PROBABILITY

1. A bag contains 6 white and 4 red balls. Three balls are drawn one by one with replacement. What is the probability that all 3 balls are red?
   A. $\frac{8}{125}$
   B. $\frac{1}{20}$
   C. $\frac{1}{30}$
   D. $\frac{1}{120}$

2. A card is pulled from a deck of cards and the outcome noted. The card is then replaced, the deck is shuffled, and a second card is drawn and the outcome noted. What is the probability that both cards are Aces?
   A. $\frac{1}{13^2}$
   B. $\frac{{}^4C_2}{{}^{52}C_2}$
   C. $\frac{{}^4P_2}{{}^{52}P_2}$
   D. $\frac{1}{13}$

3. An urn contains 9 blue, 7 white and 4 black balls. If 2 balls are drawn at random, then what is the probability that only one ball is white?
   A. $\frac{71}{190}$
   B. $\frac{121}{190}$
   C. $\frac{91}{190}$
   D. $\frac{93}{190}$

4. Find the probability that in a random arrangement of the letters of the word 'UNIVERSITY' the two I's come together.
   A. $\frac{1}{7}$
   B. $\frac{3}{5}$
   C. $\frac{5}{11}$
   D. $\frac{1}{5}$

5. A and B play a game where each is asked to select a number from 1 to 5. If the two numbers match, both of them win a prize. The probability that they will not win a prize in a single trial is
   A. $\frac{1}{5}$
   B. $\frac{2}{5}$
   C. $\frac{3}{5}$
   D. $\frac{4}{5}$

6. I forgot the last three digits of a 7-digit telephone number. If I randomly dial the final 3 digits after correctly dialing the first four, then what is the chance of dialing the correct number?
   A. $\frac{1}{1001}$
   B. $\frac{1}{1000}$
   C. $\frac{1}{999}$
   D. $\frac{1}{900}$

7. What is the probability that a 2 digit number selected at random will be a multiple of 3 and not a multiple of 5?
   A. $\frac{2}{15}$
   B. $\frac{4}{15}$
   C. $\frac{1}{15}$
   D. $\frac{4}{90}$

8. When two dice are thrown simultaneously, what is the probability that the sum of the two numbers that turn up is less than 11?
   A. $\frac{5}{6}$

B. $\frac{11}{12}$
C. $\frac{1}{6}$
D. $\frac{1}{12}$

9. When 4 dice are thrown, what is the probability that the same number appears on each of them?
A. $\frac{1}{36}$
B. $\frac{1}{18}$
C. $\frac{1}{216}$
D. $\frac{1}{5}$

10. An anti aircraft gun can fire 4 shots at a time. If the probabilities of the 1^{st}, 2^{nd}, 3^{rd} and the last shot hitting the enemy aircraft are 0.7, 0.6, 0.5 and 0.4, what is the probability that 4 shots aimed at an enemy aircraft will bring the aircraft down?
A. 0.084
B. 0.916
C. 0.036
D. 0.964

11. A number is selected at random from 1^{st} thirty natural numbers. What is the chance that it is a multiple of either 3 or 13?
A. $\frac{17}{30}$
B. $\frac{2}{5}$
C. $\frac{11}{30}$
D. $\frac{4}{15}$

12. There are 2 bags-one containing 3 one rupee coins, 6 five rupee coins and the other containing 2 one rupee coins, 7 five rupee coins. One bag is chosen at random and from that one coin is drawn at random. What is the probability that it is a 1 rupee coin?
A. $\frac{2}{9}$
B. $\frac{3}{9}$
C. $\frac{5}{9}$
D. $\frac{5}{18}$

13. If you pull 2 cards out of a deck, what is the probability that both are spades?
A. $\frac{1}{17}$
B. $\frac{1}{16}$
C. $\frac{1}{15}$
D. $\frac{1}{4}$

14. A can solve 80% of the problems given in an exam and B can solve 70%. What is the probability that at least one of them will solve a problem selected at random from the exam?
A. $\frac{21}{49}$
B. $\frac{12}{49}$
C. $\frac{2}{49}$
D. $\frac{47}{50}$

15. Eight horses are entered in a race. You randomly predict a particular order for the horses to complete the race. What is the probability that your prediction is correct?
A. $\frac{1}{8!}$
B. $\frac{1}{8}$
C. $\frac{8}{8!}$
D. None of the above

16. A bag contains 3 white balls and 2 black balls. Another bag contains 2 white and 4 black balls. A bag and a ball are picked random. The probability that the ball will be white is
A. $\frac{7}{11}$
B. $\frac{7}{30}$
C. $\frac{7}{15}$
D. $\frac{5}{11}$

17. What is the probability that the sum of two different single-digit prime numbers will not be prime?
A. 0
B. $\frac{1}{3}$
C. $\frac{2}{3}$
D. $\frac{1}{2}$

