1. If a lock uses 4 slots with digits 0-5 then the possible combinations are

a) 4^5 b) 5^4 c) 6^4 d) 4^6

2. If $5^a \div 5^2 = 5^7$ then find value of a.

3. Simplify $(2^3 \times 2^5) \div 2^4$

4. If a bacteria population doubles everyday and initially there are 1000, then after 3 days number of bacteria will be ?

5. Simplify $10^4 \div 5^4$

6. If $9^{x-3} = 729$ then the value of x is.

7. If $x = 2.5 \times 10^{-3}$ and $b = 1.5 \times 10^{-4}$ then ~~which of the following~~ find the value of $x+y$ in standard form.

8- Simplify $\left(\frac{100}{9}\right)^{-\frac{3}{2}}$.

* Find $\left(\frac{x^a}{x^b}\right)^{a^2+ab+b^2} \times \left(\frac{x^b}{x^c}\right)^{b^2+bc+c^2} \times \left(\frac{x^c}{x^a}\right)^{c^2+ac+a^2} = ?$

9. If a lock uses 5 slots with digit 0-9 then the total possible combination will be ??

10. Write in standard form

(i) 0.00000345 (6 zeros)

(ii) 78699900000000000000 (14 zero)

(iii) 0.000000000000000000000000000045 (29 zero)

(iv) 0.00000000000000123 (15 zero)

(v) 123000000 (6 zero)

11. Show that

$$\left(\frac{x^a}{x^b}\right)^{(a+b)} \times \left(\frac{x^b}{x^c}\right)^{(b+c)} \times \left(\frac{x^c}{x^a}\right)^{c+a} = 1$$

12. Show that

$$\left(\frac{x^a}{x^b}\right)^{a+b-c} \times \left(\frac{x^b}{x^c}\right)^{b+c-a} \times \left(\frac{x^c}{x^a}\right)^{c+a-b} = 1$$

13. Simplify to simplest form

a) $\frac{3^{-4} \times 9^2}{(27)^{-1}}$ b) $(10^4 \div 10^{-3})^2$

*

14. Simplify: $\frac{3^5 \times 10^5 \times 25}{5^7 \times 6^5}$

15. If $20^{-x} = \frac{1}{7}$ then find value of $(20)^{2x}$.

16. Find value of $\left(\sqrt[5]{8}\right)^{5/2} \times (16)^{-\frac{3}{2}}$

17. $2^{x+1} + 2^{x+2} = 48$ then find x.

18. If $(27)^x = (81)^y$ then find $x : y$.

19. Solve for x: $2^{2x+2} = 4^{2x-1}$

20. If $4 \times 5^x = 500$ then find value of x^x.

21. The square of an odd number can be
a) 256 b) 361 c) 144 d) 400

22. Which of the following is not a perfect square
a) 361 b) 1156 c) 1128 d) 1681

23. Find value of

a) $\sqrt{0.0576}$

b) $\sqrt{100} + \sqrt{676}$

24. Find smallest number by which 1944 must be divided to get a perfect square? Find square root of new number.

25. $\sqrt{1164 - \sqrt{225} + \sqrt{49}} = ?$

26. Find $\sqrt[3]{19683}$

27. How many cubes between 10 and 800?

28. Which number should be multiplied with 1323 to make it a perfect cube? Find cube root of new number.

29. Write cube of 9 as sum of consecutive odd numbers.

30. Three numbers are in ratio 1:2:3. The sum of their cubes is 98784. Find the numbers.

31. Find $\sqrt[3]{\frac{-3375}{-2744}}$

32. A group of students decided to collect as many rupees from each member of the group as in the number of members. If the total collection amount is 12209 then find number of students in the group.

33. Area of square field is $101\frac{1}{400}$ sq. m. Find the length of one side.

34. A general wished to arrange his men who were 335250 in form of a square. It was found that there were 9 men left over. How many were there in each row?