CDS - II 2016

Elementary Maths Question Paper

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1. What is the solution of

   $$\log_{10}\left[1-\left\{1-\left(1-x^2\right)^{-1}\right\}^{-1}\right]^{-\frac{1}{2}}=1\,?$$

   A. $x=100$ B. $x=10$

   C. $x=1$ D. $x=0$

2. If λ is an integer and α,β are the roots of $4x^2-16x+\dfrac{\lambda}{4}=0$ such that $1<\alpha<2$ and $2<\beta<3$, then how many values can λ take?

   A. 3   B. 9

   C. 14   D. 15

3. What is $\dfrac{6^2+7^2+8^2+9^2+10^2}{\sqrt{7+4\sqrt{3}}-\sqrt{4+2\sqrt{3}}}$ equal to?

   A. 330   B. 340

   C. 355   D. 366

4. If $x^2=y+z, y^2=z+x$ and $z^2=x+y$, then what is the value of $\dfrac{1}{x+1}+\dfrac{1}{y+1}+\dfrac{1}{z+1}$?

   A. -1   B. 1

   C. 2   D. 4

5. What would be the maximum value of Q in the equation $5P9+4R7+2Q8=1114$?

   A. 9   B. 8

   C. 5   D. 4

6. A is a set of positive integers such that when divided by 2, 3, 4, 5 and 6 leaves the remainder 1, 2, 3, 4 and 5 respectively. How many integer between 0 and 100 belong to the set A?

   A. No integer   B. One

   C. Two   D. Three

7. In an examination, a student was asked to divide a certain number by 8. By mistake he multiplied it by 8 and got the answer 2016 more than the correct answer, what was the number?

   A. 252   B. 256

   C. 258   D. 260

8. In the quadratic equation $x^2+ax+b=0$, a and b can take any value from the set {1, 2, 3, 4}. How many pairs of values of a and b are possible in order that the quadratic equation has real roots?

   A. 6   B. 7

   C. 8   D. 16

9. The sum of the squares of two positive integers is 208. If the square of the larger number is 18 times the smaller number, then what is the difference of the larger and smaller numbers?

   A. 2   B. 3

   C. 4   D. 6

10. Let $A=\{7,\,8,\,9,\,10,\,11,\,12\}$ and $B=\{7,10,14,15\}$. What is the number of elements in $(A-B)$ and $(B-A)$ respectively?

    A. 2 and 4   B. 4 and 2

    C. 2 and 2   D. 4 and 4

11. A boy saves Rs. 4.65 daily. What is the least number of days in which he will be able to save an exact number of rupees?

    A. 10   B. 20

    C. 21   D. 25

12. Two men, A and B run a 4 km race on a course 0.25 km round. If their speeds are in the ratio 5 : 4, how often does the winner pass the other ?

    A. Once   B. Twice

    C. Thrice   D. Four times

13. Which one of the following rational numbers has non-terminating and repeating decimal expansion?

    A. $\dfrac{15}{1600}$ B. $\dfrac{23}{8}$

    C. $\dfrac{35}{50}$ D. $\dfrac{17}{6}$

14. If α and β are the two zeros of the polynomial $25x^2-16x+2$, then what is a quadratic polynomial whose zeros are $(2\alpha)^{-1}$ and $(2\beta)^{-1}$?

    A. $x^2+30x+2$ B. $8x^2-30x+25$

    C. $8x^2-30x$ D. x^2+30x

15. What is the remainder when 2^{100} is divided by 101?

    A. 1   B. 11

    C. 99   D. 100

16. In an office, one-third of the workers are women, half of the women are married and one-third of the married women have children. If three-fourth of the men are married and one-third of the married men have children, then what is the ratio of married women to married men?

