NUMBER SYSTEM PYQ_CSAT_QUESTIONS

1. **If ABC × DEED = ABCABC; where A, B, C, D and E are different digits, what are the values of D and E?**
   (A) D = 2, E = 0
   (B) D = 0, E = 1
   (C) D = 1, E = 0
   (D) D = 1, E = 2

2. **There are five hobby clubs in a college viz., photography, yachting, chess, electronics and gardening. The gardening group meets every second day, the electronics group meets every third day, the chess group meets every fourth day, the yachting group meets every fifth day and the photography group meets every sixth day. How many times do all the five groups meet on the same day within 180 days?**
   (A) 5 (B) 18
   (C) 10 (D) 3

3. **If R and S are different integers both divisible by 5, then which of the following is not necessarily true?**
   (A) R – S is divisible by 5
   (B) R + S is divisible by 10
   (C) R × S is divisible by 25
   (D) $R^2 + S^2$ is divisible by 5

4. **There are some nectar-filled flowers on a tree and some bees are hovering on it. If one bee lands on each flower, one bee will be left out. If two bees land on each flower, one flower will be left out. The number of flowers and bees respectively are:**
   (A) 2 and 4 (B) 4 and 3
   (C) 3 and 4 (D) 4 and 2

5. **How many numbers are there between 100 and 300 which either begin with or end with 2?**
   (A) 110 (B) 111
   (C) 112 (D) None of these

6. **There are three pillars X, Y and Z of different heights. Three spiders A, B and C start to climb on these pillars simultaneously. In one chance, A climbs on X by 6 cm but slips down 1 cm. B climbs on Y by 7 cm but slips down 3 cm. C climbs on Z by 6.5 cm but slips down 2 cm. If each of them requires 40 chances to reach the top of the pillars, what is the height of the shortest pillar?**
   (A) 161 cm (B) 163 cm
   (C) 182 cm (D) 210 cm

7. **There are thirteen 2-digit consecutive odd numbers. If the mean of the first five such numbers is 39, then what is the mean of all the thirteen numbers?**
   (A) 47 (B) 49
   (C) 51 (D) 45

8. **Certain 3-digit numbers have the following characteristics:**
   1. All the three digits are different.
   2. The number is divisible by 7.
   3. The number on reversing the digits is also divisible by 7.
   How many such 3-digit numbers are there?
   (A) 2 (B) 4
   (C) 6 (D) 8

9. **How many numbers are there between 99 and 1000 such that the digit 8 occupies the units place?**
   (A) 64 (B) 80
   (C) 90 (D) 104

10. **A 2-digit number is reversed. The larger of the two numbers is divided by the smaller one. What is the largest possible remainder?**
    (A) 9 (B) 27
    (C) 36 (D) 45

11. There are certain 2-digit numbers. The difference between the number and the one obtained on reversing it is always 27. How many such maximum 2-digit numbers are there?
(A) 3
(B) 4
(C) 5
(D) None of the above

12. What is the total number of digits printed, if a book containing 150 pages is to numbered from 1 to 150?
(A) 262 (B) 342
(C) 360 (D) 450

13. Consider the following sum:
•+1•+2•+•3+•1 = 21•
In the above sum, • stands for?
(A) 4 (B) 5
(C) 6 (D) 8

14. If X is between –3 and –1, and Y is between –1 and 1, then $X^2 – Y^2$ is in between which of the following?
(A) –9 and 1 (B) –9 and –1
(C) 0 and 8 (D) 0 and 9

15. X and Y are natural numbers other than 1, and Y is greater than X. Which of the following represents the largest number?
(A) XY (B) X/Y
(C) Y/X (D) (X+Y)/XY

16. A number consists of three digits of which the middle one is zero and their sum is 4. If the number formed by interchanging the first and last digits is greater than the number itself by 198, then the difference between the first and last digits is:
(A) 1 (B) 2
(C) 3 (D) 4

17. While writing all the numbers from 700 to 1000, how many numbers occur in which the digit at hundred's place is greater than the digit at ten's place, and the digit at ten's place is greater than the digit at unit's place?
(A) 61 (B) 64
(C) 85 (D) 91

18. If x–y = 8, then which of the following must be true?
1. Both x and y must be positive for any value of x and y.
2. If x is positive, y must be negative for any value of x and y.
3. If x is negative, y must be positive for any value of x and y.
Select the correct answer using the code given below.
(A) 1 only
(B) 2 only
(C) Both 1 and 2
(D) Neither 1 nor 2 nor 3

