INTO 9TH STATE

INSTRUCTIONS **NUMBER OF QUESTIONS : 100** **TIME : 2 Hrs**

1. ATTEMPT ALL QUESTIONS WITHIN THE TIME.
2. EACH QUESTION CARRIES 1 MARK
3. NO NEGATIVE MARKS.
4. DON'T DO ROUGH WORK ON QUESTION PAPER AND OMR.
5. USE BLACK (OR) BLUE PEN FOR BUBBLING ON OMR.

CORRECT METHOD OF BUBBLING

WRONG METHOD OF BUBBLING

Mathematics

1. Which property can be used in computing $2\left(\frac{3}{5}+\frac{1}{2}\right)=2\left(\frac{3}{5}\right)+2\left(\frac{1}{2}\right)$

   1. Associative 2. Distributive 3. Closure 4. Commutative

2. $\frac{p}{q}$ form of $0.7\overline{29}$ is _____

   1. $\frac{720}{990}$ 2. $\frac{721}{990}$ 3. $\frac{360}{490}$ 4. $\frac{361}{495}$

3. If $\frac{7y+2}{5}=\frac{6y-5}{11}$ then y = _____

   1. -1 2. 1 3. 0 4. -2

4. Ramesh gives a quarter of his sweets to Renu and then gives 5 sweets to Raji. He has 10 sweets left. How many did he have to start with?

   1. 10 2. 15 3. 20 4. 16

5. If $\sqrt{6}=2.449$ then the value of $\frac{3\sqrt{2}}{2\sqrt{3}}$ is closed to

   1. 1.225 2. 0.816 3. 0.613 4. 2.449

6. If $\frac{11}{a+b}+2(a-b)=11, \frac{22}{a+b}+3(a-b)=17$ then (a, b) =

   1. (7, 4) 2. (8, 3) 3. (6, 9) 4. (3, 8)

7. If $7^{2n+1}\div 49=7^3$ then n = _____

   1. 3 2. 4 3. 6 4. 2

8. If $x^y=y^x$, *then* $\left(\frac{x}{y}\right)^{\frac{x}{y}}$ is equal to

   1. $x^{\frac{x}{y}}$ 2. $x^{\frac{x}{y}-1}$ 3. $x^{\frac{y}{x}}$ 4. $x^{\frac{y}{x}-1}$

9. The compound interest on Rs 12,600 for 2 years at 10% per annum compounded annually is _____

1. Rs 3626 2. Rs 4632 3. Rs 2646 4. Rs 15, 246

10. If the compound ratio of 5 : 8 and 3 : 7 is 60 : x the x = _____

1. 168 2. 172 3. 224 4. 220

11. If $\frac{a^3+2ab^2}{2a^2b+b^3}=\frac{123}{136}$ then a : b is _____

1. 4 : 3 2. 3 : 4 3. 1 : 2 4. 2 : 3

12. The square root of 18.49 is _____

1. 4.3 2. 4.2 3. 4.1 4. 5.3

13. The area of a square field is 5184 m^2. Find the area of a rectangular field, whose perimeter is equal to the perimeter of the square field and whose length is twice of its breath

1. 3608m^2 2. 4218m^2 3. 4608m^2 4. 3218m^2

14. Which of the following is the cubes of odd natural numbers?

1. 32768 2. 4096 3. 6859 4. 1728

15. The median of the data $\frac{3}{4},\frac{1}{2},\frac{2}{3},\frac{1}{6},\frac{7}{12}$ is _____

1. $\frac{3}{4}$ 2. $\frac{2}{3}$ 3. $\frac{7}{12}$ 4. $\frac{1}{6}$

16. If the mean of p, $\frac{1}{p}$ is q, then the mean of $p^3, \frac{1}{p^3}$ is

1. $8q^3-3q$ 2. $\frac{8q^3-3q}{2}$ 3. q^3+3 4. $4q^3-3q$

17. If median = 60, Mean = 61 then Mode =_____

1. 58 2. 38 3. 48 4. 68

18. The mode of 10, 12, 11, 10, 15, 20, 19, 21, 11, 9, 10 is

1. 11 2. 12 3. 19 4. 10

19. The area of a circle inscribed in a square of side 28cm is

1. 616 sq. cm 2. 516 sq. cm 3. 416sq. cm 4. 316sq.cm

20. Four equal circles are described about the four corners of a square so that each circle touches two of the others. Find the area of the space enclosed between the circumferences of the circles, each side of the square measuring 24cm.