    A. 1 : 2   B. 2 : 1

    C. 3 : 1   D. 1 : 3

17. A can do 50% more work than B in the same time. B alone can do a piece of work in 30 hours. B starts working and had already worked for 12 hours when A joins him. How many hours should B and A work together to complete the remaining work?
    A. 6 hours   B. 12 hours
    C. 4.8 hours   D. 7.2 hours

18. When the speed of a train is increased by 20%, it takes 20 minutes less to cover the same distance. What is the time taken to cover the same distance with the original speed?
    A. 140 minutes   B. 120 minutes
    C. 100 minutes   D. 80 minutes

19. A candidate scoring x% marks in an examination fails by a marks while another candidate who scores y% marks gets *b* marks more than the minimum required pass marks. What is the maximum marks for the examination?
    A. $\dfrac{100(a+b)}{x-y}$ B. $\dfrac{100(a-b)}{x+y}$
    C. $\dfrac{100(a+b)}{y-x}$ D. $\dfrac{100(a-b)}{x-y}$

20. If p and q are the roots of $x^2 + px + q = 0$, then which one of the following is correct?
    A. $p = 0$ or 1   B. $p = 1$ only
    C. $p = -2$ or 0   D. $p = -2$ only

21. The cost of 2.5 kg rice is Rs. 125. The cost of 9 kg rice is equal to that of 4 kg pulses. The cost of 14 kg pulses is equal to that of 1.5 kg tea. The cost of 2 kg tea is equal to that of 5 kg nuts. What is the cost of 11 kg nuts?
    A. Rs. 2310   B. Rs. 3190
    C. Rs. 4070   D. Rs. 4620

22. Which one of the following is correct in respect of the number 1729?
    A. It cannot be written as the sum of the cubes of two positive integers
    B. It can be written as the sum of the cubes of two positive integers in one way only
    C. It can be written as the sum of the cubes of two positive integers in two ways only
    D. It can be written as the sum of the cubes of two positive integers in three ways only

23. A shopkeeper increases the cost price of an item by 20% and offers a discount of 10% on this marked price. What is his percentage gain?
    A. 15%   B. 12%
    C. 10%   D. 8%

24. There are two numbers P and q such that their HCF is 1. Which of the following statements are correct?
    1. Both p and q may be prime.
    2. One number may be prime and the other composite.
    3. Both the numbers may be composite.
    Select the correct answer using the code given below :
    A. 1 and 2 only   B. 2 and 3 only
    C. 1 and 3 only   D. 1, 2 and 3

25. What is $\sqrt{1 + \dfrac{1}{1^2} + \dfrac{1}{2^2}} + \sqrt{1 + \dfrac{1}{2^2} + \dfrac{1}{3^2}} + \ldots +$ $\sqrt{1 + \dfrac{1}{2007^2} + \dfrac{1}{2008^2}}$ equal to?
    A. $2008 - \dfrac{1}{2008}$ B. $2007 - \dfrac{1}{2007}$
    C. $2007 - \dfrac{1}{2008}$ D. $2008 - \dfrac{1}{2009}$

26. A person can row downstream 20 km in 2 hours and upstream 4 km in 2 hours. What is the speed of the current?
    A. 2 km/hour   B. 2.5 km/hour
    C. 3 km/hour   D. 4 km/hour

27. Consider the following statements in respect of positive odd integers x and y ;
    Which of the above statements is/are correct?
    1. $x^2 + y^2$ is even integer.
    2. $x^2 + y^2$ is divisible by 4.
    A. 1 only   B. 2 only
    C. Both 1 and 2   D. Neither 1 nor 2

28. What are the roots of the equation $2^{x+2} \cdot 27^{\frac{x}{x-1}} = 9$?
    A. $2, 1 - \log\left(\dfrac{3}{2}\right)$ B. $2, 1 - \log\left(\dfrac{2}{3}\right)$
    C. $-2, 1 - \left(\dfrac{\log 3}{\log 2}\right)$ D. $-2, 1 - \left(\dfrac{\log 2}{\log 3}\right)$

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29. There are twelve friends A, B, C, D, E, F, G, H, I, J, K and L who invested money in some business in the ratio of 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : 9 : 10 : 11 : 12 and the duration for which they invested the money is in the ratio of 12 : 11 : 10 : 9 : 8 : 7 : 6 : 5 ; 4 : 3 : 2 : 1 respectively. Who will get the maximum profit at the end of the year?
    A. F only
    B. G only
    C. Both F and G
    D. neither F nor G