19. The number of times the digit 5 will appear while writing the integers from 1 to 1000 is:
(A) 269 (B) 271
(C) 300 (D) 302

20. In a school every student is assigned a unique identification number. A student is a football player if and only if the identification number is divisible by 4, whereas a student is a cricketer if and only if the identification number is divisible by 6. If every number from 1 to 100 is assigned to a student, then how many of them play cricket as well as football?
(A) 4 (B) 8
(C) 10 (D) 12

21. The ratio of a two-digit natural number to a number formed by reversing its digits is 4 : 7. The number of such pairs is:
(A) 5 (B) 4
(C) 3 (D) 2

22. If x is greater than or equal to 25 and y is less than or equal to 40, then which one of the following is always correct?
(A) x is greater than y
(B) (y–x) is greater than 15
(C) (y–x) is less than or equal to 15
(D) (x+y) is greater than or equal to 65

23. A printer numbers the pages of a book starting with 1 and uses 3089 digits in all. How many pages does the book have?
(A) 1040 (B) 1048

(C) 1049 (D) 1050

24. Number 136 is added to 5B7 and the sum obtained is 7A3, where A and B are integers. It is given that 7A3 is exactly divisible by 3. The only possible value of B is:
(A) 2 (B) 5
(C) 7 (D) 8

25. An 8-digit number 4252746B leaves remainder 0 when divided by 3. How many values of B are possible?
(A) 2 (B) 3
(C) 4 (D) 6

26. Consider two statements S1 and S2 followed by a question?
S1: p and q both are prime numbers.
S2: p+q is an odd integer.
Question: Is pq an odd integer?
Which one of the following is correct?
(A) S1 alone is sufficient to answer the question
(B) S2 alone is sufficient to answer the question
(C) Both S1 and S2 taken together are not sufficient to answer the question
(D) Both S1 and S2 are necessary to answer the question

27. How many integers are there between 1 and 100 which have 4 as a digit but are not divisible by 4?
(A) 5 (B) 11
(C) 12 (D) 13

28. In the sum Ä+1Ä+5Ä+ÄÄ+Ä1=1ÄÄ for which digit does the symbol Ä stand?
(A) 2 (B) 3
(C) 4 (D) 5

29. If you have two straight sticks of length 7.5 feet and 3.25 feet, what is the minimum length can you measure?
(A) 0.05 foot (B) 0.25 foot
(C) 1 foot (D) 3.25 feet

30. A simple mathematical operation in each number of the sequence 14, 18, 20, 24, 30, 32, ... results in a sequence with respect to prime numbers. Which one of the following is the next number in the sequence?
(A) 34 (B) 36
(C) 38 (D) 40

31. Let A3BC and DE2F be four-digit numbers where each letter represents a different digit greater than 3. If the sum of the numbers is 15902, then what is the difference between the values of A and D?
(A) 1 (B) 2
(C) 3 (D) 4

32. How many zeroes are there at the end of the product
1×5×10×15×20×25×30×35×40×45×50×55×60?
(A) 10 (B) 12
(C) 14 (D) 15

33. Let XYZ be a three - digit number, where (X + Y + Z) is not a multiple of 3. Then (XYZ + YZX + ZXY) is not divisible by:
(A) 3 (B) 9
(C) 37 (D) (X+Y+Z)

34. Let p, q, r and s be natural numbers such that p - 2016 = q + 2017 = r - 2018 = s + 2019, then which one of the following is the largest natural number?
(A) p (B) q
(C) r (D) s

35. How many pairs of natural numbers are there such that the difference of whose squares is 63.
(A) 3 (B) 4
(C) 5 (D) 2

36. Which one of the following will have minimum change in its value if 5 is added to both numerator and the denominator of the fractions 2/3, 3/4, 4/5 and 5/6?
(A) 2/3 (B) 3/4
(C) 4/5 (D) 5/6

