1. P, Q and R are three cities. The ratio of average temperature between P and Q is 11:12 and that between P and R is 9:8. The ratio between the average temperature of Q and R is

(a) 26:22 (c) 27:22

(b) 25:22 (d) 28:22

2. A dealer mixes tea costing $6.92 per kg with tea costing $7.77 per kg. and sells the mixture at $8.80 per kg. and earns a profit of 17.5% on his sale price. In what proportion does he mix them?

(a) 4:5 (c) 1:2

(b) 2:1 (d) 3:2

3. Find the number whose logarithm is 2.4678.

(a) 293.6 (c) 295.6

(b) 294.6 (d) 296.6

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4. A number consists of two digits, the digit in the ten's place is twice the digit in the unit's place. If 18 be subtracted from the number, the digits are reversed. Find the number.

(a) 42

(c) 35

(b) 25

(d) 76

5. For a certain commodity the demand equation giving demand "d" in kg, for a price "p" in dollars per kg is d=100 (10-p). The supply equation giving the supply "s" in kg. for a price "p" in dollars per kg is s = 75(p-3). The market price is such at which demand equals supply. Find the market price and quantity that will be bought and sold.

(a) $7, 250 kg, 250kg

(c) $7, 350kg, 350kg

(b) $7, 275 kg, 275kg

(d) $7, 300kg, 300kg

6. If the numerator of a fraction is increased by 2 and the denominator by 1, it becomes 1. Again if the numerator is decreased by 4 and the denominator by 2, it becomes 1/2. Find the fraction.

(a) 5/6

(c) 3/4

(b) 7/8

(d) 1/2

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7. As piece of iron rod costs $60. If the rod was 2 meters shorter and each meter costs $1 more, the cost would remain unchanged. What is the length of the rod?

(a) 24 meters

(b) 6 meters

(c) 12 meters

(d) 8 meters

8. Divide 25 in to two parts so that the sum of their reciprocals is 1/6.

(a) 11 & 14

(b) 9 & 16

(c) 12 & 13

(d) 10 & 15

9. A distributor of Apple juice has 500 bottles in the store that it wishes to distribute in a month. From experience, it is known that demand D (in number of bottles) is given by $D = -2000p^2+2000p+17000$. The price per bottle that will result zero inventory is

(a) $2

(b) $3

(c) $4

(d) $5

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10. If the three point (3,1), (5,-5) and (-1,13) are collinear, find the equation of the line through these points.

(a) $3x+y=10$

(b) $4x+y=10$

(c) $5x+y=10$

(d) $6x+y=10$

11. An employer recruits experienced (x) and fresh work men (y) for his firm under the condition that he can not employ more than 9 people. "x" and "y" can be related by the inequality

(a) $x+y=9$

(b) $x=9y$

(c) $x+y\geq 9$

(d) $x+y\leq 9$

12. $5000 is deposited in a term deposit scheme that fetches interest 6% per annum compounded quarterly. What will be the interest after one year? What is effective rate of interest?

(a) $304.82, 6.13%

(b) $305.82, 6.13%

(c) $306.82, 6.13%

(d) $307.82, 6.13%

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13.A machine the useful life of which is estimated to be 10 years costs $10000. Rate of depreciation is 10% per annum. The scarp value at the end of its life is

(a) $3482

(c) $3484

(b) $3483

(d) $3485

14. Compute the sum of four digit numbers which can be formed with the four digits 1, 3, 5, 7, if each digit is used only one in each arrangement.

(a) 106656

(c) 106658

(b) 106657

(d) 106659

15. In how many different ways can a club with ten members select a President, Secretary and Treasurer, if no member can hold two offices and each member is eligible for any office.

(a) 350

(c) 450

(b) 620

(d) 720

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16. A box contains 7 red, 6 white and 4 blue balls. How many selections of three balls can be made so that one is of each color?

(a) 224 ways

(c) 238 ways

(b) 168 ways

(d) 132 ways

17. A person is employed in a company at $3000 per month and he would get an increase of $100 per year. Find the total amount which he receives in 25 years and the monthly salary in the last year.

