdeorao purchased a towel at ₹ 80 from Khadi Bhandar. The M.R.P. of towel is 90. Find the amount of rebate.
- (v) Express the following information in mathematical form using two variables. (Use variables x and y).
Total cost of 2 buckets and a mug is ₹ 215.
- (vi) An agent earns 8% commission on total sale of ₹17000. Find the commission of the agent.

Q.2. Solve the following : (Any 4)

8

- (i) Solve the following simultaneous equations by method of equating the coefficients : $2x - y = 0$, $5x + y = -14$.
- (ii) Find the first three terms of the sequence for which S_n is given below :
 $S_n = n^3 (n + 1)$.

- (iii) An agent sold goods worth ₹13000 and gave ₹12350 to his principal. Find the rate of commission of the agent.
- (iv) If $t_n = 5n - 2$, find A.P.
- (v) Solve the following simultaneous equations by the method of substitution : $x + 4y = 15$, $5x - 3y = 6$
- (vi) The total printed price of article purchased from Khadi Emporium is ₹3360. The Bhandar gave total rebate ₹504. Find the percentage rebate.

Q.3. Solve the following : (Any 3)**9**

- (i) Find the sum of the first 20 natural numbers.
- (ii) Solve the following simultaneous equations by method of equating the coefficients $7c + 5d = 31$, $2d = 10 - 2c$.
- (iii) Sheshrao Patil purchased 2 towels for ₹90 each, 3 shirts for ₹220 each and 4 trousers for ₹290 each from Swarajya Khadi Bhandar, Wardha. The Bhandar gave 20% rebate. Find the amount Sheshrao Patil paid.
- (iv) Solve the following simultaneous equations by the method of substitution $\frac{x - 3y}{4} = 3$, $3x - 2y = 1$
- (v) A dinner set is sold for ₹1500 cash or for ₹1000 cash down payment and ₹545 to be paid in one instalment after 6 months. Find the rate of interest charged under instalment scheme.

Q.4. Solve the following : (Any 2)**8**

- (i) Deepak saves ₹36000 in ten years. In each year after the first, he saves ₹600 more than the preceding year. How much did he saved in the first year ?
- (ii) Perimeter of an isosceles triangle is 13 cm. Length of each congruent side of a triangle is less than its base by 1 cm. Find the length of the base and each congruent side of a triangle.
- (iii) Dinkar works as a part-time salesman in a mobile shop at 6% commission on the total sales and 4% incentive on excess of sale over ₹20000. If his monthly sales is ₹36000, then find the monthly earning of Dinkar.

Q.5. Solve the following : (Any 2)**10**

- (i) In a two digit number the digit at ten's place is greater than the digit at unit's place by 3. Sum of the original number and the number obtained by interchanging the digits is 143. Find the original number.
- (ii) Farm equipments are sold for ₹8000 cash on for ₹2000 cash down payment and balance payment in 6 equal monthly instalments. If the rate of interest is 8 p.c.p.a. find the amount of each instalment.
- (iii) A farmer borrowed ₹8000, and agreed to repay with a total interest of ₹1360 in 12 monthly instalments, each instalment being less than the preceding one by ₹40. Find the amount of the first and the last instalment ?