(a) 10   (b) 12
(c) 16   (d) 18

23. 2 − 2 + 2 − 2 + ... 101 terms =?   **(P.C.S., 2008)**
(a) − 2   (b) 0
(c) 2   (d) None of these

24. 98th term of the infinite series 1, 2, 3, 4, 1, 2, 3, 4, 1, 2, ... is   **(M.C.A., 2005)**
(a) 1   (b) 2
(c) 3   (d) 4

25. If x, y, z be the digits of a number beginning from the left, the number is
(a) xyz (b) $x + 10y + 100z$
(c) $10x + y + 100z$ (d) $100x + 10y + z$

26. If x, y, z and w be the digits of a number beginning from the left, the number is
(a) $xyzw$
(b) $wzyx$
(c) $x + 10y + 100z + 1000w$
(d) $10^3x + 10^2y + 10z + w$

27. If n and p are both odd numbers, which of the following is an even number?
(a) $n + p$ (b) $n + p + 1$
(c) $np + 2$ (d) np

28. For the integer n, if n^3 is odd, then which of the following statements are true?
I. n is odd.   II. n^2 is odd.
III. n^2 is even.
(a) I only   (b) II only
(c) I and II only   (d) I and III only

29. If $(n − 1)$ is an odd number, what are the two other odd numbers nearest to it?
(a) n, $n − 1$ (b) n, $n − 2$
(c) $n − 3$, $n + 1$ (d) $n − 3$, $n + 5$

30. Which of the following is always odd?
(a) Sum of two odd numbers
(b) Difference of two odd numbers
(c) Product of two odd numbers
(d) None of these

31. If x is an odd integer, then which of the following is true?
(a) $5x − 2$ is even   (b) $5x^2 + 2$ is odd
(c) $5x^2 + 3$ is odd   (d) None of these

32. If a and b are two numbers such that $ab = 0$, then   **(R.R.B., 2006)**
(a) $a = 0$ and $b = 0$ (b) $a = 0$ or $b = 0$ or both
(c) $a = 0$ and $b \neq 0$ (d) $b = 0$ and $a \neq 0$

33. If A, B, C, D are numbers in increasing order and D, B, E are numbers in decreasing order, then which one of the following sequences need neither be in a decreasing nor in an increasing order?
(a) E, C, D (b) E, B, C
(c) D, B, A (d) A, E, C

34. If m, n, o, p and q are integers, then $m (n + o) (p − q)$ must be even when which of the following is even?
(a) m (b) p
(c) $m + n$ (d) $n + p$

35. If n is a negative number, then which of the following is the least?
(a) 0   (b) $− n$
(c) $2n$ (d) n^2

36. If $x − y = 8$, then which of the following must be true?
I. Both x and y are positive.
II. If x is positive, y must be positive.
III. If x is negative, y must be negative.
(a) I only   (b) II only
(c) I and II   (d) III only

37. If x and y are negative, then which of the following statements is/are always true?
I. $x + y$ is positive.
II. xy is positive.
III. $x − y$ is positive.
(a) I only   (b) II only
(c) III only   (d) I and III only

38. If $n = 1 + x$, where x is the product of four consecutive positive integers, then which of the following is/are true?
I. n is odd.   II. n is prime.
III. n is a perfect square.
(a) I only   (b) I and II only
(c) I and III only   (d) None of these

39. If $x = \dfrac{2}{5}y + 3$, how does y change when x increases from 1 to 2?
(a) y increases from $− 5$ to $− \dfrac{5}{2}$
(b) y increases from $\dfrac{2}{5}$ to 5
(c) y increases from $\dfrac{5}{2}$ to 5
(d) y decreases from $− 5$ to $− \dfrac{5}{2}$

40. If x is a rational number and y is an irrational number, then
(a) both $x + y$ and xy are necessarily rational
(b) both $x + y$ and xy are necessarily irrational
(c) xy is necessarily irrational, but $x + y$ can be either rational or irrational
(d) $x + y$ is necessarily irrational, but xy can be either rational or irrational

