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**REAL NUMBERS**

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**SELECT THE CORRECT OPTION: (ONLY ONE OPTION IS CORRECT)**

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- 1) Between two irrational numbers there lies  
(a) infinite number of rational numbers (b) no rational number  
(c) no irrational number (d) no number
- 2) Irrational numbers are  
(a) terminating (b) non terminating but repeating  
(c) non-terminating and non-repeating (d) none of these
- 3) Which of the following is not possible?  
(a) two irrational numbers add to form irrational (b) two irrational numbers add to form rational.  
(c) two rational numbers add to form irrational (d) two rational numbers add to form rational.
- 4) Which of the following is always true?  
(a) product of two irrational numbers is irrational (b) product of two irrational numbers is rational.  
(c) product of two rational numbers is rational (d) product of two rational numbers is irrational.
- 5) What is the relation between HCF and LCM of two numbers?  
(a)  $HCF + LCM = \text{product of numbers}$  (b)  $HCF \times LCM = \text{sum of numbers}$   
(c)  $HCF \times LCM = \text{product of numbers}$  (d)  $HCF \times LCM = \text{square of product of numbers}$
- 6) Decimal form of  $\frac{3}{800}$  is  
(a) 0.375 (b) 0.0375 (c) 0.00375 (d) 0.000375
- 7) Decimal form of  $\frac{1}{2^8 \cdot 5^6}$  is  
(a) 0.00000025 (b) 0.0000025 (c) 0.000000025 (d) none of these
- 8) What is the p/q form of  $0.\overline{123}$  ?  
(a)  $\frac{123}{999}$  (b)  $\frac{123}{900}$  (c)  $\frac{123}{1000}$  (d)  $\frac{123}{990}$
- 9) What is the p/q form of  $0.1\overline{123}$  ?  
(a)  $\frac{1123}{9990}$  (b)  $\frac{1122}{9990}$  (c)  $\frac{1122}{9999}$  (d)  $\frac{1123}{999}$
- 10)  $5 \times 11 \times 13 + 13$  is  
(a) prime number (b) even prime number (c) composite number (d) odd number

- 11) LCM of 35 and 22 is  
 (a) 35 (b) 335 (c) 770 (d) 210
- 12) Which of these numbers always ends with 6?  
 (a)  $4^n$  (b)  $6^n$  (c)  $2^n$  (d)  $8^n$
- 13)  $(\sqrt{5} + \sqrt{2})(\sqrt{2} - \sqrt{5})$  is  
 (a) rational (b) irrational (c) 0 (d) can't be determined
- 14) HCF of 123456 and 123458 is  
 (a) 1 (b) 2 (c) 4 (d) 12345
- 15) What will be the decimal form of  $\frac{2}{5^{10}}$ ?  
 (a) 0.0000001024 (b) 0.0000002048 (c) 0.00000001024 (d) 0.00000002048
- 16) HCF of 32, 35, 40 is  
 (a) 1 (b) 2 (c) 4 (d) 5
- 17) Which of the following number is irrational?  
 (a) 3.131131113111113 (b) 1.31331333133331 (c)  $\frac{22}{7}$  (d) none of these
- 18) Which of the following is not the factor(s) of 255?  
 (a) 5 (b) 25 (c) 3 (d) 17
- 19) Let L and H be the LCM and HCF of two numbers A and B. Now which of the following is true?  
 (a)  $L + H = A + B$  (b)  $L - H = A - B$  (c)  $L/H = A/B$  (d)  $LH = AB$
- 20)  $\frac{1}{3} =$   
 (a) 0.3 (b) 0.33 (c) 0.131131113.... (d)  $0.\overline{3}$
- 21) If  $a^n = 1$ , where n is any whole number and  $a \neq 1$ , then  
 (a)  $a = 0$  (b)  $n = 0$  (c)  $a = 2$  (d)  $n = 1$
- 22) If  $a^n = 0$ , then  
 (a)  $a = 0$  (b)  $a = 1$  (c)  $a = 2$  (d)  $n = 0$
- 23) The product of three consecutive integer is always divisible by  
 (a) 4 (b) 5 (c) 6 (d) 12
- 24) HCF of 2048 and 960 is  
 (a) 32 (b) 64 (c) 128 (d) none of these
- 25) The largest number that divides 615 and 963 leaving remainder 6 in each case is  
 (a) 29 (b) 87 (c) 116 (d) none of these
- 26) Prime factorization of 468000 is  
 (a)  $2 \times 3^3 \times 5 \times 13$  (b)  $2 \times 3^3 \times 5^3 \times 13$  (c)  $2^3 \times 3^3 \times 5^3 \times 13$  (d) none of these

