

Units - Exponents and Radicals, Polynomials, Compound Interest

Q1. Simplify :-  $(6^{-1} - 8^{-1})^{-1} + (2^{-1} + 3^{-1})^{-1}$

Q2. Express as a rational number of the form of  $\frac{p}{q}$

$$\left\{ \left( \frac{3}{4} \right)^{-1} - \left( \frac{1}{4} \right)^{-1} \right\}^{-1}$$

Q3. Evaluate  $\frac{8^{-1} \times 5^3}{2^{-4}}$

Q4. Find  $x$  so that  $\left( \frac{5}{3} \right)^{-5} \times \left( \frac{5}{3} \right)^{-11} = \left( \frac{5}{3} \right)^{8x}$

Q5. Simplify:-  $\left\{ \left( \frac{2}{3} \right)^2 \right\}^3 \times \left( \frac{1}{3} \right)^{-4} \times 3^{-1} \times 6^{-1}$

Q6. If  $x = \left( \frac{3}{2} \right)^2 \times \left( \frac{2}{3} \right)^{-4}$  find the value of  $x^{-2}$

Q7. Find the value of  $x$  for which  $5^{2x} \div 5^{-3} = 5^5$

Q8. By what number should  $\left( \frac{-3}{2} \right)^{-3}$  be divide so that the quotient may be  $\left( \frac{4}{27} \right)^{-2}$  ?

Q9. Simplify:-  $\left\{ \left( \frac{1}{3} \right)^{-2} - \left( \frac{1}{2} \right)^{-3} \right\} \div \left( \frac{1}{4} \right)^{-2}$

Q10. Divide the polynomial  $2x^4 + 8x^3 + 7x^2 + 4x + 3$  by  $x + 3$  .

Q11. Divide  $3y^5 + 6y^4 + 6y^3 + 7y^2 + 8y + 9$  by  $3y^3 + 1$  and verify that Dividend = Divisor  $\times$  Quotient +Reminder

Q12. Divide and find the quotient and reminder

(i)  $14x^3 - 5x^2 + 9x - 1$  By  $2x - 1$

(ii)  $15y^4 + 16y^3 + \frac{10}{3}y - 9y^2 - 6$  by  $3y - 2$

Q13. Is  $4x - 1$  a factor of  $4x^2 - 13x - 12$ .

Q14. Vijay obtains a loan of Rs. 64000 against his fixed deposit. If the rate of interest be 2.5 paisa per rupee per annum, calculate the Compound Interest payable after 3 years.

Q15. Simple Interest on a sum of money for three years at  $6\frac{1}{4}\%$  per annum. is Rs. 2400. What will be the Compound Interest on that sum at the same rate for same period?

Q16. Find the difference between the Compound Interest and Simple Interest on a sum of Rs. 50000 at 10% per annum for 2 years.

Q17. Amit borrowed Rs 16000 at  $17\frac{1}{2}\%$  per annum Simple Interest. On the same day he gives it to Ashu at the same day but compounded annually. What does he gain at the end of 2 years?

Q18. Find the amount of Rs. 12500 for 2 years compounded annually, the rate of interest being 15% for first year and 16% for second year.

Q19. Find rate percent per annum if Rs. 2000 amount to Rs. 2662 in  $1\frac{1}{2}$  years, interest being compounded half yearly?

Q20. In how much time would Rs. 5000 amount to Rs. 6655 at 10% per annum compounded interest?

Q21. The population of a town 2 years ago was 62500. Due to migration to cities it decreases every year at rate of 4% per annum. Find its present population.

Q22. A factory increased its production of three wheelers from 80000 in 1999 to 92610 in 2002. Find the annual rate of growth of production of three wheelers?

**Unit – Linear Equations, Mensuration**

Q1. Solve:-  $\frac{3t-2}{4} - \frac{2t+3}{3} = \frac{2}{3} - t$

Q2. Solve:-  $\frac{2}{3x} - \frac{3}{2x} = \frac{1}{12}$

Q3. Solve:-  $5\left(\frac{7x+5}{3}\right) - \frac{23}{3} = 13 - \frac{4x-2}{3}$

Q4. Solve:-  $\frac{\left(\frac{1}{2} + x\right) \left(\frac{1}{2} - x\right)}{\left(\frac{1}{2} + x\right) \left(\frac{1}{2} - x\right)} = 1$

Q5. Solve:-  $\frac{2x - \left(\frac{1}{2} - 5x\right)}{9x - \left(\frac{1}{2} + 4x\right)} = \frac{7}{6}$

Q6. Solve and check:-  $\frac{2x+5}{3} = 3x-10$

Q7. Solve and check:-  $\frac{1-9y}{19-3y} = \frac{5}{8}$

Q8. A number consists of 2 digits whose sum is 8. If 18 is added to the number its digits are reversed. Find the number

Q9. Kanwar is 3 years older than Anima. Six year ago, Kanwar's age was four times Anima's age. Find the ages of Kanwar and anima.

Q10. The difference between the squares of 2 consecutive numbers is 31. Find the numbers

Q11. A sum of Rs. 800 is in the form of denominations of Rs. 10 and Rs. 20. If the total number of notes be 50, find the number of notes of each type

Q12. The numerator of a fraction is 6 less than the denominator. If 3 is added to the numerator, the fraction is equal to  $\frac{2}{3}$ . What is the original fraction equal to

Q13. Sarita is twice as old as Ashima. If six years is subtracted from Ashima's age, then Sarita will be four times Ashima's age. How old were they two years ago?

Q14. The distance between two stations is 340 km. Two trains start simultaneously from this station on parallel tracks to cross each other. The speed of one of them is greater than that of the other by 5 km/hr. If the distance between the two trains after 2 Hrs. of their start is 30 km. Find the speed of each train.

Q15. The ages of Soun and Monu are in the ratio 7 : 5 ten years hence, the ratio of their present ages.

Q16. The diagonal of a quadrilateral is 20 m in length and the perpendicular to it from the opposite vertices are 8.5 m and 11 m. Find the area of the quadrilateral.

Q17. The parallel sides of a trapezium are 25 cm and 13 cm, its non parallel sides are equal each being 10 cm. Find the area of the trapezium.

Q18. The area of the trapezium is  $105 \text{ cm}^2$  and its height is 7 cm. If one of the parallel side is longer than the other by 6 cm. Find the two parallel sides.

Q19. How many 5 cm cubes can be obtained from a cube whose edge is 20 cm?

Q20. What will happen to the volume of a cube if the edge is doubled?

Q21. A cubical oil tin is 30 cm by 40 cm by 50 cm. Find the cost of the tin required for making 20 such tins if the cost of the iron sheet is Rs. 20 per square meter.

Q22. The walls and ceiling of a room are to be plastered. The length, breadth and height of the room are 4.5 m, 3 m and 3.5 m respectively. Find the cost of plastering at the rate of Rs. 8 per square meter.

Q23. The dimensions of a metallic cuboid are 100 cm by 80 cm by 64 cm. If it is melted and recast into a cube. Find the surface area of the cube.

Q24. A tank open at the top is made of iron sheet 4 m wide. If the dimensions of the tank are 12 m by 8 m by 6 m. Find the cost of iron sheet at Rs. 18 per square metre.