Cosmo School

Work Sheet – 01 (Mathematics) for class – Ten (10.10.2020)

Chapter – Four, Exercise - 4.1

Exponents and Logarithms

Creative Multiplication Choice Questions

1. If $2^x = \frac{1}{8}$ then x = What? [D.B.- 20]
   a) -3 b) $-\frac{1}{3}$
   c) $\frac{1}{3}$ d) 3

2. What is the value of $\sqrt{x^3} \times x^{\frac{1}{2}}$? [My.B.- 20]
   a) $x^{\frac{3}{2}}$ b) $x^{\frac{1}{4}}$
   c) $x^{\frac{2}{3}}$ d) x^2

3. Which one of the following is the value of $\sqrt[3]{7}.\sqrt[3]{7}$? [R.B.- 20]
   a) $\sqrt[6]{7}$ b) $\sqrt[3]{7^2}$
   c) $\sqrt[3]{7^3}$ d) $\sqrt{7^2}$

4. If $7^{-x} = \frac{1}{2401}$ then what is the value of x? [Dj.B.- 20]
   a) 2 b) 3
   c) 4 d) 5

5. If $9^{n+1} = 243$ then what is the value of n? [C.B.- 20]
   a) $\frac{5}{2}$ b) $\frac{3}{2}$
   c) $\frac{2}{3}$ d) $\frac{5}{9}$

6. If $(\sqrt{3})^{2x+1} = (\sqrt[3]{\sqrt{3}})^{x-1}$ then x = What? [J.B.- 20]
   a) $-\frac{5}{4}$ b) $-\frac{4}{5}$
   c) $\frac{4}{5}$ d) $\frac{5}{4}$

7. If $\frac{32}{(64)^x} = 8$ then what is the value of x? [D.B.- 19]
   a) -4 b) $-\frac{1}{3}$
   c) $\frac{1}{3}$ d) 4

8. If $(\sqrt{2})^{x+1} = 16$ then what is the value of x? [R.B.- 19]
   a) 16 b) 9
   c) 8 d) 7

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

10. On what condition $a^0 = 1$. [Ctg.B.- 19, D.B.- 17, C.B.- 15]
    a) $a \neq 0$ b) $a > 0$
    c) $a < 0$ d) $a = 0$

11. If $\frac{1}{3^{-x}} = 81$ then what is the value of x? [C.B.- 19]
    a) -4 b) -3
    c) 3 d) 4

12. What is the value of $\frac{9^n - 4}{3^n + 2}$? [S.B.- 19]
    a) $3^n + 2$ b) $3^n - 2$
    c) $3^{2n} + 2$ d) $3^{2n} - 2$

13. If $2^{3x+2} = 16$ then what is the value of x? [J.B.- 19]
    a) 2 b) 4
    c) $\frac{2}{3}$ d) $\frac{4}{3}$

14. $\frac{7.2^{x+1} - 13.2^x}{2^x}$ = What? [R.B.- 19]
    a) -2 b) -1
    c) 1 d) 2

15. If $\frac{1}{4^{-x}} = 64$ then x = What? [Dj.B.- 19]
    a) 3 b) 4
    c) -3 d) -4

16. What is the simplifying value of $(p^{-1} + q^{-1})^{-2}$? [J.B.- 19]
    a) $\frac{(p+q)}{pq}$ b) $\frac{1}{p+q}$
    c) $p + q$ d) $\frac{p^2q^2}{(p+q)^2}$

17. If $\frac{5^x}{5} = \frac{3^x}{3}$ then what is the value of x? [B.B.- 19]
    a) 0 b) 1
    c) $\frac{5}{3}$ d) $\frac{3}{5}$

18. If $4^{x+1} = 32$ then what is a value of x? [All B.- 18]
    a) 1 b) $\frac{3}{2}$
    c) $\frac{7}{2}$ d) 5

19. If $a \in R$ then- [All B.- 18]
    i. $a^0 = 1$ (if $a \neq 0$)
    ii. $a^{-1} = \frac{1}{a}$
    iii. $a^n = \frac{1}{a^{-(-n)}}$

