

Bhavan's R. K. Sarda Vidya Mandir, Raipur***Practice sheet for Class - 11 (Applied Mathematics)
Session - 2023-24***

1. Represent $(100000000110)_2$ in decimal system
2. Represent number $(101101)_2$ in decimal system.
3. Represent the number $(1011001)_2$ in decimal system.
4. Add the numbers $(101)_2$ and $(111)_2$.
5. Add the numbers $(100101)_2$ and $(11001)_2$.
6. Subtract $(1010)_2$ from $(11111)_2$.
7. Subtract $(10110)_2$ from $(11011)_2$.
8. Write the number 247 in binary system.
9. Represent $(10001101)_2$ in decimal system.
10. Evaluate: $(1011011)_2 + (10010)_2$.
11. Evaluate: $(1000101)_2 - (10001)_2$.
12. Represent the number $(11001.0101)_2$ in decimal system.
13. Evaluate $(10011)_2 \times (101)_2$.
14. Divide $(11011)_2$ by $(110)_2$.

15. Represent the number 217 in terms of binary system.

16. For the power 3^9 write (i) the base, (ii) exponent.

17. Find x, if $3^{2x} = 81$.

18. Evaluate $\sqrt[3]{5} \div \sqrt{5}$.

19. For the power $\sqrt[5]{3^7}$, base is _____.

20. If $2^{5x} = \frac{1}{32}$, then value of x is

(a) 1

(b) -1

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

(d) $-\frac{1}{2}$

21. Solve for x, $2^{x+2} \cdot 3^{x+2} = \frac{1}{6}$.

22. If $5^{x+2} = 625$ then value of x is

(a) 1

(b) 0

(c) 2

(d) -2

23. For the power 5^9 , the exponent is _____.

24. Simplify $\frac{\sqrt{3} \cdot \sqrt[3]{6}}{2^2}$.

25. Evaluate the following:

$$3^2 \cdot 3^4$$

26. Evaluate the following:

$$\left[\left(\frac{1}{2} \right)^2 \right]^4$$

27. Express $81 = 3^4$ in logarithmic form.
28. Express $3^{-4} = \frac{1}{81}$ in logarithmic form.
29. Express $\log_2 16 = 4$ in exponential form.
30. Evaluate $\log_{0.5} 128$.
31. Solve for x , $\log_x(0.001) = -3$.
32. Solve for x , if $\log_2(x^2 - 17) = \log_2 8$.
33. Express the following in logarithmic form
- (i) $5^3 = 125$
- (ii) $0.0001 = 10^{-4}$
34. Represent 45 in terms of binary system.
35. Represent the number 89 in terms of binary system.
36. Represent decimal number 7.25 in binary system.
37. Represent the decimal number 36.8125 in binary system.
38. Represent the number $(1101.0101)_2$ in decimal system.
39. Evaluate: $\left(\frac{x^a}{x^b}\right)^{a^2+ab+b^2} \left(\frac{x^b}{x^c}\right)^{b^2+bc+c^2} \left(\frac{x^c}{x^a}\right)^{c^2+ac+a^2}$
40. Solve for x : $4^{x+2} = 2^{2x+1} + 14$
41. Multiply $(11001)_2$ by $(111)_2$
42. Multiply $(110011)_2$ by $(1011)_2$ and check the result by converting into decimal system.

43. Multiply $(1011.1)_2$ by $(11.01)_2$

44. Show that: $\frac{1}{1+x^{a-b}+x^{a-c}} + \frac{1}{1+x^{b-c}+x^{b-a}} + \frac{1}{1+x^{c-a}+x^{c-b}} = 1$

45. Represent the decimal number 13.25 in binary system.

46. Evaluate the following:

$$\frac{2^{-3} \cdot \sqrt{6} \cdot 3^2}{6^3 \cdot 2^5}$$

47. In binary number system the number of digits used is

- (a) 10
- (b) 8
- (c) 6
- (d) 2

48. $(110101)_2$ in decimal system represents.

- (a) 43
- (b) 53
- (c) 55
- (d) 50

49. In binary system $10 - 1$ is equal to

- (a) 1
- (b) 2
- (c) 9
- (d) 7

50. 15.6875 is in decimal system, in binary system it can be represented as

- (a) $(1111.1111)_2$
- (b) $(1011.1011)_2$
- (c) $(1111.1011)_2$
- (d) $(111.1111)_2$

51. If $(101001)_2 + (110110)_2 = (x)_{10}$, then x is

- (a) 80
- (b) 90
- (c) 95
- (d) 75

52. $(99)_{10} - (36)_{10} = (p)_2$, then p is

- (a) 111111
- (b) 11111

(c) 110111

(d) 110011

53. $(1100)_2 \times (100)_2$ is equal to

(a) $(11000)_2$ (b) $(110000)_2$

(c) $(101000)_2$ (d) $(100100)_2$

54. $(0.0111)_2$ is equal to

(a) 0.4375 (b) 4.375

(c) 43.75 (d) 437.5

55. $(11111)_2$ is equal to

(a) 59 (b) 45

(c) 37 (d) 31

56. $5 + 9$ in decimal system is equal to 'p' in binary system, the value of p is

(a) 1110

(b) 1101

(c) 1011

(d) 111

57. The number of digits required to represent a decimal number 31 in equivalent binary form are

(a) 2

(b) 4

(c) 5

(d) 6

58. The base of the binary system is _____.

59. Represent 145 in terms of binary system.

60. Represent the number $(11001001)_2$ in terms of decimal system.

61. Subtract $(101011)_2$ from $(11010110)_2$.

62. Represent 19.25 in binary system.

63. Evaluate, $(11111)_2 \times (1001)_2$.

64. Evaluate, $(111111)_2 \div (101)_2$.

65. We have been using decimal system for our calculations and in this age of technology, where use of online technology is increasing, we make use of binary system.

To know more let's answer some of the questions.

(i) Number of digits used in decimal system are

(a) 9 (b) 10 (c) 7 (d) 2

(ii) Name of digits used in binary system are

(a) 8 (b) 5 (c) 2 (d) 10

(iii) $(1101)_2$ in decimal system is

(a) 3 (b) 111 (c) 12 (d) 13

(iv) 43 in binary system is

(a) $(110011)_2$ (b) $(1111)_2$

(c) $(101011)_2$ (d) $(110101)_2$

(v) $1 + 1$ in binary system is

(a) 2 (b) 1 (c) 10 (d) 11