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BOOK 1 – S. S. 1

CHAPTER ONE: Number Base System

THEORY

1. If $2N4_{seven} = 15N_{nine}$ find the value of N. [2018/4]

2. If all numbers in the equation $\frac{y}{y+101} = \frac{11}{10010}$ are in base two, solve for y. [2008/1]

3. If $124_n = 232_{five}$, find $_n$ [2014/2]

4. Divide 11111111_{two} by 101_{two} [1994/4]

5. Convert 11.011_{two} to a number in base ten [1997/1]

6. Find the value of x for which $312_{four} + 52_x = 96_{ten}$ [2001/8]

7. If $123_y = 83_{10}$, obtain an equation in y, hence find the value of y. [2002/6]

8. Copy and complete the binary multiplication table

x	10	11	100	101
10	100	_	1000	_
11	110	_	1100	_
100	_	_	10000	10100

[1997/1]

9. Simplify $\sqrt{1001_{two}}$, leaving your answer in base two. [2004/12]

10. Given that $110_x = 40_{five}$, find the value of x. [2019/1]

OBJ

1. If $23_x = 32_5$, find the value of x.
   A. 7. B. 6. C. 5. D. 4. [2014/2]

2. The sum of 11011_2, 11111_2, and 10000_2 is $10m10n0_2$. Find the values of m and n. A. m=0,n=0. B. m=1,n=0. C. m=0,n=1. D. m=1,n=1. [2015/2]

3. The subtraction below is in base seven. Find the missing number.
   $\begin{array}{cccc} 5 & 1 & 6 & 2 \\ -2 & 6 & 4 & 4 \\ \hline 2 & * & 1 & 5 \end{array}$
   A. 2. B. 3. C. 4. D. 5. [2010/43]

4. Convert 42_5 to a base three numeral.
   A. 201_3. B. 210_3. C. 211_3. D. 222_3. [2008/6]

5. If $23_x + 101_x = 130_x$, find the value of x. A. 7. B. 6. C. 5. D. 4. [2016/1]

6. Given that $124_x = 7(14_x)$, find the value of x.
   A. 12. B. 11. C. 9. D. 8. [2011/38]

7. Evaluate $(111_{two})^2$ and leave your answer in base 2.
   A. 111001_{two}. B. 110001_{two}. C. 101001_{two}. D. 10010_{two}. [2007/1]

8. Convert 35_{10} to a number in base 2. A. 1011. B. 10011. C. 100011. D. 11001. [2012/4]

9. Arrange the following numbers in descending order of magnitude: 22_{three} 34_{five} 22_{six}
   A. 21_{six} 22_{three} 34_{five}. B. $22_{six}34_{five}22_{three}$. C. 22_{three} 34_{five} 21_{six}. D. 34_{five} 21_{six} 22_{three}. [2009/4]

10. In what number base is the addition 465 + 24 + 225 = 1050? A. Ten. B. Nine. C. Eight. D. Seven. [2013/3]

11. In what number base was the addition 1 + nn = 100, where n > 0, done? A. n - 1. B. n. C. n + 1. D. n + 2. [2017/33]

12. Find the value of x for which $32_{four} = 22_x$ A. three. B. five. C. six. D. seven. [2018/4]

13. Convert 101101_{two} to a number in base ten. A. 61. B. 46. C. 45. D. 44. [2005/11]

14. Two numbers 24_x and 31_y are equal in value when converted to base ten. Find the equation connecting x and y. A. 2x = 3 (y - 1). B. 4x - y = 1. C. 3y + 2x = 3. D. 3y = 2 (x + 3). [1999/35]