    Which one of the following is correct?

a) i and ii b) i and iii
c) ii and iii d) i, ii and iii

20. If $p^m = q^m$ then $p = q$ when? [J. B.-17]

i. $p > 0$
ii. $q > 0$
iii. $m \neq 0$

Which one of the following is correct?

a) i and ii b) i and iii
c) ii and iii d) i, ii and iii

21. $\left(16^{\frac{2}{3}}\right)^{\frac{3}{4}}$ = What? [D.B.- 17]

a) 16 b) 12
c) 8 d) 4

22. If $\sqrt[3]{a} = \sqrt{5}$ then what is the value of a? [Dj.B.- 17]

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

23. If $x^2 = \left(x^{ab}.x^{ab}\right)^c$ then what is the value of abc? [Dj.B.- 17]

a) 0 b) 1
c) 2 d) 3

24. If $8^{x+3} = 64$ then what is the value of x? [C.B.- 17]

a) -6 b) -3
c) -1 d) 3

25. If $2^{x+1} = 8$ then what is the value of x? [Ctg.B.- 17]

a) -1 b) 1
c) 2 d) 3

26. What is the value of $(2^{-1} + 3^{-1})^{-1}$? [S.B.- 17, B.B.- 16]

a) $\frac{1}{6}$ b) $\frac{2}{3}$
c) $\frac{5}{6}$ d) $\frac{6}{5}$

27. What is the value of $16^{\frac{3}{4}}$? [B.B.- 17]

a) 2 b) 4
c) 6 d) 8

28. What is the value of $\frac{a^m}{a^n}$? [when n > m] [D.B.- 16]

a) $a^{\frac{1}{n-m}}$ b) $a^{\frac{1}{m-n}}$
c) a^{n-m} d) a^{m-n}

29. What is the value of $\left(\frac{p^x}{p^y}\right)^0$? [D.B.- 16]

a) p^{x-y} b) P
c) 0 d) 1

30. What is the value of $x^0 - y^0 - z^0$? [Dj.B.- 16]

a) 2 b) 1
c) -1 d) -2

31. Which is the value of $\sqrt[4]{x} \times x^{\frac{1}{4}}$? [Dj.B.- 16]

a) $\sqrt{x}$ b) x
c) $x^{\frac{1}{4}}$ d) $\sqrt[3]{x}$

32. Which is the value of $(3^{-1} \div 9^{-1})^{-1}$? [C.B.- 16]

a) $\frac{2}{3}$ b) $\frac{1}{3}$
c) $\frac{1}{9}$ d) $\frac{1}{27}$

33. If $7^{-x} = \frac{1}{2401}$ then what is the value of x? [Ctg.B.- 16]

a) 2 b) 3
c) 4 d) 5

34. If $25^{x+2} = 125$ then what is the value of x? [J.B.- 16]

a) $\frac{7}{2}$ b) 2^{-1}
c) -2^{-1} d) -2

35. If $2^{3x+1} = 128$ then x = What? [B.B.- 16]

a) 1 b) 2
c) 3 d) 4

36. What is the value of $(x^{-1} + y^{-1})^{-1}$? [Ctg.B.- 15]

a) $\frac{(x+y)}{xy}$ b) $\frac{1}{x+y}$
c) $x + y$ d) $\frac{xy}{x+y}$

37. What is the simplified value of $\left(\frac{1}{\sqrt{a}\sqrt[3]{x}}\right)^{-3}$? [Ctg.B.- 15]

a) $\frac{x}{\sqrt{a^3}}$ b) $\frac{\sqrt{a^3}}{x}$
c) $\frac{x}{a^3}$ d) $\frac{x^3}{\sqrt{a^3}}$