Work Sheet- 3 for class- Nine
Chapter- Five
Exercise-5.3
Equation

Creative Multiplication Choice Questions

1. **What is the solution to the equation of $2^{3y+1} = 32^{y+1}$? [R.B.- 20]**
   a) 3 b) 2
   c) -2 d) -3

2. **Equation $3^{3x-2} = b$ then – [R.B.- 20]**
   i. If b = 1 then x = $\frac{2}{3}$
   ii. If x = 0 then b = $\frac{-1}{9}$
   iii. If b = 3 then x = 1
   Which one of the following is correct?
   a) i and ii b) i and iii
   c) ii and iii d) i, ii and iii

3. **Which one of the following is the solution of the equation $3^{x+8} = 3^{x+2}$? [S.B.- 20]**
   a) -12 b) -4
   c) 4 d) 12

4. **If $3.27^{y} = 9^{y+4}$ then what is the value of y? [D.B.- 19]**
   a) $\frac{7}{5}$ b) $\frac{9}{5}$
   c) 4 d) 7

5. **The roots of equations $3^{x}.2^{y} = 72$ and $3^{2x}.2^{y} = 648$ are- [R.B.- 19]**
   a) $(2, 3)$ b) $(2, 2)$
   c) $(\pm 2, \pm 3)$ d) $(3, 2)$

6. **If $7^{3x-6} = 5^{3x-6}$ then what is the value of x? [Dj.B.- 19]**
   a) -2 b) $\frac{1}{2}$
   c) $\frac{7}{5}$ d) 2

7. **If $144^{x} = 1728^{y}$ then what is the value of $\frac{x}{y}$? [Dj.B.- 19]**
   a) $\frac{1}{12}$ b) $\frac{2}{3}$
   c) $\frac{3}{2}$ d) 12

8. **If $2^{ax-1} = 2b^{ax-2}$ then what is the value of x? [B.B.- 19]**
   a) $\frac{a}{2}$ b) a
   c) $-\frac{a}{2}$ d) $\frac{2}{a}$

9. **Which is the solution of the equation $(\sqrt{5})^{x+3} = 125$? [D.B.- 17]**
   a) -3 b) $\sqrt{5}$
   c) 3 d) 5

10. **Which one is the cube root of $-3\sqrt{3}$? [R.B.- 17]**
    a) $-\sqrt{3}$ b) $\sqrt[3]{3}$
    c) $\sqrt{3}$ d) 3

11. **If $(16)^{\frac{1}{p}} = (64)^{\frac{1}{q}}$ then what is the value of $\frac{p}{q}$? [Dj.B.- 17]**
    a) $\frac{1}{3}$ b) $\frac{2}{3}$
    c) $\frac{3}{2}$ d) $\frac{8}{3}$

12. **If $3^{y+8} = 9^{2y+1}$ then what is the value of y? [C.B.- 17]**
    a) 6 b) $\frac{10}{3}$
    c) $\frac{7}{3}$ d) 2

13. **If $9^{2x} = 3^{x+1}$ then x = What? [Ctg.B.- 17]**
    a) $-\frac{1}{3}$ b) 0
    c) $\frac{1}{3}$ d) $\frac{1}{5}$

14. **Which is the correct solution of $3.27^{x} = 9^{x+4}$? [J.B.- 17]**
    a) 6 b) 7
    c) 8 d) 9

15. **If $3^{mx-1} = 3a^{mx-2}, [a > 0, a \neq 3, m \neq 1]$ then what is the value of x? [D.B.- 16]**
    a) $\frac{m}{2}$ b) $\frac{2}{m}$
    c) 2m d) 2^{m}

16. **What is the solution of the equation $3^{ax-1} = 3b^{ax-2}$? [Ctg.B.- 16]**
    a) $\frac{a}{2}$ b) $\frac{-2}{a}$
    c) $\frac{1}{a}$ d) $\frac{2}{a}$

17. **Which one is the discriminant of equation $x^2 - 2x - 2 = 0$? [R.B.- 16]**
    a) 4 b) 8
    c) 12 d) $1 + \sqrt{3}$

18. **If $(\sqrt{3})^{x+5} = (\sqrt[3]{3})^{2x+5}$ then what is the value of x? [Dj.B.- 16]**
    a) 7 b) 6