15. Find $(101_2)^2$, expressing the answer in base 2 A. 10101. B. 11001. C. 10010. D. 11101. [1995/1]

16. Simplify: $11011_{two} - 1101_{two}$ A. 101000_{two}. B. 1100_{two}. C. 1110_{two}. D. 1011_{two}. [2006/2]

17. Find the missing number in the addition of the following numbers, in base seven.
   $\begin{array}{cccc} 4 & 3 & 2 & 1 \\ 1 & 2 & 3 & 4 \\ * & * & * & * \\ \hline 12 & 3 & 4 & 1 \end{array}$
   A. 3453. B. 5556. C. 6016. D. 13453. [2000/4]

18. If $104_x = 68$, find the value of x A. 5. B. 7. C. 8. D. 9. [2000/8]

19. Arrange in ascending order of magnitude: 26_8, 36_7 and 25_9. A. $25_9 26_8 36_7$. B. $26_8 25_9 36_7$. C. $36_7 26_8 25_9$. D. $36_7 25_9 26_8$. [1999/7]

20. Evaluate $(20_{three})^2 - (11_{three})^2$ in base three A. 101. B. 121. C. 202. D. 2020. [2001/2]

21. Convert 77 to a number in base two A. 1001101. B. 111001. C. 100110. D. 10101. [1992/4]

22. If $M5_{ten} = 1001011_{two}$ find the value of M. A. 5. B. 6. C. 7. D. 8. [2002/7]

23. Given, that $4P4_5 = 119_{10}$ find the value of P A. 1. B. 2. C. 3. D. 4. [2003/19]

24. Evaluate $(111_{two})^2 - (101_{two})^2$ A. 10_{two}. B. 100_{two}. C. 1100_{two}. D. 11000_{two}. [2003/27]

25. Evaluate $202^2_{three} - 112^2_{three}$ A. 21120. B. 21121. C. 21112. D. 21011. [2004/1]

26. If $y = 23_{five} + 101_{three}$ find y, leaving your answer in base two A. 1110. B. 10111. C. 11101. D. 111100. [2004/2]

27. Convert the decimal number 89 to a binary number. A. 101101. B. 111001. C. 1001001. D. 1011001. [1996/2]

28. Convert 35 to a number in base two. A. 10011_{two}. B. 100011_{two}. C. 110010_{two}. D. 1011_{two}. [1998/2]

29. Convert 89ten to a number in base two.
   A. 1101001. B. 1011001. C. 1001101. D. 101101. [1993/4]

30. If $23_y = 1111_{two}$, find the value of y. A. 4 B. 5. C. 6. D. 7 [2019/8]

31. If $101_{two} + 12_y = 23_{five}$, find the value of y. A. 8 B. 7 C. 6 D. 5. [2020/6]

CHAPTER TWO: Arithmetic (Everyday Arithmetic)

THEORY

1. An amount of ₦300,000.00 was shared among Otobo, Ada and Adeola. Otobo received ₦60,000.00, Ada received $\frac{5}{12}$ of the remainder, while the rest went to Adeola. In what ratio was the money shared? [2019/12]

2. Salem, Sunday and Shaka shared a sum of ₦1, 100.00. For every ₦2.00 that Salem gets, Sunday gets 50 kobo and for every ₦4.00 Sunday gets, Shaka gets ₦2.00. Find Shaka's share. [2013/2]
3. The present ages of a father and his son are in the ratio 10:3. If the son is 15 years old now, in how many years will the ratio of their ages be 2:1? [2013/3]
4. A boy had M Dalasis (D), He spent D15 and shared the remainder equally with his sister. If the sister's share was equal to ⅓ of M, find the value of M [2012/6]
5. Ade received $\frac{3}{5}$ of a sum of money, Nelly ⅓ of the remainder while Austin took the rest. If Austin's share is greater than Nelly's share by N3,000, how much did Ade receive? [2011/12]
6. If $\frac{3p + 4q}{3p - 4q}$ = 2, find p : q [2016/11]
7. A man left N5, 720 to be shared among his son and three daughters. Each daughter's share was $\frac{3}{4}$ of the son's share. How much did the son receive? [2004/6]
8. A map is drawn to a scale of 1:20,000. Use it to calculate the: (i) distance, in kilometers, represented by 4.5 cm on the map; (ii) distance, in metres, on the map, between two towns 16 km apart; (iii) area on the map, of a forest, which covers 85 km^2. [2006/6]
9. The sum of the ages of a woman and her daughter is 46 years. In 4 years' time, the ratio of their ages will be 7:2. Find their present ages. [2001/2]
10. Ali, Musah and Yusif shared ₦420,000.00 in the ratio 3:5:8 respectively. Find the sum of Ali and Yusif's shares. [2019/3]