30. $2^{122} + 4^{62} + 8^{42} + 4^{64} + 2^{130}$ is divisible by which one of the following integers?
    A. 3   B. 5
    C. 7   D. 11

31. If $2p + 3q = 12$ and $4p^2 + 4pq - 3q^2 = 126$, then what is the value of $p + 2q$?
    A. 5   B. $\dfrac{21}{4}$
    C. $\dfrac{25}{4}$ D. $\dfrac{99}{16}$

32. The number of digits in 3^{30} is n and it is given that $\log_{10} 3 = 0.4771$. What is the value of n?
    A. 13   B. 14
    C. 15   D. 16

33. What is the unit digit of 7^{139} ?
    A. 9   B. 7
    C. 6   D. 3

34. If $4x + 3a = 0$, then what is the value of $\dfrac{x^2 + ax + a^2}{x^3 - u^3} - \dfrac{x^2 - ax + a^2}{x^3 + a^3}$?
    A. $-\dfrac{4}{7a}$ B. $\dfrac{7}{a}$
    C. $-\dfrac{32}{7a}$ D. $\dfrac{24}{7a}$

35. Incomes of Mahesh and Kamal are in the ratio 1 : 2 and their expenses are in the ratio 1 : 3. Which one of the following statements is correct ?
    A. Mahesh saves more than what Kamal saves
    B. Savings of both of them are equal
    C. Kamal saves more than what Mahesh saves
    D. It is not possible to determine who saves more

36. X and Y entered into partnership with Rs. 700 and Rs. 600 respectively. After 3 months X withdrew 2/7 of his stock but after 3 months, he puts back 3/5 of what he had withdrawn. The profit at the end of the year is Rs. 726. How much of this should X receive?
    A. Rs. 336   B. Rs. 366
    C. Rs. 633   D. Rs. 663

37. A tank can be filled by pipe X in 2 hours and pipe Y in 6 hours. At 10 a.m. pipe X was opened. At what time will the tank be filled if pipe Y is opened at 11 a.m.?
    A. 12:45 hours   B. 5:00 p.m.
    C. 11:45 a.m.   D. 11:50 a.m.

38. A train is travelling at 48 km/hour completely crosses another train having half its length and travelling in opposite direction at 42 km/hour in 12 s. It also passes a railway platform in 45 s. What is the length of the platform?
    A. 600 m   B. 400 m
    C. 300 m   D. 200 m

39. The speeds of three cars are in the ratio 2 : 3 : 4. What is the ratio between the times taken by these cars to travel the same distance?
    A. 4 : 3 : 2   B. 2 : 3 : 4
    C. 4 : 3 : 6   D. 6 : 4 : 3

40. If the mean age of combined group of boys and girls is 18 years and the mean of age of boys is 20 and that of girls is 16, then what is the percentage of boys in the group?
    A. 60   B. 50
    C. 45   D. 40

41. The area of four walls of a room is 120 m². The length of the room is twice its breadth. If the height of the room is 4 m, what is area of the floor ?
    A. 40 m²   B. 50 m²
    C. 60 m²   D. 80 m²

42. If a square of side x and an equilateral triangle of side y are inscribed in a circle, then what is the ratio of x to y?
    A. $\sqrt{\dfrac{2}{3}}$ B. $\sqrt{\dfrac{3}{2}}$
    C. $\dfrac{3}{\sqrt{2}}$ D. $\dfrac{\sqrt{2}}{3}$

43. The ratio of the curved surface area to the total surface area of a right circular cylinder is 1 : 2, If the total surface area is 616 cm², what is the volume of the cylinder?
    A. 539 cm³
    B. 616 cm³
    C. 1078 cm³
    D. 1232 cm³

44. A cubic metre of copper weighing 9000 kg is rolled into a square bar 9 m long. An exact cube is cut off from the bar. How much does the cube weigh?
    A. 1000 kg
    B. $\dfrac{1000}{3}$ kg
    C. 300 kg
    D. $\dfrac{500}{3}$ kg

