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10. Which of the following is in the correct order:
a) $\frac{-7}{5}, \frac{3}{8}, \frac{1}{4}, \frac{-2}{6}$ b) $\frac{-7}{6}, \frac{-4}{5}, \frac{1}{4}, \frac{3}{8}$ c) $\frac{-2}{6}, \frac{3}{8}, \frac{1}{4}, \frac{1}{4}$ d) $\frac{-4}{5}, \frac{-7}{6}, \frac{1}{4}, \frac{3}{8}$
11. The sum of $\frac{1}{5}, \frac{2}{15}, \frac{2}{30}$ and $\frac{11}{45}$ is :
a) $\frac{12}{90}$ b) $\frac{7}{90}$ c) $\frac{1}{9}$ d) $\frac{4}{9}$
12. Rational numbers show closure property of
a) addition b) subtraction c) multiplication d) all the above
13. Find the quotient when the sum of $\frac{1}{2}$ and $\frac{3}{4}$ is divided by the product of $\frac{2}{3}$ and $\frac{1}{4}$
a) $\frac{15}{2}$ b) $\frac{11}{13}$ c) $\frac{55}{48}$ d) $\frac{45}{33}$
14. $\frac{p}{q}$ and $\frac{r}{s}$ are two rational number such that $\frac{p}{q} < \frac{r}{s}$ then a number between $\frac{p}{q}$ & $\frac{r}{s}$ is
a) $\frac{p}{q} + \frac{r}{s}$ b) $\frac{p}{q} - \frac{r}{s}$ c) $\frac{p+r}{q+s}$ d) none of the above
15. The value of $\left[\left(\frac{2}{3}\right)^2 \times \left(\frac{3}{2}\right)^3\right] \div \left(\frac{3}{2}\right)^2$ is :
a) $\frac{2}{3}$ b) $\left(\frac{2}{3}\right)^{-1}$ c) 0 d) 1
16. 1.05×10^{-4} is equal to :
a) 0.000105 b) 10500 c) 0.00105 d) 0.0001
17. A rational number $\frac{p}{q}$ will be a terminating decimal if
a) q has prime factor other than 2 & 5 b) p has prime factor 2 & 5 only
c) q has prime factor 2 & 5 only d) p has prime factor other than 2 & 5
18. Which of the following will be a non-terminating fraction?
a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{1}{4}$ d) $\frac{1}{5}$
19. The product of 5.4 and 0.005 is
a) 270.0 b) 0.0270 c) 2.7 d) none of the above
20. The number of men required to construct a culvert in 15 days is 20. How many days will be required to do the same work in 12 days.
a) 25 b) 9 c) 16 d) none of the above
21. A wall clock takes 6 seconds to strike 12 O'clock how long will it take to strike 6 O'clock?
a) 6 seconds b) 5 seconds c) 4 seconds d) 3 seconds
22. 6 men can do a piece of work in 15 days. How long 9 men take to do the same work?
a) 10 days b) 12 days c) 15 days d) 18 days
23. What percent of y is $\frac{y}{100}$:
a) $\frac{y}{100}\%$ b) $\frac{y}{100}$ c) $y\%$ d) $x\%$
24. The annual increase in population of a village is 5%. The increase in population from 2015 to 2016 is 15000. What was the population of the village in 2015?
A) 150000 B) 300000 C) 35000 d) 750000

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25. By selling a book for Rs. 1900, a bookseller loses 5%. Find the cost price of the book.
a) Rs. 1700 b) Rs. 1998 c) Rs. 2000 d) none of the above
26. Which of the following is correct?
a) $A = PRT$ b) $A = \left(P + \frac{RT}{100}\right)$ c) $A = \frac{PRT}{100}$ d) none of the above
27. Find the product of $(x^3 + y^4)$ and $\frac{1}{2}xy$.
a) $\frac{1}{2}(x^4y + xy^9)$ b) $2x^4y + 2xy^5$ c) $x^3y + x^4y$ d) $x^4y + xy^4$
28. The difference between the squares of sum and difference of two numbers is 576. The product of the two numbers is
a) 144 b) 2304 c) 576 d) none of the above
29. If $x - \frac{1}{x} = \frac{1}{4}$ find the value of $x^2 + \frac{1}{x^2}$:
a) 6 b) 16 c) 18 d) 20
30. If $b + \frac{1}{b} = 5$, Find the value of $\left(b - \frac{1}{b}\right)^2$:
a) 25 b) 24 c) 22 d) 21
31. An equation having many solutions is called a/an
a) conditional equation b) identity c) equation of condition d) all the above
32. The sum of three odd numbers is 27. Which of the following is the smallest of three numbers referred to :
a) 5 b) 7 c) 13 d) 15
33. Two quantities x and y are said to vary inversely with each other if
a) $x \cdot y$ is constant b) $x \cdot y$ is constant c) $x + y$ is constant d) $x - y$ is constant
34. What is the solution of the linear equation $\frac{x-1}{2} - \frac{x-1}{4} = 2x - 1$?
a) 3 b) 2 c) 1 d) 0
35. The expression $x + (x+2) + (x+4)$ represent the sum of three consecutive
a) natural numbers b) natural odd numbers
c) even natural numbers d) both b & c above
36. If the area of a square is given by $25x^2 + 16y^2 + 40xy$, then one of the sides of the square is given by
a) $(x+y)$ b) $(x-y)$ c) $(5x+4y)$ d) $(4x+5y)$
37. If x and y represent the digits in the tens place and ones place respectively. The difference between the sum of place values and the face values is
a) $10x$ b) $9y$ c) $9x$ d) $9y$
38. Two rectangles are congruent if they have the same
a) area b) length c) breadth d) length and breadth
39. The bisector of $\angle A$ of $\triangle ABC$ is perpendicular to the opposite side and cuts it at D then
a) $\triangle ABC$ is isosceles b) $\triangle ABD \cong \triangle ACD$ c) $BD = CD$ d) all the above