OBJ

1. The distance between two towns is 50 km. It is represented on a map by 5 cm. Find the scale used. A. 1 : 1,000,000. B. 1 : 500,000. C. 1 : 100,000. D. 1 : 10,000. *[2013/48]*
2. If x : y = 3 : 2 and y : z = 5 : 4. Find the value of x in the ratio x : y : z A. 8. B. 10. C. 15. D. 20. *[2014/30]*
3. A farmer uses $\frac{2}{5}$ of his land to grow cassava, $\frac{1}{3}$ of the remainder for yam and the rest for maize. Find the part of the land used for maize. A. $\frac{2}{15}$ B. $\frac{2x}{5}$ C. $\frac{2}{3}$ D. $\frac{4}{5}$ *[2015/39]*
4. N140,000 is shared between Abu, Kayode and Uche. Abu has twice as much as Kayode, and Kayode has twice as much as Uche. What is Kayode's share? A. N80.000. B. N40,000. C. N20.000. D. N10.000. *[2007/8]*
5. In 1995, the enrolments of two schools X and Y were 1,050 and 1,190 respectively. Find the ratio of the enrolments of X to Y. A. 50 : 11. B. 15 : 17. C. 13 : 55. D. 12 : 11. *[2012/3]*
6. If the ratio x : y = 3 : 5 and y : z = 4 : 7, find the ratio x : y : z. A. 15 : 28: 84. B. 12: 20: 35. C. 3 : 5 : 4. D. 5 : 4 : 7. *[2007/37]*
7. The ages of Tunde and Ola are in the ratio 1:2. If the ratio of Ola' age to Musa' age is 4:5, what is the ratio of Tunde' age to Musa' age? A. 1:4. B. 1:5. C. 2:5. D. 5:2. *[2017/5]*
8. A sum of N 18,100.00 was shared among 5 boys and 4 girls with each boy taking N20.00 more than each girl. Find a boy' share. A. N 1,820.00. B. N 2,000.00. C. N 2,020.00. D. N 2,040.00. *[2017/10]*
9. Alfred spent $\frac{1}{4}$ his money on food, $\frac{1}{3}$ on clothing and saved the rest. If he saved $72,000.00, how much did he spend on food? A. N43,200.00. B. N43,000.00. C. N42,200.00. D. N40,000.00. *[2012/38]*
10. If x : y : z = 2 : 3 : 4, evaluate $\frac{9x+3y}{6z-2y}$ A. $1\frac{1}{2}$ B. 2. C. $2\frac{1}{2}$ D. 3. *[2018/10]*
11. If x : y =$\frac{1}{4}$: $\frac{3}{8}$ and y : z = $\frac{1}{3}$: $\frac{4}{9}$, find x : z A. 2 : 3. B. 3 : 4. C. 3 : 8. D. 1 : 2. *[2018/44]*
12. What is the value of 3 in the number 42.7531? A. $^3/_{10000}$. B. $^3/_{1000}$. C. $^3/_{100}$. D. $^3/_{10}$. *[2011/21]*