45. Into a conical tent of radius 8.4 m and vertical height 3.5 m, how many full bags of wheat can be emptied, if space required for the wheat in each bag is 1.96 m³?
    A. 264
    B. 201
    C. 132
    D. 105

46. Let ABC be a right angled triangle with BC = 5 cm and AC = 12 cm. Let D be a point on the hypotenuse AB such that $\angle BCD = 30^o$. What is length of CD?
    A. $\dfrac{60}{13}$ cm
    B. $\dfrac{17}{2}$ cm
    C. $\dfrac{120}{5+12\sqrt{2}}$ cm
    D. $\dfrac{120}{5+12\sqrt{3}}$ cm

47. Two circle touch externally and sum of their areas is 130 cm and the distance between their centres is 14 cm. What is the difference in the radii of the circles?
    A. 5 cm
    B. 6 cm
    C. 7 cm
    D. 8 cm

48. In a circle of radius 3 units, a diameter AB intersects a chord of length 2 units perpendicularly at P. If AP > BP, then what is the ratio of AP to BP?
    A. $3+\sqrt{10}:3-\sqrt{10}$
    B. $3+\sqrt{8}:3-\sqrt{18}$
    C. $3+\sqrt{3}:3-\sqrt{3}$
    D. $3:\sqrt{3}$

49. What is the number of rounds that a wheel of diameter $\dfrac{5}{11}$ m will make in traversing 7 km?
    A. 3300
    B. 3500
    C. 4400
    D. 4900

50. A building is in the form of a cylinder surmounted by a hemispherical done on the diameter of the cylinder. The height of the building is three times the radius of the base of the cylinder. The building contains $67\dfrac{1}{21}$ m³ of air. What is the height of the building?
    A. 6 m
    B. 4 m
    C. 3 m
    D. 2 m

51. The radius of the base and the height of a solid right circular cylinder are in the ratio 2 : 3 and its volume is 1617 cm³. What is the total surface area of the cylinder?
    A. 462 cm²
    B. 616 cm²
    C. 770 cm²
    D. 786 cm²

52. The cost of painting a spherical vessel of diameter 14 cm is Rs. 8008. What is the cost of painting per square centimeter?
    A. Rs. 8
    B. Rs. 9
    C. Rs. 13
    D. Rs. 14

53. If a quadrilateral has an inscribed circle, then the sum of a pair of opposite sides equals
    A. Half the sum of the diagonals
    B. Sum of the other pair of opposite sides
    C. Sum of two adjacent sides
    D. None of the above

54. A circle and a square have the same perimeter. Which one of the following is correct?
    A. Their areas are equal
    B. The area of the circle is larger
    C. The area of the square is $\dfrac{\pi}{2}$ times area of circle
    D. The area of the square is π times area of circle

55. A drinking glass of height 24 cm is in the shape of frustum of a cone and diameters of its bottom and top circular ends are 4 cm and 18 cm respectively. If we take capacity of the glass as πx cm³, then what is the value of x?
    A. 824
    B. 1236
    C. 1628
    D. 2472

56. In an equilateral triangle another equilateral triangle is drawn inside joining the mid-points of the sides of given equilateral triangle and the process is continued up to 7 times. What is the ratio of area of fourth triangle to that of seventh triangle?
    A. 256 : 1
    B. 128 : 1
    C. 64 : 1
    D. 16 : 1

57. Rain water from a roof $22\text{ m} \times 20\text{ m}$ 22 m 20 m drains into a cylindrical vessel having diameter of base 2 m and height 3.5 m. If the vessel is just full, what is the rainfall?
    A. 3.5 cm
    B. 3 cm
    C. 2.5 cm
    D. 2 cm

58. The height of a cone is 60 cm. A small cone is cut off at the top by a plane parallel to the base and its volume is $\frac{1}{64}$ the volume of original cone. What is the height from the base at which the section is made?
    A. 15 cm
    B. 20 cm
    C. 30 cm
    D. 45 cm