18. There are three similar boxes, containing
I. 6 black and 4 white balls.
II. 3 black and 7 white balls.
III. 5 black and 5 white balls.
If you choose, one of the three boxes at

random and from that particular box picks up a ball at random, and found that to be black, what is the probability that the ball picked up from the second box?
A. $\frac{14}{30}$
B. $\frac{3}{14}$
C. $\frac{7}{30}$
D. $\frac{1}{14}$

19. India plays two matches each with Pakistan and Australia. In any match the probabilities of India getting 0, 1 and 2 points are 0.45, 0.05 and 0.50 respectively. Assume that the outcomes are independent, the probability of India getting at least 7 points is
A. 0.04
B. 0.0375
C. 0.0875
D. 0.0650

20. There are 6 positive and 8 negative numbers. Four numbers are chosen at random and multiplied. The probability that the product is a positive number is
A. $\frac{500}{1001}$
B. $\frac{503}{1001}$
C. $\frac{505}{1001}$
D. $\frac{101}{1001}$

21. Four boys and three girls stand in queue for an interview. The probability that they stand in alternate positions is
A. $\frac{1}{35}$
B. $\frac{1}{34}$
C. $\frac{1}{17}$
D. $\frac{1}{68}$

22. An experiment succeeds twice often as it fails. What is the probability that in the next 5 trials there will be 4 successes?
A. 0
B. $\frac{16}{81}$
C. $\frac{80}{243}$
D. $\frac{16}{243}$

23. Two squares are chosen at random on a chess board. What is the probability that they have a side in common?
A. $\frac{1}{18}$
B. $\frac{64}{4032}$
C. $\frac{63}{164}$
D. $\frac{1}{9}$

24. The probability that an arrow fired from a point will hit the target is $\frac{1}{4}$. Three such arrows are fired simultaneously towards the target from that very point. What is the probability that the target will be hit?
A. $\frac{19}{64}$
B. $\frac{23}{64}$
C. $\frac{23}{67}$
D. $\frac{37}{64}$

25. There are three events A, B and C, one of which must and only can happen. If the odds are 8:3 against A, 5:2 against B, the odds against C must be
A. 13 : 7
B. 3 : 2
C. 43 : 34
D. 43 : 77

26. Four different objects 1, 2, 3, 4 are distributed at random in four places marked 1, 2, 3, 4. What is the probability that none of the objects occupy the place corresponding to its number?
A. $\frac{17}{24}$
B. $\frac{3}{8}$
C. $\frac{1}{2}$
D. $\frac{5}{8}$

27. A bag contains 10 balls numbered from 0 to 9. The balls are such that the person picking a ball out of the bag is equally likely to pick anyone of them. A person picked a ball and replaced it in the bag after noting its number. He repeated this process 2 more times. What is the probability that the ball picked first is numbered higher than the ball picked second and the ball picked

second is numbered higher than the ball picked third?
A. $\frac{3}{25}$
B. $\frac{18}{25}$
C. $\frac{4}{5}$
D. $\frac{1}{6}$

28. A die is biased in such a way that chance of a number showing up is proportional to the number. For example chance of getting a 6 is 6 times more than the chance of getting a 1 and thrice the chance of getting a 2. What is the probability of getting a prime number when this die is rolled?
A. $\frac{10}{36}$
B. $\frac{11}{36}$
C. $\frac{10}{21}$
D. $\frac{11}{21}$

29. Two cards are picked from a pack of cards in a random order without replacement what is the probability that first card is a King and the next card is a spade?
A. $\frac{4}{221}$
B. $\frac{1}{52}$
C. $\frac{4}{51}$
D. $\frac{1}{13}$

30. Three cards are drawn from a pack of cards without replacement. What is the probability that it consists of King, Queen or Ace?
A. $\frac{3}{13}$
B. $\frac{8}{3325}$
C. $\frac{1}{52}$
D. $\frac{11}{1105}$

31. Out of a pack of 52 cards one is lost; from the remainder of the pack, two cards are drawn and are found to be spade. Find the chance that the missing card is a spade.
A. $\frac{11}{50}$
B. $\frac{11}{49}$
C. $\frac{10}{49}$
D. $\frac{1}{5}$

32. In a shirt factory, processes A, B and C respectively manufacture 25%, 35% and 40% of the total shirts. Of their respective productions, 5%, 4% and 2% of the shirts are defective. A shirt is selected at random from the production of a particular day. If it is found to be defective, what is the probability that it is manufactured by the process C?
A. $\frac{16}{69}$
B. $\frac{25}{69}$
C. $\frac{28}{69}$
D. $\frac{27}{44}$

33. A man is known to speak the truth 3 out of 4 times. He throws a die and reports that it is a six. Find the probability that it is actually a six.
A. $\frac{3}{8}$
B. $\frac{1}{3}$
C. $\frac{2}{8}$
D. $\frac{4}{7}$

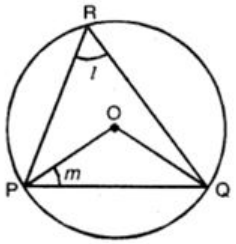
34. An insurance company insured 1500 scooter drivers, 2500 car drivers and 4500 truck drivers. The probability of a scooter, a car and a truck meeting with an accident is 0.01, 0.02 and 0.04 respectively. If one of the insured persons meets with an accident, find the probability that he is a scooter driver.
A. $\frac{7}{56}$
B. $\frac{4}{57}$
C. $\frac{6}{49}$
D. $\frac{3}{49}$