13. Express 0.612 in the form $\frac{x}{y}$. Where x and y are integers and y ≠ 0. A. $\frac{153}{250}$. B. $\frac{68}{111}$. C. $\frac{61}{100}$. D. $\frac{21}{33}$. *[2018/47]*
14. On a map, 1cm represents 5 km. Find the area on the map that represents 100 km^2 A. 2 cm^2. B. 4 cm^2. C. 8 cm^2. D. 16 cm^2. *[2016/6]*
15. There are 250 boys and 150 girls in a school. If 60% of the boys and 40% of the girls play football, what percentage of the school play football? A. 40.0%. B. 42.2%. C. 50.0%. D. 52.5%. *[2018/6]*
16. If 3x ≡ 4 (mod 5), find the least value of x. A. 1. B. 2. C. 3. D. 4. *[2018/37]*
17. If 20 (mod 9) is equivalent to y (mod 6), find y. A. 1. B. 2. C. 3. D. 4. *[2016/39]*
18. If 3 children share N 10.50 among themselves in ratio 6:7:8, how much is the largest share? A. 3.00. B. 3.50. C. 4.00. D. 4.50. [1995/2]
19. A seller allows 20% discount for cash payment on the marked price of his goods. What is the ratio of the cash payment to the marked price? A. 1:4. B. 1:5. C. 3:4. D. 4:5. [2006/36]
20. The ages of three men are in the ratio 3 : 4 : 5. If the difference between the ages of the oldest and youngest is 18 years, find the sum of the ages of the three men. A. 45 years. B. 72 years. C. 108 years. D. 216 years. [2000/9]
21. The sides of two cubes are in the ratio 2:5. What is the ratio of their volumes? A. 4:5. B. 8:15. C. 6:125. D. 8:125. [2004/46]
22. Which of the following numbers is a perfect cube? A. 350. B. 504. C. 950. D. 1728. [2000/7]
23. Which of the following correctly expresses 48 as a product of prime factors? A. 3 x 4 x 4. B. 2 x 3 x 8. C. 2 x 2 x 3 x 4. D. 2 x 2 x 2 x 2 x 3. [2001/1]
24. In a bag of oranges, the ratio of the good ones to the bad ones in the bag is 5:4, If the number of the bad oranges in the bag is 36, how many oranges are there altogether? A. 81. B. 72. C. 54. D. 45. [2001/7]
25. A tap leaks at the rate of 2cm³ per second. How long will it take the tap to fill a container of 45 litres capacity? (1 litre = 1000cm³). A. 8 hours. B. 6hr 15min. C. 4hr 25 min. D. 3hr. [2000/43]

26. If $\frac{4m+3n}{4m-3n} = \frac{5}{2}$ find the ratio m:n A. 7 : 4. B. 4 : 3. C. 3 : 4. D. 4 : 7. [2001/18]
27. If 2x : (x+1) = 3:2, what is the value of x? A. ½. B. 1. C. 1½. D. 3. [2001/25]
28. The ratio of the number of men to the number of women in a 20-member committee is 3:1. How many women must be added to the 20-member

committee so as to make the ratio of men to women 3:2? A. 2. B. 5. C. 7. D. 9. [2002/14]
29. Three men Bedu, Bakre and Kofi shared N500 in the ratio 3:2: x respectively. If Bedu's share is N150, find the value of x A. 1. B. 4. C. 5. D. 6. [2003/10]
30. If 5 times a certain integer is subtracted from twice the square of the integer, the result is 63. Find the integer. A. 21. B. 9. C. 7. D. 4. [1989/19]

Modular Arithmetic

1. The operation Δ is defined on the set T = {2, 3, 5, 7} by x Δy = $(x + y + xy)$ mod 8. (i) Construct modulo 8 table for the operation Δ on the set T (ii) Use the table to find : (I) 2 Δ (5 Δ 7), (II) 2 Δ n = 5 Δ 7) [2016/13]
2. (a) Copy and complete the following table for multiplication modulo 11.

$\otimes$	1	5	9	10
1	1			

OBJ

1. In what modulus is it true that 9 + 8 = 5? A. mod 10. B. mod 11. C. mod 12. D. mod 13. [2014/49]

Fig. 1   Fig. 2

5	5			
9	9			
10	10			

Use the table to: (b)(i) evaluate (9 ⊗ 5) ⊗ (10 ⊗ 10);
(ii) Find the true set of; I. 10 ⊗ m = 2, II. n ⊗ n = 4. [2014/8]

Fig. 1 and Fig. 2 are the addition and multiplication tables respectively in modulo 5.