- 27) The least number that is divisible by all the natural numbers between 1 and 10 (both inclusive) is  
 (a) 252 (b) 2520 (c) 1260 (d) none of these
- 28) HCF of two numbers is 145 and their LCM is 2175. If one number is 725, the other number is  
 (a) 2075 (b) 870 (c) 87 (d) 435
- 29) The sum of two numbers is 1215 and their HCF is 81. The total number of such pairs is  
 (a) 2 (b) 3 (c) 4 (d) 5
- 30) Which of the following is rational?  
 (a)  $\sqrt{2} + 3$  (b)  $(\sqrt{2} + 3)^2$  (c)  $(\sqrt{2} + 3)(\sqrt{2} - 3)$  (d) all are irrational
- 31) Which of the following is not rational?  
 (a)  $0.\overline{123456789}$  (b)  $0.010010001$  (c)  $\frac{22}{7}$  (d) all are rational
- 32)  $\frac{1}{7}$  equals  
 (a)  $0.\overline{142857}$  (b)  $0.\overline{428571}$  (c)  $0.\overline{857142}$  (d) none of these
- 33) Which of the following number is given by  $0.12\overline{36}$  ?  
 (a)  $\frac{17}{275}$  (b)  $\frac{34}{500}$  (c)  $\frac{34}{275}$  (d)  $\frac{39}{275}$
- 34) Which of the following numbers do not have terminating decimal representation?  
 (a)  $\frac{7}{5000}$  (b)  $\frac{21}{15000}$  (c)  $\frac{12}{15000}$  (d) all are terminating

