

**SRI GURUDATTA COACHING CENTRE (SARMA INST.)
MATHEMATICS**

1. $\frac{4}{5}$ times of a natural number is '4' greater than $\frac{3}{4}$ times of its preceding number then the number is _____
 (1) 80 (2) 84 (3) 60 (4) 65
2. If $(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$, and given that $a^2 + b^2 + c^2 = 125$ and $ab + bc + ca = 50$ then the value of $a + b + c =$ _____
 (1) 5 (2) -5 (3) 15 (4) none
3. $0.0000456 =$ _____
 (1) 456×10^{-6} (2) 4.56×10^{-6} (3) 456×10^{-7} (4) 456×10^{-8}
4. Two cycles are sold at the same price. One cycle is sold at 10% profit and the other at a loss of 10% then overall there is
 (1) gain of 1% (2) loss of 1% (3) no loss or gain (4) none
5. The mean of '9' observations is 45. If 24 is wrongly printed as 42 then the correct mean is _____
 (1) 42 (2) 44 (3) 41 (4) 43
6. The parallel sides of a trapezium measure $(a + b)$ units and $(a - b)$ units. If the perpendicular distance between them is p units then the area of the trapezium is _____
 (1) $2ap$ sq. units (2) $2bp$ sq. units (3) ap sq. units (4) bp sq. units
7. If $2^x = \frac{1}{2^y}$ then $3^{x+y} =$
 (1) 2 (2) 3 (3) 1 (4) 0
8. $15.7\overline{32}$ in $\frac{p}{q}$ form
 (1) $\frac{15732}{1000}$ (2) $\frac{15572}{990}$ (3) $\frac{15575}{990}$ (4) None of these
9. Rs. X when borrowed at the rate of $y\%$ compound interest payable half - yearly, the amount of 2 years is
 (1) $x \left(1 + \frac{y}{100}\right)^4$ (2) $x \left(1 + \frac{y}{200}\right)^4$ (3) $x \left(1 + \frac{y}{100}\right)^2$ (4) $x \left(1 + \frac{y}{200}\right)^2$
10. If the difference of two digit numbers $\overline{7A} - 16 = \overline{A9}$ then $A =$ _____
 (1) 3 (2) 4 (3) 5 (4) 7
11. ABC is a triangle right angled at B. $AB = m^2 - n^2$ ($m > n$) $BC = 2mn$ then $AC =$
 (1) $m^2 + n^2$ (2) $m^4 + n^4$ (3) $4m^2n^2$ (4) $m + n$
12. The sum of first 'n' natural numbers is $\frac{n(n+1)}{2}$. Hence, the sum $10 + 11 + 12 + \dots + 35$ is
 (1) 585 (2) 630 (3) 605 (4) none
13. Two of the sides of an equilateral triangle measure $(3x - 5)$ cm and $(2x - 1)$ cm. Then its perimeter is
 (1) 24 cm (2) 21 cm (3) 12 cm (4) none
14. Two towers 18m and 13m high stand upright on a ground. If their feet are 12m apart, then the distance between their tops is _____.
 (1) 5m (2) 31m (3) 13m (4) 18m
15. The sides of a ΔABC are 6cm, 8cm, 10cm. The area of triangle is _____.
 (1) 40cm^2 (2) 24cm^2 (3) 30cm^2 (4) none of these
16. A circle touches all the four sides of a square of side 42cm. the area of square not covered by the circle in square cm. is
 (1) 378 (2) 1764 (3) 1386 (4) None of these

17. The value of $(-5x^2y)\left(-\frac{2}{3}xy^2z\right)\left(\frac{8}{15}xyz^2\right)\left(-\frac{1}{4}z\right)$ is _____.

(1) $-\frac{4}{9}x^4y^4z^4$

(2) $\frac{4}{9}x^4y^4z^4$

(3) $-\frac{4}{9}x^3y^3z^3$

(4) $\frac{4}{9}x^3y^3z^3$

18. Addition of $\frac{a^2}{2} + \frac{b^3}{3} - \frac{c^3}{4}$, $\frac{2a^2}{3} + \frac{3b^3}{4} - \frac{4c^3}{5}$ and $a^2 + b^3 + c^3$ is _____.