2. Use these tables to solve the equation (n ⊗ 4) ⊕ 3 = 0(mod 5). A. 1. B. 2. C. 3. D. 4. [2017/4]

3. If 7 + y - 4 $(mod\ 8)$, find the least value of y, $10 \le y \ge 30$. A. 11. B. 13 C. 19. D. 21 [2019/5]
4. Find the least value of x which satisfies the equation 4x = 7 (mod 9). A. 7 B. 6 C. 5 D. 4. [2020/4]

CHAPTER THREE: Indices & Standard Form

THEORY

1. If $\frac{2^{1-y} \times 2^{y-1}}{2^{y+2}} = 8^{2-3y}$, find y. [2009/1]
2. If $2^{x+y} = 16$ and $4^{x-y} = \frac{1}{32}$, find the value of x and y [2008/6]
3. If $9^{(1-x)} = 27^y$ and $x - y = -1\frac{1}{2}$, find the value of x + y. [2011/2]
4. Evaluate, without using mathematical tables or calculator, (3.69 x 10⁵) ÷ (1.64 x 10⁻³), leaving your answer in the standard form. [2007/1]
5. Without using tables or calculator, simplify: $\frac{0.6 \times 32 \times 0.004}{1.2 \times 0.008 \times 0.16}$, leaving the answer in standard form (scientific notation). [2014/1]
6. Without using Mathematical tables or calculators, evaluate: $\frac{0.09 \times 1.21}{3.3 \times 0.00025}$ 1998 leaving the answer standard form (Scientific Notation) [2016/1]
7. If $9^{2x+1} = \frac{81^{x-2}}{3^x}$ find x. [1992/1]
8. If $17x = 375^2 - 356^2$, find the exact value of x (b)If $4^x = 2^{1/2}$ x 8, find x [1992/6]
9. Given that $3 \times 9^{1+x} = 27^{-x}$, find x. [1994/1]

10. Simplify $\frac{1}{3^{5n}}$ x 9^{n-1} x 27^{n+1} [2001/2]
11. Solve the equation $\frac{9^{2x-3}}{3^{x+3}} = 1$ [2002/6]
12. (a) Solve $\frac{1}{81^{(x-2)}} = 27^{(1-x)}$ [2004/1]
13. Evaluate: $2 \div \left(\frac{64}{125}\right)^{-2/3}$ [2005/2]
14. (a) Evaluate and express your answer in standard form; $\frac{4.56 \times 3.6}{0.12}$
(b) Without using mathematical tables or calculator, evaluate $(73.8)^2 - (26.2)^2$. [2000/1]
15. (a) Simplify $\frac{0.016 \times 0.084}{0.48}$ Leaving your answer in standard form. [1990/1]
16. Without using Mathematical tables, calculate $\sqrt{\left(\frac{P}{Q}\right)}$, Where P = 3.6 x 10^{-3} and Q = 2.25 x 10^6, leaving your answer in standard form. [1993/1]
17. Simplify: $625^{\frac{3}{8}}$ x $5^{\frac{1}{2}}$ ÷ 25 [2003/3]
18. Solve: $2\left(\frac{1}{8}\right)^x = 32^{x-1}$ [2019/3]

OBJ

1. If $9^{2x} = \frac{1}{3}(27^x)$, find x A. 2. B. 1. C. -1. D. -2. [2009/31]
2. Simplify: $\sqrt{\frac{8^2 \times 4^{n+1}}{2^{2n} \times 16}}$ A. 16. B. 8. C. 4. D. 1. [2014/35]
3. If $\frac{27^x \times 3^{1-x}}{9^{2x}} = 1$, find the value of x. A. 1. B. $\frac{1}{2}$. C. $-\frac{1}{2}$.