GEOMETRY

1. An angle is such that its supplement is thrice its complement. Find the angle?
2. The number of diagonals that can be drawn in a regular polygon is 14. Find the number of sides of polygon?
3. A cyclic rhombus must be ____
4. The interior and exterior angle of a regular polygon of six sides are ____
5. In a triangle ABC, BD is a median. If the area of triangle ABD is 6 sq. cm, find the area of triangle CBD?
6. The point of concurrence of the medians of the triangle is
   A. Orthocentre
   B. Incentre
   C. Circumcentre
   D. None of these
7. The angles of a quadrilateral are 60°, 80°, 100° and 120°. It must be a
   A. Trapezium
   B. Cyclic Quadrilateral
   C. Only B
   D. Either (A) or (B)
8. Find the height of a trapezium whose parallel sides are 14 cm and 8 cm and area is 154 cm^2.
   A. 7 cm
   B. 14 cm
   C. 10.5 cm
   D. 21 cm
9. A parallelogram has a base of 18 cm and an altitude of 16 cm. Find its area.
   A. 288 sq cm.
   B. 124 sq cm.
   C. 136 sq cm.
   D. 244 sq cm.
10. In a rhombus PQRS, PR = 24 cm and QS = 18 cm. Find the perimeter of the rhombus.
    A. 70 cm
    B. 60 cm
    C. 50 cm
    D. 80 cm
11. PQRS is a square. Equilateral triangle PQT is drawn inside and equilateral triangle PUS is drawn outside the square. Find TPU.
    A. 30°
    B. 45°
    C. 60°
    D. 90°
12. Bisectors of angle B and angle C of triangle ABC meet at O. If BOC = 130°, find $\angle A$.
    A. 65°
    B. 80°
    C. 60°
    D. 90°
13. Two parallel chords of equal length are drawn inside a circle of radius 13 cm. If they are 10 cm apart, then find the length of each of the two chords.
    A. 24 cm

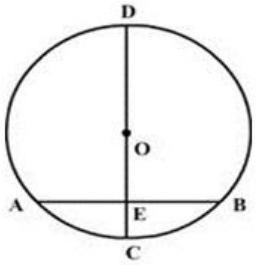
B. 18 cm
C. 12 cm
D. 6 cm

14. In the given figure, O is the center of the circle. PQ is a chord of the circle and R is any point on the circle. If $\angle PRQ = l$ and $\angle OPQ = m$, then find $l + m$.



A. 65°
B. 80°
C. 60°
D. 90°

15. In the given figure, the diameter CD of a circle with centre O is perpendicular to chord AB. If AB = 12 cm and CE = 3 cm, find the radius of the circle.



A. 5.5 cm
B. 7.5 cm
C. 9 cm
D. 6 cm

16. AB is a tangent drawn to a circle at B with centre O and radius 4.5 cm from a point A outside the circle. Find AO given that the area of the triangle ABO is 13.5 sq.cm.
A. 5.5 cm
B. 8.5 cm
C. 7.5 cm
D. 6.5 cm

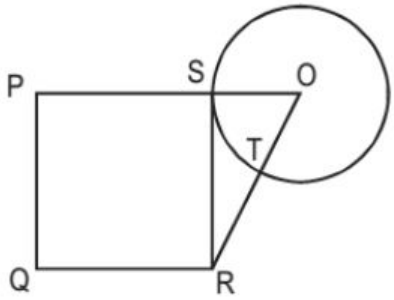
17. A rectangle with dimensions 6 m × 2.5 m is circumscribed by a circle. Find the diameter of the circle.
A. 5.5 m
B. 8.5 m
C. 7.5 m
D. 6.5 m

18. If 48 is one of the angles of a quadrilateral and the ratio of the other three angles is 11 : 24 : 43 then what is the sum of the least two angles?
A. 48
B. 92
C. 72
D. 24

19. A wire when bent in the shape of a square has its side as 22 cm. If the wire is made into a circle, find the difference of the areas of the circle and the square in sq.cm.
A. 148 sq. cm.
B. 156 sq. cm.
C. 132 sq. cm.
D. 124 sq. cm.

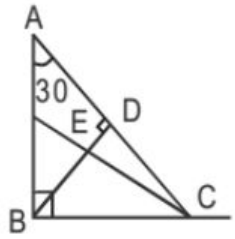
20. What is the difference between the areas of a circle of radius 10 cm and the regular hexagon inscribed in it?
A. 48.54 sq. cm.
B. 52.28 sq. cm.
C. 53.68 sq. cm.
D. 54.48 sq. cm.