(1) $\frac{13}{6}a^2 - \frac{25}{12}b^3 + \frac{1}{20}c^3$

(2) $\frac{13}{6}a^2 + \frac{25}{12}b^3 - \frac{1}{20}c^3$

(3) $\frac{13}{6}a^2 - \frac{1}{20}b^3 + \frac{25}{12}c^3$

(4) $\frac{13}{6}a^2 - \frac{25}{12}b^3 - \frac{1}{20}c^3$

Space for rough work

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19. Simplify $(2x + \frac{1}{3y})^2 - (2x - \frac{1}{3y})^2$

- (1) $\frac{4x}{3y}$ (2) $2(4x^2 + \frac{1}{9y^2})$ (3) $\frac{8x}{3y}$ (4) $\frac{4y}{3x}$

20. If $x + \frac{1}{x} = 12$ then the value of $x - \frac{1}{x}$ is _____.

- (1) $\sqrt{140}$ (2) $\sqrt{120}$ (3) 10 (4) 11

21. Simplest form of $4st(s - t) - 6s^2(t - t^2) - 3t^2(2s^2 - s) + 2st(s - t)$ is _____.

- (1) $-st^2$ (2) $-2st^2$ (3) $-3st^2$ (4) $-4st^2$

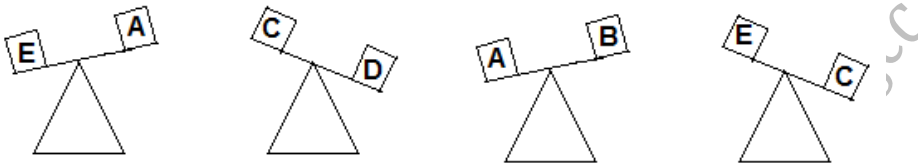
22. The value of 'x', for which $(\frac{125}{8})^5 \cdot (\frac{125}{8})^x = (\frac{5}{2})^{18}$ is _____.

- (1) 2 (2) 3 (3) 1 (4) 9

23. If $\frac{x}{y} = \frac{3}{4}$ then the incorrect relation from the following is _____.

- (1) $\frac{x+y}{y} = \frac{7}{4}$ (2) $\frac{y}{y+x} = \frac{4}{7}$ (3) $\frac{x+2y}{x} = \frac{11}{3}$ (4) $\frac{x-y}{y} = \frac{1}{4}$

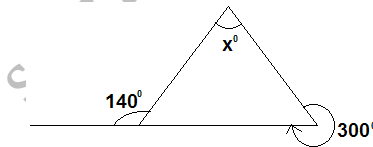
24. The boxes **A**, **B**, **C**, **D**, **E** are put on a balance beam as shown in fig.



If the boxes are then arranged from the lightest to the heaviest, the one in the middle is

- (1) **A** (2) **B** (3) **E** (4) **C**

25. The magnitude of angle marked 'x' is



- (1) 50° (2) 60° (3) 70° (4) 80°

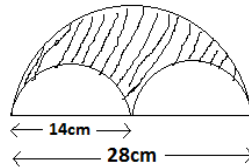
26. If $(\frac{1}{5})^{3y} = 0.008$ then $(0.25)^y$ will be _____.

- (1) 1 (2) 0.25 (3) 0.125 (4) 0.0625

27. The area of two circles are in the ratio 25:36. Then the ratio of their circumference is _____.

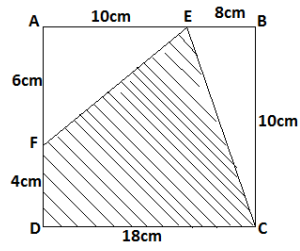
- (1) 6:5 (2) 3:4 (3) 4:3 (4) 5:6

28. In the given figure three semicircles are drawn on a line segment. The area of shaded portion is _____.



- (1) $308cm^2$ (2) $462cm^2$ (3) $154cm^2$ (4) $150cm^2$

29. ABCD is a rectangle. The area of the following shaded portion is _____.



(1) 100cm^2

(2) 110cm^2

(3) 120cm^2

(4) 130cm^2

30. If \overline{abc} means $a + b \div c$, then the value of $\overline{7\overline{4}2}$ is

(1) 13

(2) 9

(3) 15

(4) 18

Space for rough work

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31. The volume of a cuboid whose breadth is half of its length and the height is double the length is 1000 c.c. the total surface area of the cuboid in square cm. is
 1) 300 2) 500 3) 700 4) 900
32. A racing cyclist covers one round of cycling track in 2min and 40sec. How many rounds will he complete in 4hrs at the same speed.
 (1) 80 (2) 85 (3) 90 (4) 95
33. The shaded quarter -circle has area 9π . The perimeter of shaded region is