59. If two tangents inclined at an angle 60° are drawn to a circle of radius 3 cm, then what is the length of each tangent?
    A. $3\sqrt{3}$ cm
    B. $\sqrt{3}$ cm
    C. 6 cm
    D. $2\sqrt{2}$ cm

60. What is the volume of a sphere of radius 3 cm?
    A. 36π cm^3
    B. 18π cm^3
    C. 9π cm^3
    D. 6π cm^3

61. The sides of a triangle are given by $\sqrt{a^2+b^2}, \sqrt{c^2+a^2}$ and $(b+c)$ where *a, b, c* are positive. What is the area of the triangle equal to?
    A. $\dfrac{\sqrt{a^2+b^2+c^2}}{2}$
    B. $\dfrac{\sqrt{a^2b^2+b^2c^2+c^2a^2}}{2}$
    C. $\dfrac{a(b+c)}{2}$
    D. $\dfrac{\sqrt{3(a^2b^2+b^2c^2+c^2a^2)}}{2}$

62. What is area of largest triangle inscribed in a semi-circle of radius *r* units?
    A. r^2 square units
    B. $2r^2$ square units
    C. $3r^2$ square units
    D. $4r^2$ square units

63. The diameter of the front wheel of an engine is 2x cm and that of rear wheel is 2y cm. To cover the same distance, what is the number of times the rear wheel revolves when the front wheel revolves n times?

A. $\dfrac{n}{xy}$
B. $\dfrac{ny}{x}$
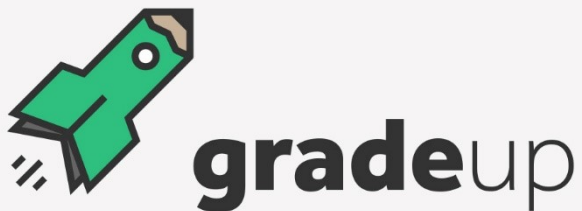C. $\dfrac{nx}{y}$
D. $\dfrac{xy}{n}$

For the next three (03) items that follow :
A tent of a circus is made of canvas and is in the form of right circular cylinder and right circular cone above it. The height and diameter of the cylindrical part of the tent are 5 m and 126 m respectively. The total height of the tent is 21 m.

64. What is the slant height of the cone?
    A. 60 m
    B. 65 m
    C. 68 m
    D. 70 m

65. What is the curved surface area of the cylinder?
    A. 1980 m^2
    B. 2010 m^2
    C. 2100 m^2
    D. 2240 m^2

66. How many square metres of canvas are used?
    A. 14450
    B. 14480
    C. 14580
    D. 14850

67. The wheels of a car are of diameter 80 cm each. The car is travelling at a speed of 66 km/hour. What is the number of complete revolutions each wheel makes in 10 minutes?
    A. 4275
    B. 4350
    C. 4375
    D. 4450

68. What is the area of a triangle with sides of length 12 cm, 13 cm and 5 cm?
    A. 30 cm^2
    B. 35 cm^2
    C. 40 cm^2
    D. 42 cm^2

69. If the perimeter of a circle is equal to that of a square, then what is the ratio of area of circle to that of square?
    A. 22 : 7
    B. 14 : 11
    C. 7 : 22
    D. 11 : 14

70. ABCDA is a con-cyclic quadrilateral of a circle ABCD with radius r and centre at O. If AB is the diameter and CD is parallel and half of AB and if the circle completes one rotation about the centre O, then the locus of the middle point of CD is a circle of radius
    A. $\dfrac{3r}{2}$
    B. $\dfrac{2r}{3}$
    C. $\dfrac{2\sqrt{3}r}{3}$
    D. $\dfrac{\sqrt{3}r}{2}$

71. If $\sin\theta + \cos\theta = \dfrac{\sqrt{7}}{2}$, then what is $\sin\theta - \cos\theta$ equal to?

    A. 0   B. $\dfrac{1}{2}$

    C. 1   D. $\sqrt{2}$

72. If $\sin x + \sin^2 x = 1$, then what is the value of $\cos^8 x + 2\cos^6 x + \cos^4 x$?

    A. 0   B. 1

    C. 2   D. 4

73. A man from the top of a 100 m high tower sees a car moving towards the tower at an angle of depression 30 After some time, the angle of depression becomes 60°. What is the distance travelled by the car during this time?