21. PQRS is a square. SR is a tangent (at point S) to the circle with centre O and TR = OS. Then, the ratio of area of the circle to the area of the square is



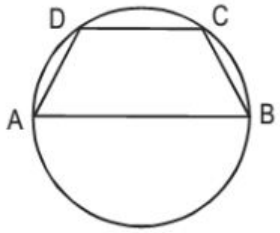
A. $\frac{\pi}{3}$
B. $\frac{11}{7}$
C. $\frac{3}{\pi}$
D. $\frac{7}{11}$

22. AB $\perp$ BC, BD $\perp$ AC and CE bisects $\angle C$, $\angle A$ = 30°. Then what is $\angle CED$?



A. 30°
B. 60°
C. 45°
D. 65°

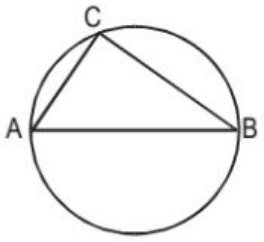
23. In the given figure, AB is diameter of the circle and points C and D are on the circumference such that $\angle CAD$ = 30° and $\angle CBA$ = 70°. What is $\angle ACD$?



A. 40°
B. 50°
C. 30°
D. 90°

24. The line AB is 6 metres in length and is tangent to the inner one of the two concentric circles at point C. It is known that the radii of the two circles are integers. The radius of the outer circle is ____, if AB is a chord to the outer circle.
A. 5 metres
B. 4 metres
C. 6 metres
D. 3 metres

25. The figure shows a circle of diameter AB and radius 6.5 cm. If chord CA is 5 cm long, find the area of $\triangle ABC$.

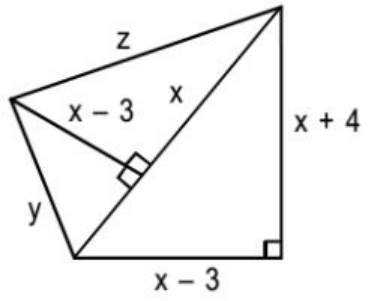


A. 60 sq. cm
B. 30 sq. cm
C. 40 sq. cm
D. 52 sq. cm

26. In a rectangle, the difference between the sum of the adjacent sides and the diagonal is half the length of longer side. What is the ratio of the shorter to the longer side?
A. $\sqrt{3} : 2$
B. $1 : \sqrt{3}$
C. 2 : 5
D. 3 : 4

27. In $\triangle ABC$, points P, Q and R are the midpoints of sides AB, BC and CA respectively. If area $\triangle ABC$, is 20 sq. units, find the area of $\triangle PQR$.
A. 10 sq units
B. $5\sqrt{3}$ sq units
C. 5 sq units
D. None of these

28. Based on the figure below, what is the value of x, if y = 10.

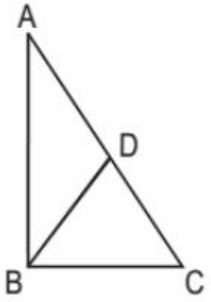


A. 10
B. 11
C. 12
D. None of these.

29. The area of an isosceles triangle is 12 sq. cm. If one of the equal sides is 5 cm long, mark all the options which can give the length of the base.
A. 4 cm
B. 6 cm
C. 8 cm
D. 9 cm

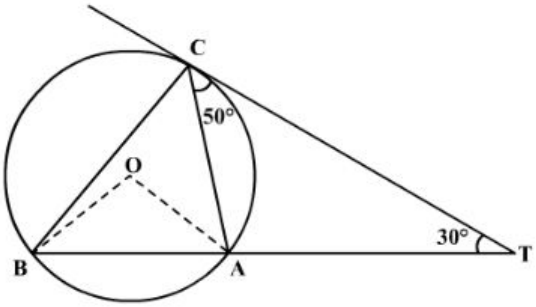
30. The interior angles of a polygon are in Arithmetic Progression. If the smallest angle is 120° and common difference is 5°, then number of sides in the polygon is:
A. 7
B. 8
C. 9
D. 11

31. In $\triangle ABC$, $\angle B$ is a right angle, AC = 6 cm, and D is the mid-point of AC. The length



of BD is
A. 4 cm
B. $\sqrt{6}$ cm
C. 3 cm
D. 3.5 cm

32. In the figure given below (not drawn to scale), A, B and C are three points on a circle with centre O. The chord BA is extended to a point T such that CT becomes a tangent to the circle at point C. If $\angle ATC = 30°$ and $\angle ACT = 50°$, then the angle $\angle BOA$ is



A. 100°
B. 150°
C. 80°
D. Cannot be determined

33. A ladder 25 metres long is placed against a wall with its foot 7 metres away from the foot of the wall. How far should the foot be drawn out so that the top of the ladder may come down by half of the total height if the foot is drawn out?
A. 6 metres
B. 8 metres
C. 8.75 metres
D. 14.93 metres

34. One side of an equilateral triangle is 24cm. The midpoints of its sides are joined to form another triangle whose midpoints are in turn joined to form still another triangle. This process continues indefinitely. Find the sum of the perimeters of all the triangles.