**SELECT THE CORRECT OPTION(S) (MORE THAN ONE OPTION CAN BE CORRECT)**

**(not meant for examination point of view)**

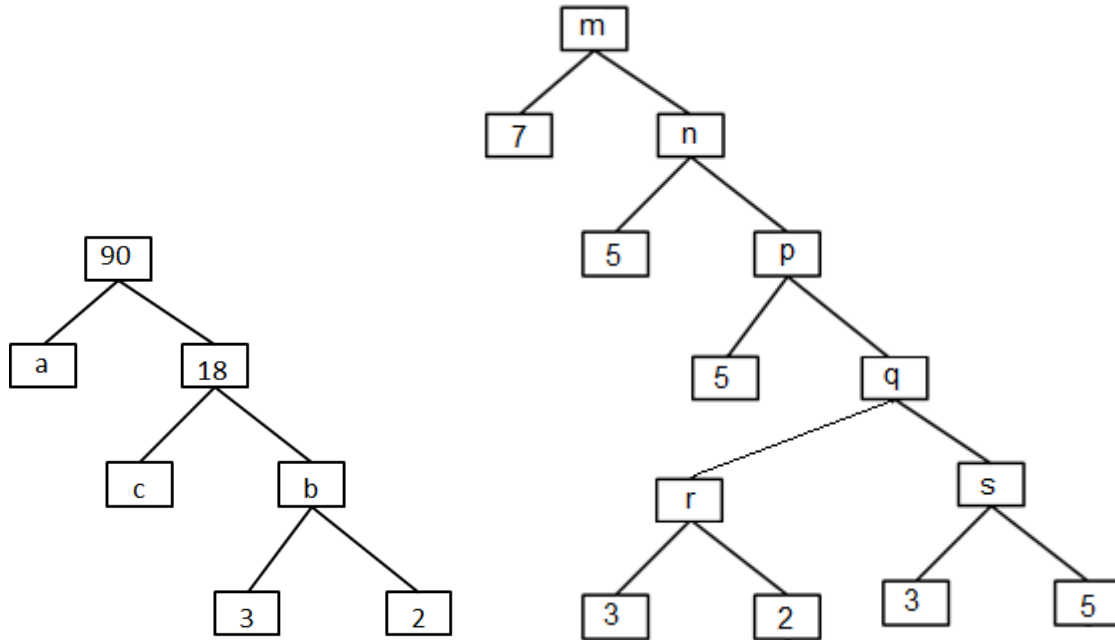
- 35) Which of the following is irrational?  
 (a)  $0.\overline{1234567898\ 7654321}$  (b)  $0.12112111211112$   
 (c)  $(\sqrt{3} + \sqrt{2})^2$  (d)  $(\sqrt{3} + \sqrt{2})^2 + (\sqrt{3} - \sqrt{2})^2$
- 36) The rational number between  $\sqrt{2}$  and  $\sqrt{3}$  is  
 (a)  $\frac{\sqrt{3} + \sqrt{2}}{2}$  (b)  $\frac{\sqrt{3} \cdot \sqrt{2}}{2}$  (c) 1.4 (d) 1.5
- 37) Which of the following is irrational?  
 (a)  $\sqrt{2}$  (b)  $(\sqrt{3} + \sqrt{2})^2$  (c)  $(\sqrt{3} - \sqrt{2})^2$  (d)  $(\sqrt{3} + \sqrt{2})(\sqrt{3} - \sqrt{2})$

- 38) Which of the following is rational?  
 (a)  $22/7$  (b) 1.01011011101111 (c) 0.1313131313..... (d)  $\overline{4.123456789}$
- 39) Which of the following is terminating?  
 (a)  $\frac{318}{300}$  (b)  $\frac{1496}{2^5 \cdot 5^4}$  (c)  $\frac{12345}{3125}$  (d)  $\frac{5432112345}{1024}$
- 40)  $\overline{0.12} =$   
 (a)  $\frac{12}{99}$  (b)  $\frac{3}{33}$  (c)  $\frac{4}{33}$  (d)  $\frac{12}{90}$
- 41)  $0.1\overline{2} =$   
 (a)  $\frac{12}{99}$  (b)  $\frac{12}{90}$  (c)  $\frac{11}{99}$  (d)  $\frac{11}{90}$
- 42)  $0.\overline{1} + 0.\overline{11} + 0.\overline{111} =$   
 (a)  $0.\overline{3}$  (b)  $0.\overline{33}$  (c)  $0.\overline{333}$  (d)  $0.\overline{321}$
- 43) 1 is  
 (a) prime (b) composite (c) odd (d) integer
- 44)  $10\frac{1}{10} =$   
 (a)  $10 \times \frac{1}{10}$  (b)  $10 + \frac{1}{10}$  (c)  $10 \div \frac{1}{10}$  (d)  $\frac{101}{10}$
- 45) Let H and L be HCF and LCM of A and B, then  
 (a) H divides A (b) H divided B (c) H divided L (d) L is multiple of A, B, H
- 46) Which of the following is surely true?  
 (a) square of any number is in the form of  $3m$  or  $3m + 1$   
 (b)  $3x + 1$  is an even number  
 (c) product of four consecutive natural numbers is 1 less than a perfect square number  
 (d) sum of n natural numbers is always divisible by n