(a) $1260000, $5400

(c) $1260000, $5000

(b) $1260000, $5200

(d) $1260000, $4800

18. The population of a country was 55 crore in 2005 and it is growing at 2% per annum compound interest, the population in the year 2015 is estimated as

(a) 5705

(c) 6700

(b) 6005

(d) None of these

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19. Out of a group of 20 teachers in a school, 10 teach math, 9 teach physics and 7 teach chemistry. 4 teach math and physics but none teach both math and chemistry. How many teach chemistry and physics?

(a) 7

(b) 1

(c) 2

(d) 6

20. The girder of a railway bridge is in the parabolic form with span 100ft. and the highest point on the arch is 10ft. above the bridge. Find the height of the bridge at 10 ft. to the left or right from the midpoint of the bridge.

(a) 12.5 ft

(b) 9.6 ft

(c) 13.5 ft

(d) 24.5 ft

21. Find the radius of the circle whose equation is

$$4x^2+32x+4y^2-32y+47=0$$

(a) 5.5

(b) 3.5

(c) 2.5

(d) 4.5

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22. The angles of a quadrilateral are in an A.P whose common difference is 10°. Find the angles.

(a) 75°,85°,95°,105°

(c) 70°,80°,90°,100°

(b) 85°,95°,105°,115°

(d) 65°,75°,85°,95°

23. In a school sports day, picking balls kept in a line was one of the games. 20 balls were placed in a straight line on the ground at intervals of 3 meters. The starting point was at a distance 3 meters from the first ball in line with the balls. How far a boy would have to run to bring the balls one by one to a basket kept at his starting point?

(a) 1820 m

(c) 2023 m

(b) 2044 m

(d) 1260 m

24. 150 workers were engaged to finish a piece of work in a certain number of days. Four workers dropped from the work the second day. Four more workers dropped in the third day and so on. It took 8 more days to finish the work. Find the number of days in which the work was completed.

(a) 20

(c) 50

(b) 25

(d) 60

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25. A ball is dropped from a height of 1 m. At every bounce it travels half the height it traveled with the previous flight. Find the total distance traveled by the ball.

(a) 1 m

(b) 2 m

(c) 3 m

(d) 4 m

26. A decorated cloth hanger is in the form of a cylinder having cones at both ends. The common radius is 2m. The height of the cone at one end is 1m. and that of another end is 1.5m. Total height of the hanger is 5.5m. Find the area of the cloth required to make the hanger.

(a) $(24.47)\Pi$ cm^2

(b) $(21.47)\Pi$ cm^2

(c) $(23.47)\Pi$ cm^2

(d) $(22.47)\Pi$ cm^2

27. A hemispherical bowl of radius 30cm is filled with soap paste. If this paste is made in to cylindrical shop cakes each of radius 5cm and height 2cm, how many cakes do we get?

(a) 360

(b) 380

(c) 400

(d) 420

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28. Let R be a relation on a seta. R is called an equivalence relation, if R is

(a) Reflexive

(c) Symmetric

(b) Transitive

(d) Reflexive, Symmetric, Transitive

29. In triangle ABC, angle C = 20° greater than angle A. The sum of angle A and angle C is twice angle B. Find the three angles.

(a) 30°, 70°, 80°

(c) 55°, 65°, 75°

(b) 40°, 50°, 60°

(d) 50°, 60°, 70°

30. 100 pencils are to be kept inside three types of boxes A, B and C. If two boxes of type A, three boxes of type B, two boxes of type C are used, 6 pencils are left out. If three boxes of type A, five boxes of type B, two boxes of type C are used, two pencils are left out. If two boxes of type A, four boxes of type B and four boxes of type C are used, there is space for four more pencils. Find the number of pencils that each box can hold.

(a) 8, 9, 10

(c) 8, 10, 11

(b) 8, 10, 12

(d) 9, 10, 12

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31. If a quadratic polynomial is divided by (x-1), (x+1) and (x-2) leaves the remainders 2, 4, 4 respectively. Find the quadratic polynomial.

(a) x^2-x-2

(b) x^2+x+2

(c) x^2-x+2

(d) x^2+x-2

32. Determine the value of "m", if (x+1) is a factor of $x^3+mx^2+19x+12$.

(a) 8

(b) 9

(c) 10

(d) 11

33. The outer dimensions of a bordered table are 72 cm and 108 cm. If the area of the table, excluding the border is 6400 cm^2. Ho9w wide is the border?

