Cosmo School

Work Sheet – 03 (Mathematics) for class – Ten (17.10.2020)

Chapter- Four, Exercise - 4.2

Exponents and Logarithms

Creative Multiplication Choice Questions

1. $\log_3(\sqrt[3]{3}.\sqrt{3})$ = What? [D.B.- 20]

a) $\frac{1}{6}$ b) $\frac{5}{6}$

c) $\frac{1}{3}$ d) $\frac{2}{3}$

2. If $2\log x - \log(2x-1) = 0$ then what is the value of x? [My.B.- 20]

a) -1 b) 0

c) $\frac{1}{2}$ d) 1

3. $\log_{36} 6 + \log_{\sqrt{6}} 6$ = What? [Ctg.B.- 20]

a) $\frac{1}{\sqrt{6}}$ b) 1

c) $2\frac{1}{2}$ d) 5

4. If $\log_p 324 = 4$ then what is the value of p? [S.B.- 20]

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

c) $3\sqrt{2}$ d) 81

5. What is the log of 144 to the base $2\sqrt{3}$? [B.B.- 20]

a) 4 b) $2\sqrt{3}$

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

Answer to the questions No. (6 – 7) based on following information: $\log_a x = 5$ and $\log_a y = 3$.

6. What is the value of $\log_a(xy)$? [C.B.- 20]

a) 2 b) 5

c) 8 d) 15

7. What is the value of $\log_y x$? [C.B.- 20]

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

c) 8 d) 15

8. If $\log_a N = P$ then – [Dj.B.- 20]

i. $N > 0$

ii. $P > 0$

iii. $a > 0, a \neq 1$

Which one of the following is correct?

a) i and ii b) i and iii

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

9.

i. $\log_9 3 = \frac{1}{2}$

ii. If $4^{2x+1} = 2$ then $x = -\frac{1}{4}$.

iii. The value of $(3^{-1} + 6^{-1})$ is $\frac{1}{2}$.

Which one of the following is correct?

a) i and ii b) i and iii

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

10. What is the value of $\log_{2\sqrt{2}} 64$? [D.B.- 19, All B.- 18]

a) 2 b) 3

c) 4 d) 8

11. If $\log_4 x = \frac{1}{2}$ then x = What? [Dj.B.- 19]

a) 4 b) 2

c) $\frac{1}{2}$ d) $\frac{1}{8}$

12. What is the value of $\log_{\sqrt{3}} 27$? [C.B.- 19]

a) 1 b) 3

c) 6 d) 9

13. If $\log_x 36 = 4$ then what is the value of x? [S.B.- 19]

a) $\sqrt{6}$ b) $3\sqrt{2}$

c) 4 d) 6

14. Which is the simplify value of $\log_5 \sqrt[3]{5} + \log_5 \sqrt{5}$? [S.B.- 19]

a) $\frac{1}{3}$ b) $\frac{1}{6}$

c) $\frac{5}{6}$ d) $\frac{6}{5}$

15. What is the value of $\log_{16} 4$? [J.B.- 19, S.B.- 16]

a) $\frac{1}{16}$ b) $\frac{1}{8}$

c) $\frac{1}{4}$ d) $\frac{1}{2}$

16. What is the value of $\log_{27}\sqrt{3}$? [B.B.- 19]

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

c) $\frac{1}{6}$ d) $\frac{1}{9}$

17. On which condition given below $\log_a a = 1$? [R.B.- 17, Dj.B.– 16]

a) $a > 0$ b) $a \neq 1$

c) $a > 0, a \neq 1$ d) $a \neq 0, a > 1$

18. Which of the following is the value of $\log_5 125$? [S.B.- 17]

a) 3 b) 5

c) 6 d) 8

19. If $\log_x 625 = 4$ then what is the value of x? [J.B.- 17]

a) 2 b) 4

c) 5 d) 25

20. If log of 144 is 4 then what is the base? [B B.-17]

a) $2\sqrt{3}$ b) $3\sqrt{2}$

c) $5\sqrt{2}$ d) $2\sqrt{5}$

21. $\log_4 2 \times \log_{\sqrt{3}} 27$ = What? [D.B.- 17]

a) 3 b) 6

c) 9 d) 27

22. If $\log x = \frac{1}{2} \log y$ then what is the value of $\log x^2$? [Dj.B.- 17]

a) X b) Y

c) logy d) $\log\sqrt{y}$

23. If $\log_x\left(\frac{1}{25}\right) = -2$ then what is the value of x? [Dj.B.- 17]

a) ± 5 b) 5

c) $\pm \frac{1}{5}$ d) $\frac{1}{5}$

24. For log to the base of 10. [Dj.B.- 17]

i. $\log 1 = 0$

ii. $\log 0 = 1$

iii. $\log 100 = 2$

Which one of the following is correct?

a) i and ii b) i and iii

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

25. Observe the following information: - [R.B.- 16]

i. $\log_a(m)^p = P \log_a m$.

ii. $2^4 = 16$ and $\log_2 16 = 4$ are synonymous.

iii. $\log_a(m+n) = \log_a m + \log_a n$.