1. 126.52 sq cm 2. 127.36sq cm 3. 132.32 sq. cm 4. 123.42 sq.cm

21. 175 men can dig a canal 3150m long in 36 days. How many men are required to dig a canal 3900m long in 24 days?

1. 325 2. 300 3. 275 4. 335

22. Four men and six boys can do a piece of work in 2 days where as one man and three boys can do the same work in 6 days. In how many days can one man and one boy complete the same work?

1. 7 2. 8 3. 9 4. 10

23. The time taken by a 180m long train running at 54 km/h to cross a man standing on a platform is

1. 10seconds 2. 12 seconds 3. 8 seconds 4. 20seconds

24. If $P = 4x^2, T = 5x$ *and* $R = 5y$, *then* $\frac{PTR}{100} =$

1. xy^3 2. x^3y^3 3. x^2y^3 4. x^3y

25. What must be subtracted from $x^3 - 3x^2 + 5x - 1$ to get $2x^3 + x^2 - 4x + 2$?

1. $-x^3 + 4x^2 - 9x + 3$ 2. $x^3 + 4x^2 - 9x + 3$ 3. $x^3 - 4x^2 + 9x - 3$ 4. $-x^3 - 4x^2 + 9x - 3$

26. If $x - 2$ is one factor of $x^2 + ax - 6 = 0$ and $x^2 - 9x + b = 0$ then $a + b =$

1. 15 2. 13 3. 11 4. 10

27. The value of $(x-2y)(y-3x)+(x+y)(x-3y)-(y-3x)(4x-5y)$ is

1. $10x^2 + 14xy$ 2. $10x^2 - 14xy$ 3. $11x^2 - 14xy$ 4. $11x^2 + 14xy$

28. One of the factor of $x^2 + 9x + 18$ is

1. $x + 2$ 2. $x + 1$ 3. $x + 3$ 4. $x + 4$

29. $(p+5)(p-5)(p^2+25)$ is _____

1. $p^4 - 25$ 2. $p^2 - 625$ 3. $p^2 - 25$ 4. $p^4 - 625$

30. The value of $\frac{0.76 \times 0.76 \times 0.76 + 0.24 \times 0.24 \times 0.24}{0.76 \times 0.76 - 0.76 \times 0.24 + 0.24 \times 0.24}$ is

1. 0.52 2. 1 3. 0.01 4. 0.1

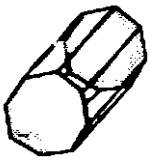
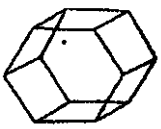
31. One of the factors of $x^2 + \frac{1}{x^2} + 2 - 2x - \frac{2}{x}$ is

1. $x - \frac{1}{x}$ 2. $x + \frac{1}{x} - 1$ 3. $x + \frac{1}{x}$ 4. $x^2 + \frac{1}{x^2}$

32. Which of the following is a 3-D figure?

1. Square 2. Rectangle 3. Cone 4. Triangle

33. The pentagonal prism of the following is

1.  2.  3.  4. 

34. The total surface area of a cube is $600cm^2$ then its side is _____

1. 10cm 2. $10cm^2$ 3. $10cm^3$ 4. 10

35. How many bricks will be required to build a wall of 8m long , 6m height and 22.5cm thick, if each brick measures 25cm by 11.25cm by 6cm?

1. 1200 2. 1800 3. 6400 4. 3600

36. Three cubes of sides 3cm, 4cm and 5cm respectively are melted and formed into a larger cube. What is the side of the cube formed?