(a) 1 cm

(b) 2 cm

(c) 7 cm

(d) 4 cm

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34. Determine the nature of the roots of the equation

$$4x^2-28x+49=0$$

(a) imaginary

(c) real

(b) real, equal, rational

(d) real, equal, irrational

35. Find the equation whose roots are n times the roots of the equation ax^2+bx+c

(a) $ax^2+nbx+n^2c$

(c) $ax^2+nbx-n^2c$

(b) $ax^2-nbx+n^2c$

(d) $ax^2-nbx-n^2c$

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36. A project consists of 12 jobs. Draw the project network and determine the duration of critical path.

Job	Activity	Duration(weeks)
A	1-2	2
B	2-3	7
C	2-4	3
D	3-4	3
E	3-5	5
F	4-6	3
G	5-8	5
H	6-7	8
I	6-10	4
J	7-9	4
K	8-9	1
L	9-10	7

(a) 32 weeks

(c) 35 weeks

(b) 34 weeks

(d) 36 weeks

37. The angle in the semicircle is a

(a) right angle

(c) acute angle

(b) obtuse angle

(d) straight angle

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38. The sum of the opposite angles of a cyclic quadrilateral is

(a) 90° (c) 100°

(b) 270° (d) 180°

39. $ABCD$ is a quadrilateral with angle $B = 90^\circ$. If $AD^2 = AB^2+BC^2+CD^2$, then the angle ACD is

(a) 90° (c) 100°

(b) 270° (d) 180°

40. In what ratio is the line segment joining the points $A(4,4)$ and $B(7,7)$ divided by the point $C(-1,-1)$?

(a) 5:8 (c) 8:5

(b) 2:5 (d) 9:1

41. Find the equation of a straight line parallel to the line joining the points (7,5) and (1,3) and passing through the point (-3,4).

(a) $x+3y+15=0$ (c) $x-3y-15=0$

(b) $x-3y+15=0$ (d) $x+3y-15=0$

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42. A point is collinear with the points (3,4) and (8,5). It also lies on the straight line 2x+y+1=0. Find the coordinates of the point.

(a) (2,-3)

(c) (4,-1)

(b) (-4,1)

(d) (-2,3)

43. Find the co-ordinates of the circum centre of a triangle whose vertices are (2,-3), (8,-2) and (8,6).

(a) (4/17, 2)

(c) (17/4, 2)

(b) (17, 2)

(d) (4, 2)

44. Find the length of the chord of a circle of radius 5 cm subtending at the centre the angle of 144°

(a) 8.5110

(c) 10.5110

(b) 9.5110

(d) 11.5110

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45. The length of a string between a kite and a point on a ground is 90m. If the string makes an angle Θ with the level of the ground such that tan Θ = 15/8, how high is the kite?

(a) 79.41 m

(c) 54.67 m

(b) 64.77 m

(d) 85.76 m

46. The mean of 100 items is 48 and their standard deviation is 10. Find the sum of all the items and also the sum of squares of all the items.

(a) 4800, 240100

(c) 4800, 240300

(b) 4800, 240200

(d) 4800, 240400

47. Find the coefficient of variation for the following data: 16, 13, 17, 21, 18

(a) 13.35%

(c) 15.35%

(b) 14.35%

(d) 16.35%

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48. A factory has two sections A and B with 50 and 60 employees respectively. Their average weekly wages are $386 and $475. The standard deviations are 9 and 10. Which section has greater variability in wages?

(a) A

(b) B

(c) A and B are equal

(d) None of these

49. A fair die is rolled. Find the probability of getting prime factors of 6 on the die.

(a) 2/5

(b) 1/5

(c) 2/3

(d) 1/3

50. A number is chosen at random from 1 to 50. Find the probability that the number is divisible by 5.

(a) 2/5

(b) 1/5

(c) 2/3

(d) 1/3

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Answers:

1. c	2. d	3. a	4. a	5. d	6. b
7. c	8. d	9. d	10. a	11. d	12. c
13. b	14. a	15. d	16. b	17. a	18. d
19. c	20. b	21. d	22. a	23. d	24. b
25. c	26. b	27. a	28. d	29. d	30. b
31. c	32. a	33. d	34. b	35. a	36. b
37. a	38. d	39. a	40. a	41. b	42. d
43. c	44. b	45. a	46. d	47. c	48. a
49. d	50. b				

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