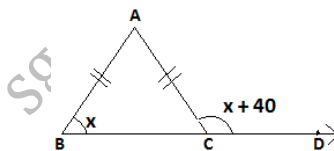
- (1) 3π (2) $3(\pi + 4)$ (3) 6π (4) $6\pi + 4$
34. x students have x objects each, and each object has x equal parts. If the total no. of parts is 1331, the no. of students is
 1) 11 2) 121 3) 9 4) None of these

35. If $x + \frac{1}{x} = 15$, then the value of $x^2 + \frac{1}{x^2}$ is
 (1) 225 (2) 223 (3) 169 (4) none of these

36. If $\frac{x-1}{x} = y$ and $\frac{y+1}{y} = x$ then the value of $x - y$ is
 (1) 2 (2) -2 (3) 3 (4) -4

37. $\frac{\sqrt{49}}{49}$ equals
 (1) $\frac{1}{7}$ (2) $-\frac{1}{7}$ (3) both (1) and (2) (4) $\sqrt{\frac{-1}{7}}$

38. In the given figure if $AB = AC$ then $X =$ _____



- (1) 80° (2) 70° (3) 60° (4) 110°
39. Six rectangles each with a common base width of 2 have lengths of 1,4,9,16,25 and 36. What is the sum of the areas of the six rectangles.
 (1) 91 (2) 93 (3) 162 (4) 182
40. Which integer is the identity under multiplication for any integer 'a'.
 (1) $\frac{1}{a}$ (2) 1 (3) -1 (4) -a

PHYSICS

41. The density of a cuboid of mass 200gm with dimensions $2cm \times 4cm \times 5cm$ is
 (1) $1000Kgm^{-3}$ (2) $\frac{1}{100}Kgm^{-3}$ (3) $5000Kgm^{-3}$ (4) $2000Kgm^{-3}$
42. A car covers the first half of a certain distance with a speed of V_1 and second half with a speed of V_2 . The average speed during the whole journey is
 (1) $\frac{V_1 + V_2}{2}$ (2) $\frac{V_1 V_2}{V_1 + V_2}$ (3) $\sqrt{V_1 V_2}$ (4) $\frac{2 V_1 V_2}{V_1 + V_2}$

43. The study of the earth's magnetic field is called

- (1) Geography (2) Terrestrial magnetism (3) Terrestrial electricity (4) magnetic study

44. A force of $12N$ gives an object an acceleration of $4m/s^2$. The force required to give it an acceleration of $10m/s^2$ is

- (1) $15N$ (2) $20N$ (3) $25N$ (4) $30N$

45. An athlete completes one round of a circular track of radius $7m$ in $10sec$, his speed is

- (1) $4.4m/s$ (2) $2.2m/s$ (3) $44m/s$ (4) 0

46. A passenger in a moving train tosses a coin which falls behind him. It means that the motion of the train is

- (1) accelerated (2) uniform (3) started (4) along circular track

47. Sea water of density $1300Kg m^{-3}$ exerts a pressure of $104 \times 10^5 Pascal$ on the floor. Calculate the depth of the Sea at that place ($g = 10m/s^2$)

- (1) $600m$ (2) $800m$ (3) $1000m$ (4) $1040m$

Space for rough work

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63. Suppose that you need to move a 100Kg desk. If the coefficient of friction between the floor and the desk is 0.2 , how much force you have to apply to get the desk to start moving? ($g = 9.8\text{m/s}^2$)

- (1) 196N (2) 98N (3) 100N (4) 200N

64. A cubical block of wood of density 5gm/cm^3 stands on table with sides of 10cm . Find the thrust by the block of wood on the table. ($g = 10\text{m/s}^2$)

- (1) 500N (2) 500dyne (3) 50N (4) 50dyne

Space for rough work

sgcc sgcc sgcc sgcc

65. Equal masses of two liquids of densities d_1 and d_2 are mixed together. The density of the mixture is

- (1) $d_1 + d_2$ (2) $\frac{d_1 + d_2}{2}$ (3) $\frac{2d_1d_2}{d_1 + d_2}$ (4) $\frac{d_1d_2}{d_1 + d_2}$

CHEMISTRY

66. Which of the following metals readily reacts with cold water?

- (1) *Mg* (2) *Al* (3) *Na* (4) *Fe*

67. Which of the following metals is non-ductile?

- (1) *Al* (2) *Zn* (3) *Fe* (4) *Cu*

68. German silver is a mixture of

- (1) *Cu, Zn, Ag* (2) *Cu, Zn, Ni* (3) *Cu, Zn, Sn* (4) *Mn, Cu, Ag*

69. When steam is passed through magnesium, then

- (1) magnesium hydroxide is formed (2) magnesium hydride is formed
(3) magnesium oxide is formed (4) water is formed