D. -1. [2015/4]
4. If 2^n= y, find $2^{(2+n/3)}$ A. 4y $^{1/3}$. B. 4y $^{-3}$. C. 2y $^{1/3}$. D. 2y $^{-3}$. [2015/7]

4

5. Given that $\frac{5^{n+3}}{25^{2n-3}} = 5^\circ$, find n A. n = 1. B. n = 2. C. n = 3. D. n = 5. *[2010/18]*

6. Simplify: $\sqrt[3]{27}\ x^3y^9$ A. $9xy^3$. B. $3xy^6$. C. $3xy^3$. D. $9y^3$. *[2008/10]*

7. Simplify: $\frac{3^{n-1}\times 27^{n+1}}{81^n}$ A. 3^{2n}. B. 9. C. 3^n. D. 3^{n+1}. *[2016/7]*

8. If 2^n = 128. find the value of $(2^{n-1})(5^{n-2})$ A. 5 (10^6). B. 2 (10^6). C. 5 (10^5). D. 2 (10^5). *[2008/30]*

9. Simplify: $\frac{3x^3}{(3x)^3}$ A. 1. B. $\frac{1}{3}$. C. $\frac{1}{9}$. D. $\frac{1}{27}$. *[2007/7]*

10. If $8^{x-1} = \frac{1}{4}$, find x. A. $-\frac{5}{3}$. B. -1. C. $-\frac{1}{3}$. D. $\frac{1}{3}$. *[2007/13]*

11. If $27^x = 9^y$, find the value of $\frac{x}{y}$ A. $\frac{1}{3}$. B. $\frac{2}{3}$. C. $1\frac{1}{2}$. D. 3. *[2011/46]*

12. If $(2x + 3)^3$ = 125, find the value of x. A. 1. B. 2. C. 3. D. 4. *[2009/13]*

13. If $9^{(2-x)}$ = 3. find x A. 1. B. $\frac{3}{2}$. C. 2. D. $\frac{5}{2}$. *[2013/2]*

14. Given that $t = 2^{-x}$, find 2^{x+1} in terms of t. A. $\frac{2}{t}$. B. $\frac{t}{2}$. C. $\frac{1}{2t}$. D. $2t$. *[2017/43]*

15. Solve: $(\frac{27}{125})^{-\frac{1}{3}}$ x $(\frac{4}{9})^{\frac{1}{2}}$ A. $\frac{10}{9}$. B. $\frac{9}{10}$. C. $\frac{2}{5}$. D. $\frac{12}{125}$. *[2012/39]*

16. If x = 64 and r = 27, calculate: $\frac{x^{\frac{1}{2}} - y^{\frac{1}{3}}}{y - x^{\frac{2}{3}}}$. A. $2\frac{1}{5}$. B. 1. C. $\frac{5}{11}$. D. $\frac{11}{43}$. *[2013/11]*

17. Simplify 0.000215 x 0.000028 and express your answer in standard form. A. 6.03×10^9. B. 6.02×10^9. C. 6.03×10^{-9}. D. 6.02×10^{-9}. *[2010/1]*

18. Evaluate $\frac{(3.2)^2 - (4.8)^2}{3.2 + 4.8}$ A. -0.80. B. -1.60. C. -10.24. D. -12.80. *[2008/2]*

19. Find the product of 0.0403 and 0.0021 leaving your answer in the standard form. A. 8.6×10^{-6}. B. 8.46×10^{-5}. C. 8.6×10^4. D. 8.6×10^5. *[2008/3]*

20. Simplify $(0.3 \times 10^5) \div (0.4 \times 10^7)$, leaving your answer in the standard form. A. 7.5×10^{-4}. B. 7.5×10^{-3}. C. 7.5×10^{-2}. D. 7.5×10^{-1}. *[2007/3]*