c) 5 d) 4

19. When $3^{3x} = \frac{1}{3}$ then x = What? **[C.B.- 15]**

a) -3 b) $\frac{-1}{3}$

c) $\frac{1}{3}$ d) 3

20. If $4^x = 16$ then x = What? **[Ctg.B.- 15]**

a) 2 b) 4

c) 8 d) 16

21. What is the solution of the equation $5^{3x-7} = 3^{3x-7}$? **[Ctg.B.- 15]**

a) $\frac{1}{3}$ b) $\frac{2}{3}$

c) $\frac{5}{3}$ d) $\frac{7}{3}$

22. If $2^{x+7} = 4^{x+2}$ then x = What? **[S.B.- 15]**

a) -12 b) 3

c) 5 d) 11

23. Which is the solution of the equation $9^{2x} = 3^{5x-2}$? **[J.B.- 15]**

a) -2 b) $\frac{2}{3}$

c) $\frac{2}{3}$ d) 2

24. What is the solution of the equation $64 = \left(\sqrt[3]{64}\right)^{2x+1}$?

a) $\frac{1}{2}$ b) 0

c) 1 d) 4

25. Which is the solution of $3^{px-1} = 27q^{px-4}$?

a) $-\frac{p}{4}$ b) $\frac{p}{4}$

c) $\frac{4}{p}$ d) p

26. If $27.81^x = 9^{x+2}$ then what is the value of x?

a) 0 b) $\frac{1}{2}$

c) 1 d) $\frac{7}{9}$

27. If $3^{2x-2} - 5.3^{ax-2} - 66 = 0$ then what is the value of x = 3?

a) -2 b) -1

c) 0 d) 1

28. Which is the solution of $16^x = 4^{x+1}$?

a) 0 b) 1

c) 2 d) 4

29. If $2^{x+3} + 2^{x+1} = 320$ then what is the value of x?

a) 2 b) 3

c) 5 d) 7

30. What is the solution of x in $x^x = x^{x^2}$?

a) 0 b) 1

c) 2 d) ∞

31. Which one is the solution of $5^{px-6} = 625q^{px-10}$ $(q \neq 5)$?

a) $\frac{6}{p}$ b) $\frac{p}{6}$

c) $\frac{10}{p}$ d) $\frac{p}{10}$

32. If $a^{2x} - (a^3 + a)a^{x-1} + a^2 = 0$ $(a > 0)$ then what is the value of x?

a) $\{0\}$ b) $\{2\}$

c) $\{0, 2\}$ d) $\{0, 1, 2\}$

33. $3^{2x-5}.a^{x+7} = 3^{4x-1}.9a^{1-x}$ then x = What?

a) 2 b) -3

c) $\frac{3}{2}$ d) $-\frac{5}{2}$

34. What is the value of x if $2^{x+7} = 4^{x+2}$?

a) 7 b) 4

c) 3 d) 0

35. For which value of x $\left(\frac{2a}{3b}\right)^{4x-20} = 1$?

a) 2 b) 3

c) 4 d) 5

36. Which is the solution of the equation $\left(\sqrt{5}\right)^{x+2} = 125$?

a) $\sqrt{5}$ b) 3

c) 4 d) 5

37. Which one satisfies the system of indicial equations $18y^x - y^{2x} = 81$ and $3^x = y^2$?

a) $(-2, -3)\left(-2, -\frac{1}{3}\right)$

b) $(2, -3)\left(2, -\frac{1}{3}\right)$

c) $(-2, 3)\left(-2, -\frac{1}{3}\right)$

d) $(2, 3)\left(-2, -\frac{1}{3}\right)$

38. If $8^{x+7} = 4^{x+2}$ then what is the value of x?

a) 8 b) 12

c) 21 d) -17

39. **Expressing 4096 in the power of $\frac{1}{2}$ then what will be its power?**

a) -12 b) -11

c) 11 d) 12

40. **If $(16)^x = (64)^{\frac{1}{y}}$ then $\frac{x}{y}$ = What?**

a) $\frac{1}{3}$ b) $\frac{3}{2}$

c) $\frac{2}{3}$ d) $\frac{4}{3}$

Creative Questions:

1. **$A = x^3 + x^2 + 4x + 4$, $B = a^y - (a^3 + a)a^{\frac{y}{2}-1} + a^2$ and $C = x^2 + 4x - 7$.** **[S.B.- 19]**

a) Find the nature of the roots of the equation C = 0.

b) If $B = 0$ and $a > 0, a \neq 1$ then show that, y = 0.

c) Express $\frac{C}{A}$ as partial fraction.

2. **$ax^2 + bx + c = 0$..... (i)**
$5 - 8x - x^2 = 0$..... (ii)
are two quadratic equations with one variable. **[Dj.B.- 17]**

a) Find the value of y when $5^{y+2} = 625$.

b) Find the roots of the equation (i).

c) Solve the equation (ii) and determine the characteristic of roots.

3. **(i) $x^2 - 8 = 0$**
(ii) $5^x + 5^{2-x} = 26$
(iii) $3^{x-2} = 2^{2x-4}$

a) Determine discriminant and nature of root of the equation $x^2 + 1 = 0$.

b) Show that, equation (ii) and (iii) has a common root.

c) Draw the graph of the equation (i) and determine roots from the graph.

4. **$\left(\sqrt[5]{4}\right)^{4x+7} = \left(\sqrt[11]{64}\right)^{2x+7}$ and $a^{-x}(a^x + b^{-x}) = \frac{a^2b^2+1}{a^2b^2}$ ($a > 0, b > 0$ and $ab \neq 1$) are two exponential equations.**

a) Express the first equation in the form of $a^m = a^n$.

b) Solve the first equation.

c) Solve the second equation and show that, the roots of the two equations are equal.