70. An element '*X*' forms an oxide " X_2O " which turns red litmus to blue. Identify "*X*"

- (1) A metal (2) A non metal (3) A metalloid (4) none of these

71. When a substance '*X*' is hit with a hammer, it expands in size but does not break. This is because substance is

- (1) ductile (2) malleable (3) elastic (4) hard

72. Why is rusting of iron a chemical change?

- (1) Because it changes its colour (2) Because it becomes powdery
(3) Because a new substance is formed (4) none of these

73. $2Na + 2H_2O \rightarrow 2NaOH + H_2(\uparrow)$ is an example for

- (1) Chemical combination (2) Chemical decomposition
(3) Chemical displacement (4) Chemical double decomposition

74. Which of the following mixtures of gases is produced, when Zinc nitrate is heated?

- (1) $NO_2 + N_2$ (2) $NO_2 + O_2$ (3) $NO + Cl_2$ (4) $NO + O_2$

75. The correct order of increasing chemical reactivity of metals is

- (1) $Zn < Fe < Ca < Na$ (2) $Fe < Zn < Ca < Na$
(3) $Fe < Ca < Na < Zn$ (4) $Fe < Ca < Zn < Na$

76. The amount of oxygen required for complete combustion of 9.6 gm of magnesium? [Atomic mass of elements: Mg = 24U, O = 16U]

- (1) 19.2 gm (2) 4.8 gm (3) 6.4 gm (4) 3.2 gm

77. Bakelite and melamine are examples for

- (1) thermo plastics (2) thermosetting plastics (3) both 1 & 2 (4) none

78. Match the entries in column-I with that in column-II correctly

Column – I (Mixture)

- (i) Bio gas
(ii) Natural gas
(iii) Petroleum gas
(iv) Carbogen
(1) i - s, ii - r, iii - p, iv - q
(3) i - r, ii - s, iii - p, iv - q

Column – II (Composition)

- (p) $C_4H_{10} + C_3H_8 + C_2H_6$
(q) $O_2 + CO_2$
(r) $CH_4 + CO_2 + H_2$
(s) $CH_4 + C_2H_6 + C_3H_8 + C_2H_4$
(2) i - r, ii - p, iii - s, iv - q
(4) i - q, ii - p, iii - s, iv - r

79. Thermo plastics

- (1) are linear polymers (2) melt on heating
(3) molten polymer can be moulded into any shape (4) all the above

80. Different varieties of coal differ in their

- (1) volatile nature (2) number of hydrogen atoms (3) moisture (4) carbon content

81. Ethyl mercaptan is added to LPG

(1) to give colour to it

(2) to give volume to it

(3) to give smell to it

(4) to make it a liquid

Space for rough work

sgcc sgcc sgcc sgcc

82. Which of the following is prepared by using wood pulp?

(1) Rayon

(2) Nylon

(3) Teflon

(4) Polyester

83. Which of the following conditions are necessary for combustion?

(i) There must be a combustible substance

(ii) There must be a continuous supply of supporter of combustion

(iii) The temperature of combustible substance should be above its ignition temperature

(1) i & ii only

(2) ii & iii only

(3) i & iii only

(4) i, ii & iii

84. Which of the following exhibits variable valency?

(1) Sodium

(2) Magnesium

(3) Iron

(4) Calcium

85. What are the characteristics of graphite?

(i) It has a soft greasy touch

(ii) It does not react with acids and alkalis

(iii) It's a good conductor of heat and electricity

- (1) i & ii only (2) ii & iii only (3) i & iii only (4) i, ii & iii
86. The chemical composition of petrol is
(1) $CH_4 - C_4H_{10}$ (2) $C_5H_{12} - C_9H_{20}$ (3) $C_{10}H_{22} - C_{12}H_{26}$ (4) $C_{20}H_{42} - C_{30}H_{62}$
87. In free state, hydrogen is present in
(1) sun (2) stars (3) both 1 & 2 (4) petroleum
88. α - ray particle consists of
(1) two protons and three neutrons (2) two protons and one neutron
(3) two protons and two neutrons (4) two protons and two electrons
89. The maximum number of electrons in 'M' shell of an atom is
(1) 2 (2) 18 (3) 32 (4) 8
90. The number of electrons present in valence shell of sodium atom is
(1) 2 (2) 1 (3) 3 (4) 4

Space for rough work

sgcc sgcc sgcc sgcc