STATISTICS

1. Find the inter-quartile range of 1, 6, 7, 3, 5, 9, 15, 12, 27, 18, 19.
   A. 15
   B. 9
   C. 13
   D. 12

2. b - 3, b - 1, b + 2, b + 3, b + 4. The median of the five terms listed above is 5, where b is a constant. What is the average (arithmetic mean) of the five terms?
   A. 3
   B. 4
   C. 5
   D. 6

3. What is the median of the set of all three digit natural numbers such that the unit digit is greater than the tens digit which is greater than the hundred's digit?
   A. 263
   B. 258.5
   C. 345
   D. 278.5

4. Consider the set of numbers 11,3,6,3,5,3 and x. If the mean, median and mode of this set of numbers are in an non constant arithmetic progression. What are the number of possible values for x?
   A. 0
   B. 1
   C. 2
   D. None of the above

5. The arithmetic mean of 9 distinct integers is 87. If none of the numbers is more than 100 and the average of the smallest five numbers is 78. Find the minimum value of the sixth number.
   A. 86
   B. 90
   C. 96
   D. 98

6. An analysis of the monthly incentives received by 5 salesmen : The mean and median of the incentives is $7000. The only mode among the observations is $12,000. Incentives paid to each salesman were in full thousands. What is the difference between the highest and the lowest incentive received by the 5 salesmen in the month?
   A. $4000
   B. $13,000
   C. $9000
   D. $11,000

7. Positive integers from 1 to 45, inclusive are placed in 5 groups of 9 each. What is the highest possible average of the medians of these 5 groups?
   A. 25
   B. 31
   C. 15
   D. 26

8. An automated manufacturing unit employs N experts such that the range of their

monthly salaries is $10,000. Their average monthly salary is $7000 above the lowest salary while the median monthly salary is only $5000 above the lowest salary. What is the minimum value of N?
A. 10
B. 12
C. 14
D. 15

9. Five logs of wood have an average length of 100 cm and a median length of 116 cm. What is the maximum possible length, in cm, of the shortest piece of wood?
A. 50
B. 76
C. 84
D. 96

10. Consider the following sets:
L = $\{3, 4, 5, 5, 6, 7\}$
M = $\{2, 2, 2, 8, 8, 8\}$
N = $\{15, 15, 15, 15, 15, 15\}$
Rank those three sets from least standard deviation to greatest standard deviation.
A. L, M, N
B. M, L, N
C. M, N, L
D. N, L, M

11. An Olympic diver received the following scores: 6.0, 7.0, 7.5, 6.5 and 8.0. The standard deviation of these scores is in which of the following ranges?
A. 4 - 6.9
B. 2 - 3.9
C. 0 - 1.9
D. 7 - 7.9

12. Find the range for the following list of values: 13, 18, 13, 14, 13, 16, 14, 21, 13.
A. 9
B. 14
C. 13
D. 8

13. Three positive integers a, b, and c are such that their average is 20 and $a \leq b \leq c$. If the median is (a + 11), what is the least possible value of c?
A. 23
B. 21
C. 25
D. 26

14. The five number summary for scores on a statistics exam is 35, 68, 77, 83 and 97. In all 196, students took the test. About how many had scores between 77 and 83?
A. 39
B. 49
C. 98
D. Cannot be determined

15. The mean of 25 observations is 36. The mean of first 13 observations is 32 and that of last 13 observations is 39. What is the value of the 13^{th} observation?
A. 20
B. 32
C. 40
D. 23

16. In a moderately asymmetrical series, the values of arithmetic mean and mode are at 20.6 and 34.1 respectively. The value of the median is
A. 23.4
B. 28.0
C. 25.1
D. 35.3

17. The standard deviation of 10 values is 4. If each value is increased by 3, then find the variance of the new set of values.
A. 49
B. 16
C. 19
D. 7

18. Suppose that the average amount of sugar a person eats per year is 5 kg with a standard

deviation of 1.7 kg. How many standard deviations from the mean is the consumption of 14 kg of sugar?
A. About 3.00 standard deviations above the mean
B. About 3.00 standard deviations below the mean
C. About 2.94 standard deviations above the mean
D. About 5.29 standard deviations above the mean

19. The mean weight of a group of individuals is 120 pounds and the standard deviation of the weights of the individuals in this group is 0 pounds (zero pounds). Which of the following is a correct statement based on this information?
A.There is only one individual in this group.
B. Each individual in this group weighs 120 pounds.
C. All individuals in this group have the same weight, but not necessarily 120 pounds.
D. For the standard deviation to be zero, all individuals in the group must weigh zero pounds.