Which one of the following is correct?

a) i and ii b) i and iii

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

26. Which of the following is the value of log 1? [C.B.- 16]

a) 0 b) 1

c) 2 d) 3

27. Which of the following is the value of $\log_3 9$? [D.B.- 16]

a) $\sqrt[3]{3}$ b) 2

c) 3 d) 9

28. If $\log_x 25 = 2$ then what is the value of x? [D.B.- 16]

a) 25 b) ± 5

c) 5 d) – 5

29. If $\log_x 400 = 4$ then what is the base? [Dj.B.- 16]

a) $2\sqrt{5}$ b) $3\sqrt{2}$

c) $-2\sqrt{5}$ d) $\pm 2\sqrt{5}$

30. $\log_{25} 5 + \log_{\sqrt{5}} 5$ = What? [Ctg.B.- 16]

a) $\frac{1}{\sqrt{5}}$ b) 1

c) $2\frac{1}{2}$ d) 4

31. What is the log of $3\sqrt{3}$ to the base 3? [D.B.- 15]

a) $\frac{4}{3}$ b) $\frac{3}{2}$

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

32. If $\log_x 9 = 2$ then which is the value of x? [R.B.- 15]

a) ± 2 b) ± 3

c) 3 d) 18

33. If $\log_a 200 = 2$ then which is the value of a? [C.B.- 15]

a) $10\sqrt{2}$ b) $5\sqrt[3]{2}$

c) $5\sqrt{3}$ d) $10\sqrt{5}$

34. Which one the value of $\log_{\sqrt{2}} 16$? [Ctg.B.- 15]

a) 2 b) 3

c) 4 d) 8

35. Which one is 2 based $\log 2\sqrt{2}$? [Ctg.B.- 15]

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

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

36. What is the value of $\log_3(\frac{1}{9})$? [S.B.- 15]

a) 3 b) -3

c) -2 d) 2

37. Find the value of $\log_{\sqrt{7}} 7$? [Dj.B.- 15]

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

c) $\sqrt{7}$ d) 7

38. What is the base if 4 is log of 729? [Dj.B.- 15]

a) $6\sqrt{3}$ b) 6

c) $3\sqrt{3}$ d) 3

39. What is the base if 9 is the log of $3\sqrt[3]{3}$? [Dj.B.- 15]

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

c) $\frac{8}{3}$ d) 4

40. $\log_a a = 1$, where – [S.B.- 15]

i. $a > 0$
ii. $a \geq 0$
iii. $a \neq 1$

Which of the following is correct?

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

41. In Logarithm Methods – [Dj.B.- 15]

i. Algebraical expression is e base log.
ii. Number's is 10 base log.
iii. log table 10 is taken as the base.

Which of the following is correct?

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

42. $\log_4 64$ = What?

a) 2 b) 3
c) 4 d) 8

43. Find the value of x for $\log_x 324 = 4$.

a) $2\sqrt{3}$ b) $3\sqrt{2}$
c) $\sqrt{3}$ d) $\sqrt{2}$

44. For what condition $\log_x x = 1$?

a) $x > 0$ b) $x \neq 1$
c) $x > 0, x \neq 1$ d) $x > 1, x \neq 0$

45. Which of the following expression of $\log_e x^{-1}$?

a) $-\text{Inx}$ b) $\log\frac{1}{x}$
c) $-\log x^2$ d) $\log\sqrt{x}$

46. What is the value of $\log_{2\sqrt{3}} 144$?

a) 4 b) $2\sqrt{3}$
c) 2 d) $\sqrt{3}$

47. What is the value of $\left(\frac{\sqrt{a}}{\sqrt[3]{b}}\right)^{-3}$?

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

48. $4\log_4\sqrt{2}$ = What?

a) 4 b) 1
c) 0 d) 2

49. $\log_a M^r$ = What?

a) $\log_a Mr$ b) $\log aM^r$
c) $r\log_a M$ d) $Mr\log a$

50. Which one is the value of $\log_4 2$?

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

51. What is the base of $\log_x 324 = 4$?

a) 2 b) 3
c) $2\sqrt{3}$ d) $3\sqrt{2}$

52. If $\log_x 81 = 4$ then x = What?

a) 2 b) 3
c) $2\sqrt{3}$ d) $3\sqrt{2}$

53. If $\log_a x = -2$ then what is the value of x?

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

54. What is the value of x when $\log 10^x = -3$?

a) 0.11 b) 0.10
c) 0.01 d) 0.001

55. What is the log of 3 of the bases $3\sqrt{3}$?

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

56. What is the base if 9 is the log of $3\sqrt{3}$?

a) 1 b) 4
c) $\frac{2}{3}$ d) $\frac{3}{4}$

57. Observe the following statement: -

i. $\log_{10} m^p = P\log_{10} m$.
ii. $2^4 = 16$ and $\log_2 16 = 4$ are synonymous.
iii. $\log_a(m+n) = \log_a m + \log_a n$.

Which one of the following is correct?

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

58. If $a > 0, b > 0$ and $a \neq 1, b \neq 1$ then-

i. $\log_a b \times \log_b a = 1$.
ii. $\log_a M^r = M\log a^r$.
iii. $\log_a\left(\sqrt[3]{a}.\sqrt{a}\right) = \frac{5}{6}$.

Which one of the following is correct?

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