21. Express the square root of 0.000144 in the standard form. A. 1.2×10^{-4}. B. 1.2×10^{-3}. C. 1.2×10^{-2}. D. 1.2×10^{-1}. *[2009/6]*

22. Multiply 2.7×10^{-4} by 6.3×10^6 and leave your answer in standard form. A. 1.7×10^3. B. 1.70×10^3. C. 1.701×10^3. D. 17.01×10^3. *[2013/1]*

23. Evaluate $(101.5)^2 - (100.5)^2$ A. 1. B. 2.02. C. 20.02. D. 2020. [1988/1]

24. Simplify $36^{\frac{1}{2}}$ x $64^{-\frac{1}{3}}$ x 5° A. 0. B. $\frac{1}{24}$. C. ⅔. D. 1½. [1988/3]

25. Which of the following is equal to $\frac{72}{125}$? A. $\frac{2^3 \times 3^2}{5^3}$. B. $\frac{2^4 \times 3}{5^3}$. C. $\frac{2^3 \times 3^2}{5^5}$. D. $\frac{2^2 \times 3^2 \times 4^2}{5^2}$. [1994/2]

26. Evaluate $\frac{27^{1/3}}{16^{-1/4}}$ A. 6. B. 5. C. 4. D. 3. [1994/4]

27. Simplify: $16^{5/4} \times 2^{-3} \times 3^\circ$ A. 0. B. 2. C. 4. D. 10. [1994/5]

28. Given that $81 \times 2^{2n-2}$ = k, find √k A. 4.5×2^n. B. 4.5×2^{2n}. C. $9 \times 2^{n-1}$. D. 9×2^{2n}. [1999/24]

29. Solve the equation $2^7 = 8^{5-x}$. A. $\frac{5}{8}$. B. $\frac{8}{3}$. C. $\frac{3}{2}$. D. $\frac{15}{4}$. [2005/12]

30. Simplify $56x^{-4} \div 14x^{-8}$ A. $2x^{-12}$. B. $3x^{-3}$. C. $4x^{-3}$. D. $4x^4$. [1996/4]

31. Simplify: $0.027^{-1/3}$ A. $^{31}/_3$. B. 3. C. $^3/_{10}$. D. $^1/_3$. [1995/4]

32. Simplify: $\frac{9^{-1/2}}{27^{2/3}}$ A. 1. B. $\frac{1}{2}$. C. $\frac{1}{9}$. D. $\frac{1}{27}$. [1989/32]

33. Simplify: $125^{-1/3}$ x $49^{-1/2}$ x 10° A. 350. B. 35. C. $\frac{1}{35}$. D. $\frac{1}{350}$. [1990/1]

34. If 3^{2x} = 27, what is x? A. 1. B. 1.5. C. 4.5. D. 18. [1990/2]

35. Simplify $(1/4)^{-1/2}$ A. 8. B. 4. C. $\frac{1}{4}$. D. $\frac{3}{8}$. [1998/4]

36. It is observed that $1 + 3 = 2^2$, $1 + 3 + 5 = 3^2$, $1 + 3 + 5 + 7 = 4^2$. If $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 = p^2$, find P. A. 6. B. 7. C. 8. D. 9. [1999/3]

37. Simplify $\frac{8^{2/3} \times 27^{-1/3}}{64^{1/3}}$ A. -3. B. $\frac{1}{9}$. C. $\frac{1}{3}$. D. 4. [1998/7]

38. Given that $27^{(1+x)}$ = 9 find x. A. -3. B. $-\frac{1}{3}$. C. $\frac{5}{3}$. D. 2. [2000/29]

39. Simplify: $\frac{1}{4}(2^n - 2^{n+2})$ A. $2^{n-2} - 2^n$. B. $2^{n+2}(1-2)$. C. $2^{n+2n} + 2.2^n$. D. 2^{2n}. [1991/10]