20. The following table shows the sales of DVD players made by a retail store each month last year.

Month	Number of Sales
January	25
February	43
March	39
April	28
May	29
June	35
July	32
August	46
September	28
October	43
November	51
December	63

What was the range?
A. 26
B. 28
C. 35
D. 38

21. A booklet has 12 pages with the following numbers of words: 271, 354, 296, 301, 333, 326, 285, 298, 327, 316, 287 and 314 What is the median number of words per page?
A. 301
B. 305.5
C. 307.5
D. 314

22. The median of the numbers 6, 3, 17, 28, 37, 6, 24 and x is 16. What are the mean and mode?
A. Mean = 16 and mode = 6
B. Mean = 17 and mode = 3
C. Mean = 17 and mode = 6
D. Mean = 20 and mode = 17

23. Ten friends scored the following marks in their end-of-year math exam (in percentage): 23, 37, 45, 49, 56, 63, 63, 70, 72 and 82. What was the variance of their marks?
A. 292.4
B. 284.6
C. 246.2
D. 268.6

24. What is the population standard deviation for the numbers: 75, 83, 96, 100, 121 and 125?
A. 16.9
B. 17.1
C. 17.6
D. 18.2

25. Ramiro did a survey of the number of pets owned by his classmates, with the following results.

Number of pets	Frequency
0	4
1	12
2	8
3	2
4	1
5	2
6	1

What was the standard deviation?

A. 1.38
B. 1.49
C. 1.60
D. 2.27

26. Find the variance of 8, 9, 10, 11, 12, 13, 14
    A. 2
    B. 5
    C. 4
    D. 6

27. Find the standard deviation of 12, 8, 8, 10, 6, 10, 6, 6, 6
    A. $\frac{40}{3}$
    B. $\frac{\sqrt{40}}{3}$
    C. $\frac{10}{3}$
    D. $\frac{\sqrt{10}}{3}$

28. Find the Quartile Deviation of the following 15 items in a shopping mall: 3, 4, 5, 15, 18, 20, 25, 28, 30, 31, 32, 34, 35, 38, 40.
    A. 9
    B. 9.75
    C. 10
    D. 9.5

29. Find the standard deviation of the following data.
    20, 20, 20, 20, 20, 20, 20, 20, 20, 25
    A. 1
    B. 2.5
    C. 1.5
    D. -1

30. Find the Inter Quartile Range of the following observations.
    1, 4, 16, 17, 35, 36, 47
    A. 34
    B. 32
    C. 36
    D. 17

31. Find the geometric mean of 2, 6, 18, 54, 162
    A. 12
    B. 18
    C. 16
    D. 15

32. For a given distribution, mean is 26 and mode is 24. Find the median of the data.
    A. $\frac{76}{3}$
    B. 56
    C. 45
    D. 18

33. Find the mode of the data.
    3, 4, 5, 3, 6, 5, 4, 3, 4, 3 is
    A. 5
    B. 4
    C. 3
    D. Cannot be determined

34. Find quartile deviation of 15, 9, 10, 12, 16, 4, 21
    A. 3.5
    C. 3
    C. 5
    D. 6

35. The value of correlation coefficient lies between
    A. -1 and 0
    B. 0 and 1
    C. -1 and 1
    D. None of these

36. A correlation of -0.5 would indicate a scatter diagram in which the slope is
    A. Upwards
    B. Downwards
    C. Curvilinear
    D. None of these

2

PERMUTATIONS & COMBINATIONS

1. If I have kept six different books on a shelf, in how many different ways can I arrange them?
   A. 6
   B. 24
   C. 120
   D. 720

2. In how many ways can the letters of the word "LEADER" be rearranged?
   A. 72
   B. 144
   C. 360
   D. 720

3. In how many ways can the letters of the word "OPTICAL" be rearranged such that vowels are always together?
   A. 120
   B. 720
   C. 2140
   D. 5360

4. In how many ways can the letters of the word "SIGNATURE" be rearranged such that vowels are never together?
   A. 14400
   B. 28800
   C. 43400
   D. 43200

5. In how many ways can the letters of the word "MACHINE" be arranged such that vowels occupy only even positions?
   A. 144
   B. 120
   C. 360
   D. 180

6. The number of 6-digit numbers that can be formed from 0, 1, 5, 6, 7 and 8 in which the first digit is not 0 are
   A. 120
   B. 600
   C. 720
   D. 800

7. The cause of productivity loss are to be written around a circle in the annual report. In how many ways can an analyst write them around the circle, if the number of causes are 5?
   A. 120
   B. 24
   C. 60
   D. 12

8. In how many ways can a group of 5 men and 2 women be selected from a group of 7 men and 5 women?
   A. 210
   B. 63
   C. 120
   D. 144

9. A box contains 2 white balls, 3 black balls and 4 red balls. In how many ways can three balls be drawn from the box if at least one black ball has to be included in the draw?
   A. 32
   B. 48

C. 64
D. 63

10. How many four digit numbers can be formed from the digits 2, 3, 5, 6, 7 and 9 which are divisible by 4 and none of the digits is repeated?
A. 96
B. 88
C. 80
D. 144

11. There are five types of envelopes and nine types of stamps in a post office. How many ways are there to buy an envelope and a stamp?
A. 20
B. 45
C. 54
D. 9

12. Find the number of ways in which the letters of the word 'EQUATION' be written such that no two consonants are together?
A. 126000
B. 36000
C. 10000
D. 14400

13. How many different ways can the letters of the word 'ENGINEERING' be rearranged such that the vowels always come together?
A. 4200
B. $7! \times 5!$
C. 16840
D. 240!