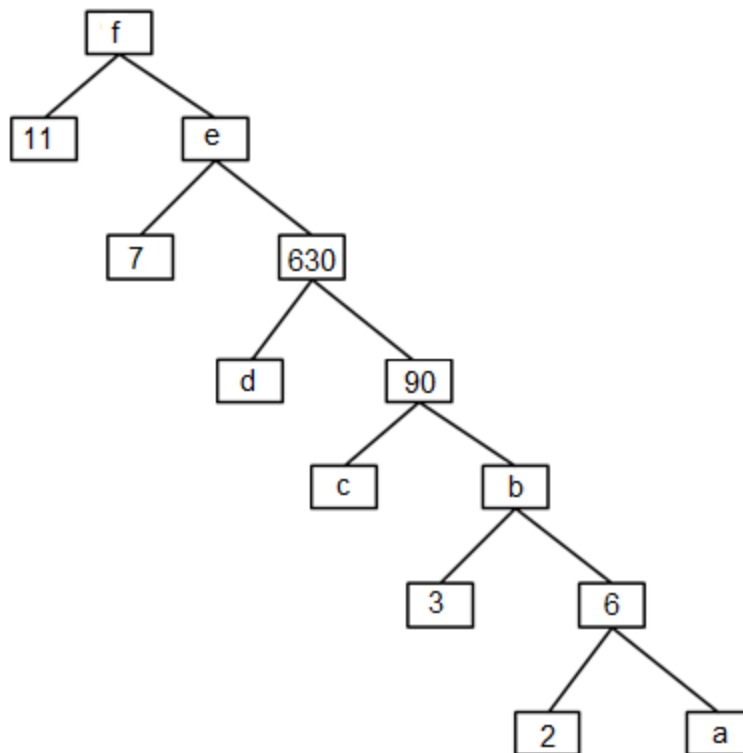
**SUBJECTIVE PART**

- 47) Using Euclid's division algorithm, find the HCF of  
 (i) 27727 and 53124.  
 (ii) 33677 and 33711

- (iii) 357, 629, 4709
- 48) Factorize and hence find the HCF and LCM of 539000 and 66000.
- 49) Give reason:
- (i)  $4^n$  will never end with zero, where n is natural number.
- (ii)  $625^n$  will never end with zero, where n is natural number.
- (iii)  $7 \times 11 \times 13 \times 17 + 17 \times 19 \times 23$  is composite number.
- (iv) 72 cannot be the HCF of 72, 144 and 1234567890.
- (v) Two numbers cannot have HCF and LCM as 19 and 360 respectively.
- (vi)  $\frac{12321}{320000}$  will terminate when converted into decimal form.
- 50) Show that any positive odd integer is of the form  $6p + 1$  or  $6q + 3$  or  $6q + 5$ , where p is certain integer.
- 51) Prove that  $\sqrt{3}$  is irrational.
- 52) Prove that  $\frac{1}{\sqrt{3}}$  is irrational.
- 53) Prove that  $\sqrt{5} - \sqrt{3}$  is irrational.
- 54) If  $\text{HCF}(108, 234) = 18$ , then find  $\text{LCM}(306, 657)$ .
- 55) On a morning walk, three persons step off together and their steps measure 40 cm, 42 cm and 45 cm, respectively. What is the minimum distance each should walk so that each can cover the same distance in complete steps?
- 56) Three bells A, B, C are rung after every 25, 20, 15 minutes respectively. They all rang together at 9 AM. At what time next this will happen again?
- 57) Using Euclid's division algorithm, find the largest number that divides 1251, 9377 and 15628 leaving remainders 1, 2 and 3, respectively.
- 58) Find missing numbers:
- (i) \_\_\_\_\_ (ii) \_\_\_\_\_



(iii)



- 59) in a seminar, the number of participants in Urdu, Hindi and English are 45, 75 and 135 respectively. Find the number of rooms required to house them in each room, if the same number of participants are to be accommodated and all of them must belong to same language.

