STD: VIII   Marks: 80

Date: /09/2018   Time: 2½hrs

Question 1

a.   Sum of three consecutive odd numbers is 75. Find the number   [3]

b.   Divide the sum of $\frac{13}{5}$ and $\frac{-12}{75}$ by the product of $\frac{-31}{7}$ and $\frac{1}{-2}$ [2]

c.   Solve the following $\frac{2x-3}{3x-1} = \frac{2x+3}{3x+4}$ [2]

d..   Simplify: i. $\frac{1}{1+x^{a+b}}$ ii. $\frac{1}{1+x^{a+b}}$ [3]

Question 2

1.   Show that

$$\left[\frac{x^{a^2}}{x^{b^2}}\right]^{\frac{1}{a+b}} \times \left[\frac{x^{a^2}}{x^{b^2}}\right]^{\frac{1}{a+b}} \times \left[\frac{x^{a^2}}{x^{b^2}}\right]^{\frac{1}{a+b}}$$ [3]

b.   Find the least number which must be added to 6203 to obtain a perfect square and also find
       the perfect square and its square root.   [3]

c.   Finds the smallest number by which 2560 must be multiplied so that the product is a
       perfect cube   [2]

d.   Let A be the set of letters in ward 'seed' find: i.   A   ii.   n (A)

       iii.   Number of subsets of A   iii.   Number of proper subsets of A   [2]

Question 3

a.   Let S = {21, 22, 23, 24, 25, 26, 27, 28, 29}, R = {21, 22, 23, 24, 25, 26, 27, 28, 29}   T=
       {21, 22, 23, 24, 25, 26, 27, 28, 29} Show that :

       i.   S ∩ (R ∪ T) = (S ∩ R) ∪ (S ∩ T)   **[2]**

       ii.   (R ∪ T) ∪ T = S ∩ (R ∪ T)   **[2]**

b. In an examination 24% students failed in mathematics, 27% failed in English and 20 %failed in both the subjects.

    i.   Find the percentage of students who passed in one or both the students.

    ii.   Find the percentage of students who passed in both the subjects.

    iii.   If 345 students passed in both the subjects, find the total number of students.   **[4]**

c. Solve: $3(t – 5) – 16t = 12 – 2(t – 3)$ **[2]**

Question 4

a. A cycle sold at a gain of 10%. Had it been sold for Rs. 99 more, the gain would have been 12 %. Find the cost price of the cycle.   **[3]**

b. Find the rate of discount being given on a mini toy gun whose selling price is Rs.345 after deducting a discount of Rs 30 on its marked price.   **[3]**

c. Mr Singh barrowed Rs.2100 for 3 years at $16\frac{2}{3}$ % compounded annually while Mr. Gupta barrowed same amount at simple interest for the same period and at the same rate of interest. Who has to pay more and by how much?   **[4]**

Question 5

a. Calculate the amount and the compound interest on Rs.24000 for $1\frac{1}{2}$ years at 10% per annum, compounded half yearly.   **[3]**

b. If a and b varies inversely, find the value of x, y and z,

A	8	2	y	10
B	2.5	x	5	z

    [3]

c. If 14 typist typing hrs a day takes 12 days to type the manuscript of book, then how many days will 4 typists, working 7 hrs a day, take to do same job?   **[4]**

Question 6

a. Two pipes A and B can separately fill a tank in 2 hrs and 3 hrs respectively. If both the pipes are opened simultaneously in a empty tank, in what time the tank is filled?   **[3]**

b.   **i.**   Write the degree of polynomial xy + yz + zx + 3xyz

    ii.   Identify monomial binomial, trinomial and polynomial from the following.

        a. a^2 - bc + 1   b. $7x \ X \ 4y \ X \ 8az$ c. 2x + y - b÷5   d. 3x + 3X4.   **[3]**

c. A and B can finish a work together in 30 days; they worked at it for 20 days then B left. The remaining work was done by A alone in 20 more days. In how many days can A alone do it.

[4]

Question 7

a. Subtract the sum of $4x^2 + 7xy + 3y^2 + 1$ and $2x^2 - 5xy - 2y^2 + 8$ from
$9x^2 - 8xy + 11y^2 + 1$ 　　　　　　　　　　　　　　　　　　　　　　　　[2]

b. multiply$(4x^2 + 3x - 5)$ by $(2x + 1)$ 　　　　　　　　　　　　　　　[2]

c. Show by division method that $(2a^2 - a + 3)$ is a factor of

$(6a^5 - a^4 + 4a^3 - 5a^2 - a - 15)$. 　　　　　　　　　　　　　　　[3]

d. factorize the following trinomial; $9a^2 + 24a + 16$ 　　　　　　　　[3]

Question 8

a. Find the product of (a + ab) (a +ab) (a² + a²b²). 　　　　　　　　[2]

b. Expand 　　i. 　　(3a – 2b – 5c)² 　　ii. 　　(a + 2)³ 　　　　　[3]

c. If $\left(z - \frac{1}{z}\right) = 6$, find the value of k 　i. 　　$\left(z + \frac{1}{z}\right)$ 　　ii. 　　$\left(z^2 - \frac{1}{z^2}\right)$

　　iii. 　　$\left(z^4 - \frac{1}{z^4}\right)$. 　　　　　　　　　　　　　　　　　　　[3]

d. factorize; 　i. 　　xy – ay – ax + a² + bx - ab 　　ii. 　　ab – 2b + a² – 2a. [2]

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