14. There are 8 black balls and 8 white balls. In how many ways can these balls be arranged in a row so that balls of different colors are alternate?
A. $8 \times 7!$
B. $2 \times 8! \times 7!$
C. $2 \times 8!^2$
D. $8!^2$

15. How many 4 digit numbers divisible by 5 can be formed with the digits 0, 1, 2, 3, 4, 5,6 and 6? (Repetition not allowed, which means 6 can be used 2 times other numbers can be used only once)
A. 220
B. 249
C. 216
D. 288

16. There are 20 people among whom 2 are sisters. Find the number of ways in which we can arrange them around a circle so that there is exactly one person between the 2 sisters.
A. 18!
B. $2! \times 19!$
C. 19!
D. $2! \times 18!$

17. If you jumble and arrange the word LABOUR in all possible ways and arrange all the words so formed as in a dictionary. What will be the rank of the word LABOUR?
A. 275
B. 251
C. 240
D. 242

18. A student selects 3 digits from numbers 1 to 9 such that they are in strictly increasing order. How many selections have the property that the three digits form an arithmetic progression?
A. 7
B. 12
C. 16
D. 14

19. How many numbers can be made with digits 0, 7, 8 which are greater than 0 and less than a million?
A. 496
B. 486

C. 1084
D. 728

20. In how many ways can 5 apples (identical) be distributed among 4 children? (Some children may get no apples.)
A. 56
B. 144
C. 200
D. 256

21. The number of non-negative integral solutions of the equation a + b + c + d = 20 will be
A. 1208
B. 4024
C. 1140
D. 1771

22. How many ways can a group of 4 men and 3 women be selected from a group containing 7 men and 6 women so that Ms .X refuses to be in the same group as Mr. Y?
A. 500
B. 375
C. 350
D. 275

23. There are 4 different letters and 4 addressed envelopes. In how many ways can the letters be put in the envelopes so that at least one letter goes to the correct address?
A. 64
B. 23
C. 15
D. 63

24. A manager has to send 10 letters to 10 clients. She writes the 10 envelopes and addresses the 10 envelopes and then calls in her secretary and asked her to put the letters in the envelopes and mail them. In how many ways can the manager send the letter such that she gets exactly 6 letters correct?
A. 210
B. 1890
C. 10^6
D. 6^{10}

25. There are six friends who take 6 different buses which go in six different routes from a particular junction. Given that, one person can board only one bus at a time. How many combinations are possible such that none of the six friends reaches the correct destination?
A. 265
B. 360
C. 719
D. 714

26. In how many ways is it possible to choose a white square and a black square on a chessboard so that the squares must not lie in the same row or column?
A. 56
B. 896
C. 60
D. 768

27. How many natural numbers less than 4300 can be formed with the digits 0, 1, 2, 3, 4 (if repetitions are not allowed)?
A. 113
B. 158
C. 154
D. 159

28. In how many ways can you pack 5 different gifts in 3 identical boxes such that no box is empty, if any of the boxes may hold all of the gifts?
A. 20
B. 25
C. 30
D. 600

29. A polygon has 54 diagonals. Find the number of sides.
A. 10
B. 14

C. 12
D. 9

30. In how many ways can the letters of the word EDUCATION be rearranged so that the relative position of the vowels and consonants remain the same as in the word EDUCATION?
A. 576
B. 14400
C. 2880
D. 144

31. In how many ways can the letters of the English alphabet be arranged so that there are 7 letters between the letters A and B?
A. $31! \times 2!$
B. ${}^{24}P_7 \times 18! \times 2$
C. $24! \times 32$
D. ${}^{26}P_7 \times 20! \times 2$

32. At a business meeting, every person shakes each other's hands once. How many people were present for the meeting if there was a total of 91 handshakes?
A. 14
B. 15
C. 24
D. 46

33. The number of permutations of the letters a, b, c, d, e, f, g such that neither the pattern 'beg' nor 'acd' occurs is
A. 4806
B. 420
C. 2408
D. None of these

34. How many teams of 4 persons can be formed out of 7 men, 3 women and 5 boys if each team has a man and contains at least one woman?
A. 322
B. 350
C. 224
D. None of these

35. The number of ways which a mixed double tennis game can be arranged amongst 9 married couples if no husband and wife play in the same is
A. 1514
B. 1512
C. 3024
D. 3028

36. How many numbers can be formed from 1, 2, 3, 4, 5 (without repetition), when the digit at the unit's place must be greater than that in the ten's place?
A. 54
B. 60
C. 17
D. $2 \times 4!$

37. Some boys are standing on a circle at distinct points. Each possible pair of persons, who are not adjacent, sing a 3 minute song, one pair after another. The total time taken by all the pairs to sing is 1 hour. Find the number of boys?
A. 6
B. 7
C. 8
D. 9

38. In an examination, a question paper consists of 12 questions divided into two parts (i.e) Part I and Part II containing 5 and 7 questions respectively. A student is required to attempt 8 question in all selecting at least 3 from each part. In how many ways can a student select the questions?
A. 320
B. 420
C. 520
D. 620