- 60) A circular field has a circumference of 360 km. Three cyclists start together and can cycle 48, 60 and 72 km a day, round the field. When will they meet again?
- 61) In a government girls school, there are two sections in class X, section A and section B which respectively have 40 and 48 girls. Find the minimum number of books required for their class library so that they can be distributed equally among the students of sections A and B.
- 62) Two tankers contain 8670 litres and 680 litres of petrol respectively. Find the maximum capacity of the container which can measure the petrol of either tanker in exact number of litres.
- 63) During a sale, colour pencils were being sold in packs of 24 each and crayons in packs of 32 each. If you want full packs of both and the same number of pencils and crayons, how many each would you need to buy?
- 64) If the HCF of 657 and 963 is expressible in the form  $657 \times 22 + 963y$ , then find the value of y.
- 65) Determine the number nearest to 11000 but greater than 10500 which is exactly divisible by each of 21, 15 and 8.
- 66) What is the smallest number which when divided by 35, 65 and 104 leaves remainder 5 in each case?
- 67) What can you say about the prime factorisation of denominators of following numbers?
- (i) 0.123456789
- (ii)  $\overline{0.123456789}$
- (iii) 0.1211211121112.....
- (iv) 0.123412341234.....

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**BRaiNTeaSeRS :***(not meant for examination point of view)*

- 68) Find the smallest number that leaves 1 as remainder when divided by any of 2, 3, 4, 5, 6, 7, 8, 9, 10.
- 69) Find the smallest number that leaves 1 as remainder when divided by 2, 2 as remainder when divided by 3, 3 as remainder when divided by 4, 4 as remainder when divided by 5, 5 as remainder when divided by 6, 6 as remainder when divided by 7, 7 as remainder when divided by 8, 8 as remainder when divided by 9, 9 as remainder when divided by 10.
- 70) Three sets of English, Hindi and Mathematics books have to be stacked in such a way that all the books are stored topic wise and the height of the each stack is the same. The number of English, Hindi and Mathematics books are 96, 240 and 336 respectively. Assuming that all the books are of same thickness, find the number of stacks of English, Hindi and Mathematics books.
- 71) Find the smallest number which leaves remainders 8 and 12 when divided by 28 and 32 respectively.
- 72) Find the remainder obtained on dividing 9876543210 by 10000, 1000, 100 and 10 successively.
- 73) Find the last digit in  $10^{10} + 11^{11} + 12^{12} + 13^{13} + 14^{14} + 15^{15} + 16^{16} + 17^{17} + 18^{18} + 19^{19} + 20^{20}$ .
- 74) Find the largest number which divides 2053 and 967 and leaves a remainder of 5 and 7 respectively.
- 75) Find the largest number which divides 705 and 1053 and leaves a remainder of 9 in each case..

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**answers**

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- 1)a 2)c 3)c 4)c 5)c 6)c 7)a 8)a 9)b 10)c  
11)c 12)b 13)a 14)b 15)b 16)a 17)d 18)b 19)d 20)d  
21)b 22)a 23)c 24)b 25)b 26)d 27)b 28)d 29)c 30)c  
31)d 32)a 33)c 34)d 35)c 36)d 37)abc 38)abcd 39)abcd 40)ac  
41)d 42)abc 43)cd 44)bd 45)abcd 46)acd  
47) (i) 233 (ii) 17 (iii) 17 48) HCF = 11000, LCM = 3234000  
54) 1404 55) 25.2 m 56) 2 PM 57) 625  
58)(i)  $a = 5, b = 6, c = 3$  (ii)  $m = 15750, n = 2250, p = 450, q = 90, r = 6, s = 15$   
(iii)  $a = 3, b = 18, c = 5, d = 7, e = 4410, f = 48510$   
59) 17 60) 60 61) 240 62) 170 litres 63) 96 (each type)  
64) -15 65) 10290 66) 3645 68) 2521 69) 2519  
70) 2, 5, 7 71) 204 72) 7 73) 7 74) 64 75) 348
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