1. 7cm 2. 6cm 3. 5cm 4. 4cm

37. If $a+b, a-b$ *and* $2\sqrt{ab}$ are the sides of a cuboid, then the longest stick that can be placed in it is

1. $2(a+b)$ units 2. $\sqrt{2}(a+b)$ units 3. a + b units 4. $a-b$ units

38. Three cubes each of side 3.2cm are joined end to end. The total surface area of the resulting cuboid is

1. $140.16cm^2$ 2. $141.56cm^2$ 3. $142.26cm^2$ 4. $143.36cm^2$

39. The dimensions $l \times b \times h$ of a room are 12m × 7m × 5m. The cost of white – washing inside the room excluding the floor at the rate of Rs 3 per m^2 is _____

1. Rs 822 2. Rs 820 3. Rs 764 4. Rs 644

40. Which of the following are divisible by 7

1. 321 2. 589 3. 449 4. 553

41. In a basket there are '$10a+b$' fruits. Among '10 b + a' fruits are rotten. The remaining fruits distributed to 9 persons equally. The number of fruits would each child get?

1. 0 2. $a-b$ 3. $a+b$ 4. $2a-b$

42. The values of A and B of the number 4 AB 8 (A, B are digits)which is divisible by 2, 3, 4, 6, 8 and 9 is

1. A = 3, B = 4 2. A = 2, B = 3 3. A = 2, B =4 4. A = 3, B =5

43. If cost of 88 articles is A733B, then (A, B)=_____

1. (1, 6) 2. (2, 5) 3. (3, 4) 4. (2, 6)

44. $1^{11}+2^{11}+3^{11}+4^{11}$ is divisible by _____

1. 2 2. 3 3. 4 4. 5

45. If ABB × 999 = ABC 123 (where A, B, C are digits) then 2A + B –C = _____

1. 15 2. 16 3. 17 4. 18

46. If $\frac{3^{5x}\times(81)^2\times 6561}{3^{2x}}=3^7$, then x =

1. 3 2. -3 3. $\frac{1}{3}$ 4. $-\frac{1}{3}$

47. If $x=2$ *and* $y=4$ *then* $\left(\frac{x}{y}\right)^{x-y}+\left(\frac{y}{x}\right)^{y-x}$ =_____

1. 4 2. 8 3. 12 4. 2

48. The solution set $\frac{2}{x}+\frac{3}{y}=2$ and $\frac{3}{x}-\frac{4}{y}=20$ is

1. (4, -2) 2. $\left(-\frac{1}{2},\frac{1}{4}\right)$ 3. $(2,-4)$ 4. $\left(\frac{1}{4},-\frac{1}{2}\right)$

49. If $2a+3b+4c=35$ and $3a+5b+7c=30$ *then* $a+b+c=$_____

1. 40 2. 45 3. 35 4. 30

50. The square root of the expression $\frac{1}{xyz}\left(x^2+y^2+z^2\right)+2\left(\frac{1}{x}+\frac{1}{y}+\frac{1}{z}\right)$

1. $\frac{x+y+z}{xyz}$ 2. $\sqrt{\frac{yz}{x}}+\sqrt{\frac{zx}{y}}+\sqrt{\frac{xy}{z}}$

3. $\sqrt{x}+\sqrt{y}+\sqrt{z}$ 4. $\sqrt{\frac{x}{yz}}+\sqrt{\frac{y}{xz}}+\sqrt{\frac{z}{xy}}$

51. If $3x-1$ is a factor of the polynomial $81x^3-45x^2+3a-6$, then a = _____

1. $\frac{8}{3}$ 2. $\frac{-7}{3}$ 3. $\frac{-10}{3}$ 4. $\frac{11}{3}$

52. The square root of $1296b^4$ is

1. $28b^2$ 2. $38\ b^2$ 3. $36\ b^2$ 4. $42\ b^2$

53. A town's population increased by 1200 people, and then this new population decreased 11%. The town now had 32 less people than it did before the 1200 increase. The original population is _____

1. 6000 2. 7000 3. 9000 4. 10, 000

54. If $\frac{3t+1}{16}-\frac{2t-3}{7}=\frac{t+3}{8}+\frac{3t-1}{14}$ then t =

1. $\frac{-3}{7}$ 2. $\frac{3}{7}$ 3. $\frac{7}{3}$ 4. $-\frac{7}{3}$

55. The sum of the adjacent angles in a parallelogram is

1. 90^0 2. 180^0 3. 0^0 4. 360^0

56. The standard form of 0.0000004m is

1. 4×10^{-5}m 2. 4×10^{-6}m 3. 4×10^{-7}m 4. 4×10^{-8}m

57. A shop keeper sold two TV sets at Rs 9, 900 each. He sold one at a profit of 10% and the other at a loss of 10%. On the whole which of the following is true