41. The difference between the square of any two consecutive integers is equal to
(a) sum of two numbers
(b) difference of two numbers
(c) an even number
(d) product of two numbers

42. Between two distinct rational numbers a and b, there exists another rational number which is **(P.C.S., 2006)**

(a) $\dfrac{a}{2}$

(b) $\dfrac{b}{2}$

(c) $\dfrac{ab}{2}$

(d) $\dfrac{a+b}{2}$

43. If $B > A$, then which expression will have the highest value (given that A and B are positive integers)? **(Campus Recruitment, 2007)**

(a) $A - B$

(b) AB

(c) $A + B$

(d) Can't say

44. If $0 < x < 1$, which of the following is greatest? **(Campus Recruitment, 2007)**

(a) x

(b) x^2

(c) $\dfrac{1}{x}$

(d) $\dfrac{1}{x^2}$

45. If p is a positive fraction less than 1, then

(a) $\dfrac{1}{p}$ is less than 1

(b) $\dfrac{1}{p}$ is a positive integer

(c) p^2 is less than p

(d) $\dfrac{2}{p} - p$ is a positive number

46. If x is a real number, then $x^2 + x + 1$ is

(a) less than $\dfrac{3}{4}$

(b) zero for at least one value of x

(c) always negative

(d) greater than or equal to $\dfrac{3}{4}$

47. Let n be a natural number such that $\dfrac{1}{2} + \dfrac{1}{3} + \dfrac{1}{7} + \dfrac{1}{n}$ is also a natural number. Which of the following statements is not true? **(A.A.O. Exam, 2009)**

(a) 2 divides n

(b) 3 divides n

(c) 7 divides n

(d) $n > 84$

48. If n is an integer, how many values of n will give an integral value of $\left(\dfrac{16n^2 + 7n + 6}{n}\right)$?

(a) 2

(b) 3

(c) 4

(d) None of these

49. If $p > q$ and $r < 0$, then which is true?

(a) $pr < qr$

(b) $p - r < q - r$

(c) $p + r < q + r$

(d) None of these

50. If $X < Z$ and $X < Y$, which of the following is necessarily true?

I. $Y < Z$

II. $X^2 < YZ$

III. $ZX < Y + Z$

(a) Only I

(b) Only II

(c) Only III

(d) None of these

51. In the relation $x > y + z$, $x + y > p$ and $z < p$, which of the following is necessarily true? **(Campus Recruitment, 2008)**

(a) $y > p$

(b) $x + y > z$

(c) $y + p > x$

(d) Insufficient data

52. If a and b are positive integers and $\dfrac{(a-b)}{3.5} = \dfrac{4}{7}$, then **(Campus Recruitment, 2010)**

(a) $b > a$

(b) $b < a$

(c) $b = a$

(d) $b \geq a$

53. If $13 = \dfrac{13\,w}{(1-w)}$, then $(2w)^2 = ?$ **(Campus Recruitment, 2009)**

(a) $\dfrac{1}{4}$

(b) $\dfrac{1}{2}$

(c) 1

(d) 2

Directions (Questions 54–57): *For a 5–digit number, without repetition of digits, the following information is available.*

(B.B.A., 2006)

(i) The first digit is more than 5 times the last digit.

(ii) The two-digit number formed by the last two digits is the product of two prime numbers.

(iii) The first three digits are all odd.

(iv) The number does not contain the digits 3 or 0 and the first digit is also the largest.

54. The second digit of the number is

(a) 5

(b) 7

(c) 9

(d) Cannot be determined

55. The last digit of the number is

(a) 0

(b) 1

(c) 2

(d) 3

56. The largest digit in the number is

(a) 5

(b) 7

(c) 8

(d) 9

57. Which of the following is a factor of the given number?

(a) 2

(b) 3

(c) 4

(d) 9

58. The least prime number is

(a) 0

(b) 1

(c) 2

(d) 3

59. Consider the following statements:

1. If x and y are composite numbers, then $x + y$ is always composite.

2. There does not exist a natural number which is neither prime nor composite.

Which of the above statements is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

60. The number of prime numbers between 0 and 50 is

(a) 14

(b) 15

(c) 16

(d) 17