37. A digit n > 3 is divisible by 3 but not divisible by 6. Which one of the following is divisible by 4?
(A) 2n (B) 3n

(C) 2n+4 (D) 3n+1

38. What is the greatest length x such that $3\frac{1}{2}$m and $8\frac{3}{4}$m are integral multiples of x?

(A) $1\frac{1}{2}$m (B) $1\frac{1}{3}$m

(C) $1\frac{1}{4}$m (D) $1\frac{3}{4}$m

39. The recurring decimal representation 1.272727 ... is equivalent to:

(A) 13/11 (B) 14/11

(C) 127/99 (D) 137/99

40. What is the least four-digit number when divided by 3, 4, 5 and 6 leaves a remainder 2 in each case?

(A) 1012 (B) 1022

(C) 1122 (D) 1222

41. What is the remainder when 51 x 27 x 35 x 62 x 75 is divided by 100?

(A) 50 (B) 25

(C) 5 (D) 1

42. For what value of n, the sum of digits in the number $(10^n + 1)$ is 2?

(A) For n = 0 only

(B) For any whole number n

(C) For any positive integer n only

(D) For any real number n

43. Which of the following is the largest number?

(A) $\left(\frac{1}{2}\right)^{-6}$ (B) $\left(\frac{1}{4}\right)^{-3}$

(C) $\left(\frac{1}{3}\right)^{-4}$ (D) $\left(\frac{1}{6}\right)^{-2}$

44. Two Statements are given followed by two Conclusions:

Statements:

All numbers are divisible by 2.

All numbers are divisible by 3.

Conclusion I: All numbers are divisible by 6.

Conclusion II: All numbers are divisible by 4.

Which of the above Conclusions logically follows/follow from the two given Statements?

(A) Only Conclusion I

(B) Only Conclusion II

(C) Neither Conclusion I nor Conclusion II

(D) Both Conclusion I and Conclusion II

45. Two Statements S1 and S2 are given below followed by a Question:

Statements:

S1: n is a prime number.

S2: n leaves a remainder of 1 when divided by 4.

Question:

If n is a unique natural number between 10 and 20, then what is n?

Which one of the following is correct in respect of the above Statements and the Question?

(A) S1 alone is sufficient to answer the Question.

(B) S2 alone is sufficient to answer the Question.

(C) S1 and S2 together are sufficient to answer the Question, but neither S1 alone nor S2 alone is sufficient to answer the Question.

(D) S1 and S2 together are not sufficient to answer the Question.

46. Two Statements S1 and S2 are given below with regard to two numbers followed by a Question:

Statements:

S1: Their product is 21.

S2: Their sum is 10.

Question:

What are the two numbers?

Which one of the following is correct in respect of the above Statements and the Question?

(A) S1 alone is sufficient to answer the Question.

(B) S2 alone is sufficient to answer the Question.

(C) S1 and S2 together are sufficient to answer the Question, but neither S1 alone nor S2 alone is sufficient to answer the Question.

(D) S1 and S2 together are not sufficient to answer the Question.

47. If 3^{2019} is divided by 10, then what will be the remainder?

(A) 1 (B) 3

(C) 7 (D) 9

48. The number 3798125P369 is divisible by 7. What is the value of the digit P?

(A) 1 (B) 6

(C) 7 (D) 9

49. From January 1, 2021, the price of petrol (in Rupees per litre) on m^{th} day of the year is 80 +

0.1m, where m = 1, 2, 3,....., 100 and thereafter remains constant. On the other hand, the price of diesel (in Rupees per litre) on n^{th} day of 2021 is 69 + 0.15n for any n. On which date in the year 2021 are the prices of these two fuels equal?

(A) 21st May (B) 20th May
(C) 19th May (D) 18th May

50. A biology class at high school predicted that a local population of animals will double in size every 12 years. The population at the beginning of the year 2021 was estimated to be 50 animals. If P represents the population after n years, then which one of the following equations represents the model of the class for the population?

(A) P = 12 + 50n (B) P = 50 + 12n
(C) $P = 50\ (2)^{12n}$ (D) $P = 50\ (2)^{n/12}$

51. In a group of 120 persons, 80 are Indians and rest are foreigners. Further, 70 persons in the group can speak English. The number of Indians who can speak English is

(A) 20 (B) 30
(C) 30 or less (D) 30 or more

52. Consider all 3-digit numbers (without repetition of digits) obtained using three non-zero digits which are multiples of 3. Let S be their sum. Which of the following is/are correct ?
1. S is always divisible by 74.
2. S is always divisible by 9.
Select the correct answer using the code given below:

(A) 1 only (B) 2 only
(C) Both 1 and 2 (D) Neither 1 nor 2

53. There are two Classes A and B having 25 and 30 students respectively. In Class-A the highest score is 21 and lowest score is 17. In Class-B the highest score is 30 and lowest score is 22. Four students are shifted from Class-A to Class-B.
Consider the following statements:
1. The average score of Class-B will definitely decrease.
2. The average score of Class-A will definitely increase.
Which of the above statements is/are correct?