    A. $100\sqrt{3}$ m   B. $\dfrac{200\sqrt{3}}{3}$ m

    C. $\dfrac{100\sqrt{3}}{3}$ m   D. $200\sqrt{3}$ m

74. Two men on either side of a tower 75 m high observe the angle of elevation of the top of the tower to be 30° and 60° What is the distance between the two men?

    A. $100\sqrt{3}$ m   B. $\dfrac{100\sqrt{3}}{3}$ m

    C. $75\sqrt{3}$ m   D. $60\sqrt{3}$ m

75. What is the value of $\operatorname{cosec}^2 68^o + \sec^2 56^o - \cot^2 34^o - \tan^2 22^o$?

    A. 0   B. $\dfrac{1}{2}$

    C. 1   D. 2

76. If $2y\cos\theta = x\sin\theta$ and $2x\sec\theta - y\operatorname{cosec}\theta = 3$, then what is $x^2 + 4y^2$ equal to ?

    A. 1   B. 2

    C. 4   D. 8

77. If $\sin\theta + \cos\theta = \dfrac{1+\sqrt{3}}{2}$ where $0 < \theta < \dfrac{\pi}{2}$, then what is $\tan\theta + \cot\theta$ equal to?

    A. $\dfrac{\sqrt{3}}{4}$ B. $\dfrac{1}{\sqrt{3}}$

    C. $\sqrt{3}$ D. $\dfrac{4}{\sqrt{3}}$

78. If $A = \sin^2\theta + \cos^4\theta$ where $0 \le \theta < \dfrac{\pi}{2}$, then which one of the following is correct?

    A. $1 \le A \le 2$ B. $\dfrac{3}{4} \le A \le 1$

    C. $\dfrac{13}{16} \le A \le 2$ D. $\dfrac{3}{4} \le A \le \dfrac{13}{16}$

79. What is $\dfrac{\cot A + \operatorname{cosec} A - 1}{\cot A - \operatorname{cosec} A + 1}$ equal to?

    A. $\dfrac{1+\cos A}{\sin A}$ B. $\dfrac{1-\cos A}{\sin A}$

    C. $\dfrac{1+\sin A}{\cos A}$ D. $\dfrac{1-\sin A}{\cos A}$

80. Consider the following

    1. $\sin 1^o > \sin 1^o$

    2. $\cos 1^o < \cos 1^o$

    3. $\tan 1^o > \tan 1^o$

    Which of the above are not correct?

    A. 1 and 2 only   B. 2 and 3 only

    C. 1 and 3 only   D. 1, 2 and 3

81. If $\tan^2 x + \dfrac{1}{\tan^2 x} = 2$ and $0^o < x < 90^o$, then what is the value of X?

    A. 15°   B. 30°

    C. 45°   D. 60°

82. If the length of the shadow of a tower is equal to its height, then what is the Sun's altitude at that time?

    A. 15°   B. 30°

    C. 45°   D. 60°

83. Consider the following :

    1. $\dfrac{\cos 75^o}{\sin 15^o} + \dfrac{\sin 12^o}{\cos 78^o} - \dfrac{\cos 18^o}{\sin 72^o} = 1$

    2. $\dfrac{\cos 35^o}{\sin 55^o} - \dfrac{\sin 11^o}{\cos 79^o} + \cos 28^o \operatorname{cosec} 62^o = 1$

    3. $\dfrac{\sin 80^o}{\cos 10^o} - \sin 59^o \sec 31^o = 0$

    Which of the above are correct?