1. 1% gain 2. Neither gain nor loss 3. 1% loss 4. 2% loss

58. Sudhakar borrows 15000 from a bank to renovate his house. He borrows the money at 9% p.a simple interest over 8 years. Then his monthly repayment is

1. Rs 268. 75 2. Rs 255.50 3. Rs 238.25 4. Rs258.75

59. The weight in kgs of 8 students is listed below. Then their mean is 45, 38.5, 42.4, 44.3, 35.8, 39, 41.5, 39.5

1. 40.65 2. 39 3. 41 4. 40.75

60. Among 100 employees, the average salary of 99 is Rs 50. The 100^{th} employee has the salary exceeds the average of 100 employees by Rs 49.50. Then average salary of all the employees is

1. 49 2. 29.50 3. 50 4. 50.50

PHYSICS

61. Which one of the following statements is correct

1) Rolling friction is greater than sliding friction
2) Rolling friction is less than sliding friction
3) Rolling friction is equal to sliding friction
4) Rolling friction and sliding friction are same

62. Find the acceleration of the body from the following diagram

1. $6m/s^2$ 2. $4m/s^2$ 3. $3m/s^2$ 4. $2m/s^2$

63. The pitch of sound depends upon it_____
1. Amplitude 2. Wavelength 3. Frequency 4. Speed

64. Magnetic compass acts are tester when it is connected in a circuit due to_____effect of current
1. Heating 2. Magnetic 3. Chemical 4. None of these

65. The process of depositing a layer of any desired metal on another material by means of electricity is called
1. Electrotyping 2. Electrolysis 3. Electroplating 4. None of these

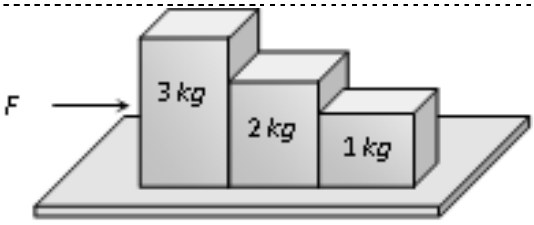
66. The man made satellites revolving around the earth are called_____satellites.
1. Natural 2. Periodic 3. Linear 4. Artificial

67. Pure water is a
1. Electric conductor 2. Semi conductor 3. Insulator 4. Resistor

68. When a horse pulls a wagon, the force that causes the horse to move forward is the force
1. The ground exerts on it
2. It exerts on the ground
3. The wagon exerts on it
4. It exerts on the wagon

69. If μ_s, μ_k and μ_r are coefficients of static friction, sliding friction and rolling friction, then
1. $\mu_s < \mu_k < \mu_r$ 2. $\mu_k < \mu_r < \mu_s$ 3. $\mu_r < \mu_k < \mu_s$ 4. $\mu_r = \mu_k = \mu_s$

70. Consider the following statements about the blocks shown in the diagram that are being pushed by a constant force on a frictionless table



A. All blocks move with the same acceleration

B. The net force on each block is the same Which of these statements are/is correct

1. A only 2. B only 3. Both A and B 4. Neither A nor B

71. A cold soft drink is kept on the balance. When the cap is open, then the weight
1. Increases
2. Decreases
3. First increases then decreases
4. Remains same

72. Action and reaction forces act on
1. The same body
2. The different bodies
3. The horizontal surface
4. Nothing can be said

73. The instrument is called to approximate measure the intensity of earth quake is
1. Seismograph
2. Sesimoscope
3. Gold leaf electroscope
4. Lightening conductors

74. The outer most layer of the earth is fragmented each fragment is called

1. Zone 2. Plate 3. Region 4. Area

75. A body of mass 40 *gm* is moving with a constant velocity of 2 *cm*/*sec* on a horizontal frictionless table. The force on the table is

1. 39200 *dyne* 2. 160 *dyne* 3. 80 *dyne* 4. Zero *dyne*

76. An elevator weighing 6000 *kg* is pulled upward by a cable with an acceleration of $5\ ms^{-2}$. Taking *g* to be $10\ ms^{-2}$, then the tension in the cable is