(A) 1 only (B) 2 only
(C) Both 1 and 2 (D) Neither 1 nor 2

54. A boy plays with a ball and he drops it from a height of 1.5 m. Every time the ball hits the ground, it bounces back to attain a height 4/5th of the previous height. The ball does not bounce further if the previous height is less than 50 cm. What is the number of times the ball hits the ground before the ball stops bouncing?

(A) 4 (B) 5
(C) 6 (D) 7

55. Integers are listed from 700 to 1000. In how many integers is the sum of the digits 10?

(A) 6 (B) 7
(C) 8 (D) 9

56. Consider the following statements:
1. The sum of 5 consecutive integers can be 100.
2. The product of three consecutive natural numbers can be equal to their sum.
Which of the above statements is/are correct?

(A) 1 only (B) 2 only
(C) Both 1 and 2 (D) Neither 1 nor 2

57. Half of the villagers of a certain village have their own houses. One-fifth of the villagers cultivate paddy. One-third of the villagers are literate. Four-fifth of the villagers are under 25 years of age. Which one of the following statements is certainly correct?

(A) All the villagers who have their own houses are literate.
(B) Some villagers under 25 years of age are literate.
(C) Only half of the villagers who cultivate paddy are literate.
(D) No villager under 25 years of age has his own house.

58. The difference between a 2-digit number and the number obtained by interchanging the positions of the digits is 54.
Consider the following statements:

1. The sum of the two digits of the number can be determined only if the product of the two digits is known.
2. The difference between the two digits of the number can be determined.
Which of the above statements is/are correct?
(A) 1 only (B) 2 only
(C) Both 1 and 2 (D) Neither 1 nor 2

59. When a certain number is multiplied by 7, the product entirely comprises ones only (1111...). What is the smallest such number?
(A) 15713 (B) 15723
(C) 15783 (D) 15873

60. Jay and Vijay spent an equal amount of money to buy some pens and some pencils of the same quality from the same store. If Jay bought 3 pens and 5 pencils, and Vijay bought 2 pens and 7 pencils, then which one of the following is correct?
(A) A pencil costs more than a pen
(B) The price of a pencil is equal to that of a pen
(C) The price of a pen is two times the price of a pencil
(D) The price of a pen is three times the price of a pencil

61. A person P asks one of his three friends X as to how much money he had. X replied, "If Y gives me ₹40, then Y will have half of as much as Z, but if Z gives me ₹40, then three of us will have equal amount." What is the total amount of money that X, Y and Z have?
(A) Rs. 420 (B) Rs. 360
(C) Rs. 300 (D) Rs. 270

62. Consider the following addition problem:
3P + 4P + PP + PP = RQ2; where P, Q and R are different digits. What is the arithmetic mean of all such possible sums?
(A) 102 (B) 120
(C) 202 (D) 220

63. Consider the following multiplication problem:
(PQ) × 3 = RQQ, where P, Q and R are different digits and R ≠ 0.
What is the value of (P + R) ÷ Q?
(A) 1
(B) 2
(C) 5
(D) Cannot be determined due to insufficient data

64. How many integers are there between 1 to 100 which have 7 as a digit but are not divisible by 7 ?
(a) 9 (b) 15
(c) 16 (d) 12

65. How many digits have been used to number the pages of a book, if it has 352 pages ?
(a) 848 (b) 504
(c) 759 (d) 948

66. Integers are listed from 500 to 1000. In how many integers is the sum of the digits 10?
(a) 20 (b) 19
(c) 15 (d) 17

67. How many numbers are there between 99 and 1000 such that the digit 6 occupies the units place?
(a) 70 (b) 80
(c) 90 (d) 100

68. How many integers are there between 1 to 50, which have 3 as a digit but are not divisible by 3 ?
(a) 6 (b) 8
(c) 7 (d) 9

69. How many digits are required to number the pages of a book having 200 pages?
(a) 200 (b) 400
(c) 450 (d) 492

70. How many numbers are there between 99 to 500 such that the digit 7 occupies the units place ?
(a) 50 (b) 40
(c) 60 (d) 70