40. Simplify: $(\frac{16}{81})^{1/4}$ A. $\frac{8}{27}$. B. $\frac{1}{3}$. C. $\frac{4}{9}$. D. $\frac{2}{3}$. [1992/7]

41. Simplify $2^{\frac{1}{2}}$ x $8^{\frac{1}{2}}/4$ A. 1. B. 2. C. 4. D. 16. [2002/31]

42. If $\frac{3^{(1-n)}}{9^{-2n}} = \frac{1}{9}$, find n A. $-^3/_2$. B. ⅓. C. -1. D. -3.

43. Express the product of 0.06 and 0.09 in standard form A. 5.4×10^{-3}. B. 5.4×10^{-2}. C. 5.4×10^{-1}. D. 5.4×10^2. [1988/2]

44. Express $\frac{8.75}{0.025}$ in standard form. A. 3.5×10^3. B. 3.5×10^{-2}. C. 3.5×10^1. D. 3.5×10^2. [1994/3]

45. Simplify 3.72 x 0.025 and express your answer in the standard form. A. 9.3×10^3. B. 9.3×10^2. C. 9.3×10^{-2}. D. 9.3×10^{-3}. [1999/34]

46. Express 0.000834 in standard form. A. 8.34×10^{-4}. B. 8.34×10^{-3}. C. 8.34×10^3. D. 8.34×10^4. [1995/3]

47. Evaluate $0.009 \div 0.012$ leaving your answer in standard form. A. 7.5×10^2. B. 7.5×10^1. C. 7.5×10^{-1}. D. 7.5×10^{-2}. [1989/10]

48. Express 0.00562 in standard form A. 5.62×10^{-3}. B. 5.62×10^{-2}. C. 0.562×10^{-2}. D. 5.62×10^2. [1990/3]

49. Express 398753 correct to three significant figures. A. 398000. B. 398700. C. 398800. D. 399000. [2000/2]

50. Express 0.0462 in standard form. A. 0.462×10^{-2}. B. 0.462×10^{-2}. C. 4.62×10^{-1}. D. 4.62×10^{-2}. [1991/1]

51. Express 0.0462 in standard form. A. 0.462×10^{-1}. B. 0.462×10^{-2}. C. 4.62×10^{-1}. D. 4.32×10^{-2}. [2001/6]

52. Evaluate $(0.13)^3$ correct to three significant figures. A. 0.00219. B. 0.00220. C. 0.00300. D. 0.00390. [2006/1]

53. What is the place value of 9 in the number 3.0492? A. $\frac{9}{10000}$. B. $\frac{9}{1000}$. C. $\frac{9}{100}$. D. $\frac{9}{10}$. [2006/23]

54. Express $(0.0425 \div 2.5)$ as a fraction A. $\frac{17}{10,000}$. B. $\frac{17}{1000}$. C. $\frac{17}{250}$. D. $\frac{17}{100}$. [1997/1]

55. Divide 3.6721 by 4 A. 0.9180. B. 1.4180. C. 1.1680. D. 1.9180. [1997/28]

56. Evaluate $3.0 \times 10^1 - 2.8 \times 10^{-1}$ leaving the answer in standard form. A. 2×10^{-1}. B. 2×10^2. C. 2.972×10^1. D. 2.972×10^2. [1999/4]

57. Express $25^\circ 45^1$ in decimal (Hint $1^\circ = 60^1$) A. 25.75°. B. 25.55°. C. 25.45°. D. 25.15°. [2001/29]

58. Simplify $\frac{2.25}{0.015}$ leaving your answer in standard form. A. 1.5×10^{-4}. B. 1.5×10^{-2}. C. 1.5×10^{-3}. D. 1.5×10^2. [1993/25]

59. Correct 0.04945 to two significant figures. A. 0.040. B. 0.049. C. 0.050. D. 0.49. [2005/1]

60. Simplify $0.63954 \div 0.003$ giving your answer correct to two significant figures. A. 213.18. B. 213.00. C. 213. D. 210. [1988/31]

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