    A. 1 and 2 only   B. 2 and 3 only

    C. 1 and 3 only   D. 1, 2 and 3

84. A pole stands vertically inside a triangular park ABC. If the angle of elevation of the top of the pole from each corner of the park is same, then in the triangle ABC, the foot of the pole is at the

    A. Centroid   B. Circumference

    C. Incentre   D. Orthocentre

85. What is the value of $\tan 1^o \tan 2^o \tan 3^o \tan 4^o \ldots \tan 89^o$?

    A. 0   B. 1

    C. 2   D. $\sqrt{3}$

86. The average score of class X is 83.
    The average score of class Y is 76
    The average score of class Z is 85
    The average score of class X and Y is 79
    And average score of class Y and Z is 81.
    What is the average score of X, Y and Z?
    A. 81.5　　　　　B. 80.5
    C. 79.0　　　　　D. 78.0

87. For $x > 0$, if a variable takes discrete values $x + 4, x - 3.5, x - 2.5, x - 3, x - 2, x + 0.5, x - 0.5, x + 5,$ then what is the median?
    A. x − 1.25　　　B. x − 0.5
    C. x + 0.5　　　 D. x + 1.25

88. The median of set of 9 distinct observations is 20.5. If each of the largest 4 observation of the set is increased by 2, then the median of the new set
    A. is increased by 2
    B. is decreased by 2
    C. is two times the original median
    D. remains the same as that of original set

89. A cricketer has a certain average of 10 innings. In the eleventh inning he scored 108 runs, thereby increasing his average by 6 runs. What is his new average?
    A. 42　　　　　　B. 47
    C. 48　　　　　　D. 60

90. The mean of 20 observations is 17. On checking it was found that the two observation were wrongly copied as 3 and 6. If wrong observation are replaced by correct values 8 and 9, then what is the correct mean?
    A. 17.4　　　　　B. 16.6
    C. 15.8　　　　　D. 14.2

91. Number of credit cards held by an individual can be treated as
    A. Qualitative data
    B. Discrete data
    C. Categorical data
    D. None of the above

92. In a class of 100 students, there are 70 boys whose average marks in a subject are 75. If the average marks of the complete class is 72, then what is the average marks of the girls?
    A. 64　　　　　　B. 65
    C. 68　　　　　　D. 74

93. A pie chart depicts the classification of total funds of an organization according to different sources of funds. A particular sector of pie chart for corporate tax has 108 angle at the centre. What is the percentage of income from corporate tax to total funds?
    A. 20%　　　　　B. 25%
    C. 30%　　　　　D. 35%

94. Consider the following statements :
    1. The classes of type 15-19, 20-24, 25-29 etc. are exclusive classes.
    2. The classes of type 15-20, 20-25, 25-30 etc. are inclusive classes.
    Which of the above statements is/are correct?
    A. 1 only　　　　B. 2 only
    C. Both 1 and 2　D. Neither 1 nor 2

95. Suppose the class interval 10-15 has frequency 30, then what is the frequency density of this class interval?
    A. 2　　　　　　　B. 3
    C. 5　　　　　　　D. 6

96. Let S be a set of first ten natural numbers. What is the possible number of pairs (a, b) where $a, b \in S$ such $a \neq b$ that the product $ab(> 12)$ leaves remainder 4 when divided by 12?
    A. 4　　　　　　　B. 6
    C. 8　　　　　　　D. 10

97. What is the remainder when $13^5 + 14^5 + 15^5 + 16^5$ is divided by 29?
    A. 8　　　　　　　B. 5
    C. 3　　　　　　　D. 0

98. What is the difference between the sum of the cubes and that of squares of first ten natural numbers?
    A. 2280　　　　　B. 2640
    C. 3820　　　　　D. 4130

99. A motorist travels to a place 150 km away at an average speed of 50 km/hour and returns at 30 km/hour. What is the average speed for the whole journey?
    A. 35 km/hour　　B. 37 km/hour
    C. 37.5 km/hour　D. 40 km/hour

100. If $x + \dfrac{1}{1 + \dfrac{1}{2 + \dfrac{1}{3}}} = 2,$ then what is equal to?

    A. $\dfrac{7}{10}$　　　　　B. $\dfrac{13}{10}$

    C. $\dfrac{11}{10}$　　　　　D. $\dfrac{17}{10}$