1. 6000 *N* 2. 9000 *N* 3. 60000 *N* 4. 90000 *N*

77. A rocket has an initial mass of $20\times10^3\ kg$. If it is to blast off with an initial acceleration of $4ms^{-2}$, the initial thrust needed is $(g \cong 10\,ms^{-2})$

1. $6\times10^4\ N$ 2. $28\times10^4\ N$ 3. $20\times10^4\ N$ 4. $12\times10^4\ N$

78. The resultant of two forces $3P$ and $2P$ is *R*. If the first force is doubled then the resultant is also doubled. The angle between the two forces is

1. 60^o 2. 120^o 3. 70^o 4. 180^o

79. Two forces are such that the sum of their magnitudes is 18 *N* and their resultant is perpendicular to the smaller force and magnitude of resultant is 12 N. Then the magnitudes of the forces are

1. 12 *N*, 6 *N* 2. 13 *N*, 5*N* 3. 10 *N*, 8 *N* 4. 16 *N*, 2 *N*

80. Two forces with equal magnitudes *F* act on a body and the magnitude of the resultant force is *F*/3. The angle between the two forces is

1. $\cos^{-1}\left(-\frac{17}{18}\right)$ 2. $\cos^{-1}\left(-\frac{1}{3}\right)$ 3. $\cos^{-1}\left(\frac{2}{3}\right)$ 4. $\cos^{-1}\left(\frac{8}{9}\right)$

CHEMISTRY

81. Choose the correct answer

1. Code 1	a) HDPE
2. Code 2	b) PVC
3. Code 3	c) PET

1. 1–c,2–a,3–b 2. 1–b,2–c,3–a 3. 1–c,2–b,3–a 4. 1–b,2–a,3–c

82. _____fibre is as strong as steel

1. Rayon 2. Nylon 3. Polyester 4. Acrylic

83. _____is called fake fur.

1. Polyester 2. Nylon 3. Acrylic 4. Rayon

84. Sodium is stored in_____

1. Water 2. Air 3. Kerosene 4. None of these

85. _____foil used in inner packing of food materials and toffees

1. Sodium 2. Magnesium 3. Aluminium 4. Silicon

86. Which non–metal is dissolved in tincture?

1. Chlorine 2. Bromine 3. Iodine 4. Fluorine

87. Petroleum components are separated by a technique called_____

1. Distillation 2. Evoparation
3. Sublimation 4. Fractional distillation

88. Coal fired power plants emits_____

1. Magnisium 2. Aluminium 3. Mercury 4. Silicon

89. Purest form of carbon is called_____

1. Coal 2. Charcoal 3. Lamp black 4. Coke

90. _____ is used in matchsticks

1. Potassium chloride 2. Sodium chloride
3. Antimony sulphide 4. Potassium sulphide

91. _____gas is released when potassium permanganate is heated

1. Hydrogen 2. Chlorine 3. Oxygen 4. Nitrogen

92. Burning of a matchstick is an example of_____ combustion

1. Spontaneous 2. Rapid 3. Explosion 4. None of these

93. Middle zone of candle_____hot

1. Highest 2. Moderate 3. Least 4. None of these

94. Arrange the following in the decreasing order of calorific value (KJ/Kg) [CNG,LPG,Petrol,H_2]

1. H_2>CNG>Petrol>LPG 2. H_2>LPG>CNG>Petrol
3. LPG>CNG>Petro>H_2 4. CNG>LPG>Petrol>H_2

95. A mixture of carbon monoxide and nitrogen is called

1. Coal gas 2. Water gas 3. Producer gas 4. None of these

96. _____is a synthetic fibre, prepared from coal, water and air

1. Nylon 2. Rayon 3. Acrylic 4. Polyester

97. The creator of first manmade plastic is

1. Alexander graham bell 2. Alexander Parkes
3. Alexander Dumas 4. Alexander Phillip

98. Which non metal is present in eggs?

1. Sulphur 2. Nitrogen 3. Chlorine 4. Hydrogen

99. Some metals reacts with acids to evolve_____ gas

1. Hydrogen 2. Oxygen 3. Carbon dioxide 4. Nitrogen

100. Inexhaustible source among these is_____

1. Coal 2. Petroleum 3. Solar energy 4. Natural gas

THE END