The City School

Boys Campus North Nazimabad

Mathematics Paper-A (Grade 9)

Q1: Solve the following equations (2)

(a) $2^x = 256$ (b) $5^{x+7} = 25^x$

Simplify each of the following: (4)

(a) $\frac{a^4b^5 \times a^2b^3}{ab^5}$ (b) $\frac{(abc)^3}{(bc)^2} \times \frac{(ac^2)^5}{(ab)^3}$

Q2: (a) Solve the inequality (2)

$$\frac{5x}{6} - \frac{7}{9} \leq 2x - \frac{9}{2}$$

(b) Given that $2 \leq x \leq 6$ and $-6 \leq y \leq -2$ find (4)

(i) the greatest possible value of $x^2 - y^2$ (ii) the smallest possible value of $x^2 - y$

(iii) the greatest possible value of x/y (iv) the smallest possible value of xy

Q3: If y is directly proportional to x, and if y=6 when x=2 (2)

(i) express y in terms of x (ii) find value of x when y=12

Q4: Given that $E = mgh + \frac{1}{2}mv^2$

(i) express 'v ' in terms of E, m, g and h (2)

(ii) find the value(s) of 'v' when m=6, g=10, h=30 and E=3000 (2)

Q5: Solve the equation (2)

$$\frac{x-1}{2} + \frac{x-1}{3} = x$$

Q6: Express the following fraction as single denominator (4)

(i) $\frac{5}{x^2-4} - \frac{2}{x-2}$ (ii) $\frac{4}{a-1} - \frac{3}{a-2} - \frac{4}{a-3}$

Q7: The square ABCD having radius 8cm. Find the area of circle and the area of shaded Portion. (2)

Q8: The diagram shows below having radius 64cm. Find the perimeter and area of sector AOD. (4)

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Mathematics Paper-B (Grade 9)

Q1: Solve the following equations (2)

(a) $7^{x} = 49$ (b) $7^{3x+1} = 49^{x}$

Simplify each of the following: (4)

(a) $\frac{x^2 \times x^6 y z^2}{x^2 y^2 z}$ (b) $\frac{(a^4)^3}{(ab)^3} \times \frac{ab^2}{(ab)^3}$

Q2: (a) Solve the inequality (2)

$$\frac{1}{4} + \frac{x}{3} > 3x - \frac{1}{2}$$

(b) Given that $4 \le x \le 8$ and $-8 \le y \le -4$ find (4)

(i) the greatest possible value of $x^2 - y^2$ (ii) the smallest possible value of $x^2 - y$

(iii) the greatest possible value of x/y (iv) the smallest possible value of xy

Q3: If y is inversely proportional to x, and if y=4 when x=3 (2)

(i) express y in terms of x (ii) find value of y when x=6

Q4: Given that $E = mgh + \frac{1}{2}mv^2$

(i) express 'v ' in terms of E, m, g and h (2)

(ii) find the value(s) of 'v' when m=6, g=10, h=30 and E=3000 (2)

Q5: Solve the equation (2)

$$\frac{1-2x}{4} + \frac{2-x}{2} = 4$$

Q6: Express the following fraction as single denominator (4)

(i) $\frac{5}{x^2-9} - \frac{7}{x+3}$ (ii) $\frac{2}{m-4} + \frac{1}{m} + \frac{3}{m-3}$

Q7: The windscreen wiper of a car sweeps through an angle of 120°. The shaded region In the given diagram represents the area of the windscreen swept by the wiper. Find the area and perimeter of the shaded region (6)