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40. If $\triangle ABC \cong \triangle DEF$ then which of the following is false?
 a) $AB=DE$ b) $BC=EF$ c) $AC=DF$ d) $\triangle BCA \cong \triangle EDF$
41. If in a triangle ABC $AB^2=BC^2+CA^2$ then
 a) $\angle A=90^\circ$ b) $\angle B=90^\circ$ c) $\angle C=90^\circ$ d) $\angle BAC$
42. If m and n are two positive integers with $m>n$ then the three numbers which form a pythagorean triplet are:
 a) $m^2+n^2, 2mn, m^2-n^2$ b) $2mn, m^2-n^2, m^2-n^2$
 c) $m^2-n^2, 2mn, m^2+n^2$ d) $2mn, m^2+n^2, m^2-n^2$
43. The orthocentre of a triangle lies in the exterior of the triangle, then the triangle is
 a) equilateral b) isosceles c) not acute-angled d) acute-angled
44. In an equilateral triangle
 a) altitudes are of equal length b) medians are of equal length
 c) orthocentre and centroid coincide d) all the above
45. Choose the wrong statement
 a) All the medians of a triangle are concurrent.
 b) All the altitudes of a triangle are concurrent.
 c) All the perpendicular bisectors of a triangle are concurrent.
 d) Circumcentre of an obtuse angled triangle lies interior of the triangle
46. The point in a triangle is equidistant from the three sides of the triangle. The point referred to is:
 a) Centroid b) orthocentre c) circumcentre d) incentre
47. The sum of four interior angles of a geometrical figure bounded by four line segments is 360. The geometrical figure is a
 a) rectangle b) rhombus c) trapezium d) all the above
48. In a circle AB is the diameter. If C is any point on the circle other than A and B , then sum of $\angle CAB$ and $\angle CBA$ is a) 180° b) 90° c) 60° d) 120° .
49. A and B are two different points on a circle with centre O but do not lie on the diameter. If $\angle OAB=30^\circ$ then $\angle AOB$ is
 a) 30° b) 60° c) 90° d) 120° .
50. Choose the wrong statement
 a) Every rhombus is a square
 b) A square is a parallelogram
 c) A square is a rhombus
 d) Opposite angles in a parallelogram, rectangle square and rhombus are equal.

The End

INSTRUCTION:

- There are 50 questions with four alternatives of which one is the correct/most appropriate answer. Each question carry 2 marks.
 - The correct/most appropriate choice should be marked in the answer sheet with a ball point pen only, by darkening the circle corresponding to the correct choice.
 - If any candidate is found using unfair means of any kind, he/she shall be expelled from the test without any prior warning.
 - Using any calculator/mobile phone etc. is strictly prohibited in exam. hall.
 - The decision of the Association with regard to the conduct of the Examination shall be final and binding to the candidate.
- Solutions of equation of the form $ax+b=0$ where a, b are integers and $a \neq 0$ represent
 a) natural numbers b) whole numbers c) integers d) rational numbers.
 - $\frac{-3}{5}$ is :
 a) an integer b) a fraction
 c) neither an integer nor a fraction d) all the above
 - Which of the following is correct?
 a) all fractions are rational numbers b) all integers are fractional numbers
 c) all rational numbers are fractions d) in all rational numbers denominator > 1
 - Which of the following is not in the standard form of a rational number?
 a) $\frac{-12}{9}$ b) $\frac{-2}{-3}$ c) $\frac{-4}{-3}$ d) all the above
 - A fraction of the form $\frac{p}{q}$ is improper if
 a) $p < q$ b) $q < p$ c) $p \neq q$ d) both b & c above
 - Which of the following is correct?
 a) all fractions are rational numbers b) natural numbers are positive integers
 c) natural numbers are non-zero whole numbers d) all the above
 - A rational number of the form $\frac{p}{q}$ is negative when
 a) p is positive b) q is positive
 c) p and q are negative d) either p or q is negative
 - Which of the following can be represented by a point on a number line?
 a) integers b) rational numbers c) whole numbers d) all the above
 - Two rational numbers $\frac{p}{q}$ and $\frac{r}{s}$ are equivalent or equal if
 a) they can be reduced to the same standard form b) $axd = bxd$
 c) $a=c$ and $b=d$ d) all the above

Turn Over