MATHEMATICS-9th (2012)

NOTE: There are three sections of this paper. carefully read the instructions for each section and attempt accordingly. Attempt all questions of section-A and return it to the superintendent within given time even if you have not attempted any question. Select the correct choice and write only A,B,C or D, whichever is appropriate, in the answer box. No marks will be awarded for cutting/erasing/overwriting.

SECTION-A

Tim: 20 Min   Max. Marks: 15

1. If A={2,5,8}, B={1,2,3........9} then A-B=
   (a) {1,3,4,6,7} (b) {9} (c) {6,7} (d) { }

2. If A={5,10,15}, B=ϕ then A×B=
   (a) $(5, \phi)$ (b) $(5, \phi)(10, \phi)$ (c) $(5, \phi)(10, \phi)(15, \phi)$ (d) { }

3. If R={(3,1)(4,2)(5,3)} is a binary relation, then Domain R=
   (a) {1,2} (b) {3,4} (c) {3,4,5} (d) {1,2,3}

4. Additive inverse of -3 is (a) 0, (b) -3, (c) 3, (d) 6

5. If $n\sqrt{x} = y$, the (a) $x - y^{1/n}$ (b) $y^n = x$, (c) $x^n = y$, (d) $\frac{x}{y} - n$

6. $x^2(-x)^4 =$ (a) $-x^6$, (b) $-x^6$, (c) x^6, (d) x^8

7. $10^0 = 1$ may be written in logarithm from as:
   (a) $Log_1 10 = 0$, (b) $Log_{10} 0 = 1$, (c) $Log_{10} 1 = 0$ (d) $Log_0 1 = 10$

8. If $Log_2 8 = x$, then x= (a) 64 (b) 3^2 (c) 3 (d) 2^8

9. If P(x)= $x^2 - 5x + 6$ then P(5)= (a) 56 (b) 6 (c) -6 (d) 65

10. If a-b=6 and ab=16 then a+b= (a) 100 (b) 10 (c) -10 (d) ±10

11. $a^2b^2 - 9 =$ (a) $(ab + 3)^2$ (b) $(ab - 3)^2$ (c) $(ab + 3)(ab - 3)$ (d) $(ab - 3)$

12. If $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ then adj A= (a) $\begin{bmatrix} -a & b \\ c & -d \end{bmatrix}$ (b) $\begin{bmatrix} -d & b \\ c & -a \end{bmatrix}$ (c) $\begin{bmatrix} d & b \\ c & a \end{bmatrix}$ (d) $\begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$

13. If the non-common arms of two adjacent angles lies on a line then they are called:
    (a) complementary angles (b) supplementary angles (c) acute angles (d) obtuse angles

14. With respect to angles, the kinds of triangles are: (a) 3 (b) 4 (c) 5 (d) 6

15. A quadrilateral whose diagonals are right bisector but are not congruent is called:
    (a) rectangle (b) square (c) rhombus (d) trapezium

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Time: 2 hrs 40 Minutes   SECTION-B   Max. Marks: 36

1. Attempt any nine of the following. All carry equal marks.

   i. Domain of a binary relation $R = \{(x,y) y + 1 = 2x^2\}$ in set N is N. Find its range.

   ii. If $\frac{1}{p} = 9 - 4\sqrt{5}$, then find the value of $p^2 - \frac{1}{p^2}$

   iii. Simplify $\frac{(2a+3b)^3(x^2+y)^4(z^2+xy)^3}{(z^2+xy)(2a+3b)^2(x^2+y)^2}$

   iv. Find the value of x if $Log_8 x = \frac{-2}{3}$

   v. Simplify with the help of logarithm $\frac{(67.35)(48.27)}{(16.18)^2}$

   vi. If $x + \frac{1}{x} = 5$ then find the value of $x^4 + \frac{1}{x^4}$

   vii. Factorize $1 - x^2 + 2xy - y^2$

   viii. Find H.C.F. $8a^4 + 3a + 10, 10a^4 + 3a^3 + 8$

   ix. Simplify $\frac{6x^2 - 6x}{x^2 + 2x - 3} \times \frac{x^2 + x - 6}{2x}$

   x. Find the square root by factorization $x^2 + \frac{1}{x^2} - 10(x + \frac{1}{x}) + 27$

   xi. Find the solution with the help of matrices $5x + y, 3x + 2y = 7$

   xii. The sum of two numbers is 13 and their difference is 5. Find the numbers.

SECTION-C

Max. Marks: 24

Note: Attempt any three of the following question. All questions carry equal marks.

2. Prove that if two lines interest, then the vertical angles are congruent.

3. Prove that the line segment joining the mid points of two sides of a triangle is parallel to the 3rd side and half as long.

4. Prove that if a point is equidistant from the end points of a line segment, then it lies on the right bisector of that segment.

5. Construct $\triangle ABC$ and draw their right bisectors when $m\overline{AB} = 4.8cm, m\overline{BC} = 4.2cm, m\overline{CA} = 4.5cm$.