11

CRYPTARITHMETIC

1. Find the value of $3 \times A + 5 \times B + 4 \times C \times D$.

$$\begin{array}{cccc} A & 4 & C & 2 \\ - \; 3 & B & 4 & 8 \\ \hline 2 & 7 & 0 & D \end{array}$$

A. 133
B. 143
C. 153
D. 169

2. Find the valued of $T + G + O + U$.

$$\begin{array}{cc} T & O \\ +G & O \\ \hline O & U & T \end{array}$$

A. 11
B. 12
C. 13
D. 14

3. Find the value of $A + P + P + L + E$.

$$\begin{array}{cccc} & E & A & T \\ + & T & H & A & T \\ \hline A & P & P & L & E \end{array}$$

A. 12
B. 13
C. 14
D. 15

4. Find the value of $A + B + C$.

$$\begin{array}{cc} A & A \\ + B & B \\ + C & C \\ \hline A & B & C \end{array}$$

A. 15
B. 18
C. 21
D. 12

5. Find the value of $R + H + O$. (Assume $S = 8$)

$$\begin{array}{ccccc} C & O & M & E & S \\ - & & S & H & E \\ \hline & H & E & R & E \end{array}$$

A. 15
B. 18
C. 14
D. 12

6. Decrypt HUNT.

$$\begin{array}{cccc} & & N & O \\ & +G & U & N \\ & + & N & O \\ \hline H & U & N & T \end{array}$$

A. 1280
B. 1086
C. 1082
D. 1820

7. Find the value C.

```
  A B C D
+E B C B
-------
A F G A G
-------
```

A. 2
B. 3
C. 4
D. 5

8. Find the value of $T \times E + I \times R \times H - S$.

```
THIS+
  IS
----
HERE
----
```

A. 221
B. 178
C. 157
D. 149

9. If $T = 0$, then what will be the value of $TEE + TEE$?

```
E A T+
E A T+
E A T
-----
B E E T
-----
```

A. 088
B. 174
C. 066
D. 154

10. Find the value of $G + R + O + S + S$.

```
K A N S A S+
    O H I O
-----------
O R E G O N
-----------
```

A. 11
B. 20
C. 12
D. 10

11. Find the value of $P + E + A + C + E$.

```
  U S S R
+   U S A
---------
P E A C E
---------
```

A. 9
B. 10
C. 11
D. 12

12. Find the value of $E + N + E + R + G + Y$.

```
  P O I N T
+   Z E R O
-----------
E N E R G Y
-----------
```

A. 14
B. 15
C. 16
D. 17

13. Find the value of $Y + U + R + E$.

```
  Y O U R
+   Y O U
---------
H E A R T
---------
```

A. 13
B. 15
C. 17
D. 19

14. Find the value of $S + I + X + T + Y$.

```
F O R T Y
  + T E N
  + T E N
---------
S I X T Y
---------
```

A. 64
B. 24
C. 22
D. 21

10

CODING & DECODING

1. If TSEREVE and NOITACUDE stands for EVEREST and EDUCATION, how will you code REDFORT?
   A. RECFORT
   B. TEDFNOR
   C. REDFORT
   D. TROFDER

2. If CARPET is coded as TCEAPR, then the code for NATIONAL would be
   A. NLATNOIA
   B. LANOITAN
   C. LNAANTOI
   D. LNOINTAA

3. If in a certain code BACK is coded as 5431, LABLE is coded as 14510 what will be the code for BALL?
   A. 1345
   B. 5411
   C. 1354
   D. 2130

4. If JAPAN is coded KCSES, then the code for CASTLE will be
   A. DIJOBT
   B. DJKRDP
   C. DKMSGR
   D. DCVXQK

5. If in a certain language CARROM is coded as BZQQNL, how is HOUSE written the code?
   A. GNTRD
   B. GNTSD
   C. GMTRD
   D. GNSRD

6. If PAINTER is written in a code language as NCGPRGP, then REASON would be written as
   A. PCYQMN
   B. PGYQMN
   C. PGYUMP
   D. PGYUPM

7. If 'COUNSEL' is to 'BITIRAK' so also 'GUIDANCE' is to
   A. FOHYZJBB
   B. FOHYBJBB
   C. FOHZZKAB
   D. FORHYZJB

8. If EARTH can be coded as 'IUSBF' how can GLOBE be coded?
   A. HMPCF
   B. FMPCH
   C. FPMCH
   D. FCPMH

9. If DOOR = 25, LOWER = 37, TOWER = 18, then OVER = ?
   A. 81
   B. 45
   C. 60
   D. 06

10. In a certain code, DEER is written as 96. How is SONG written in that code?
    A. 155
    B. 165

C. 175
D. 185

11. If 'MEANDER' is coded as '4515459', then 'MATHEMATICS' is coded as
A. 6 7 2 5 0 6 2 3 0 7 6
B. 4 1 2 8 5 4 1 2 9 3 1
C. 4 5 0 3 8 4 0 1 8 5 4
D. 5 7 1 5 9 4 1 3 9 5 5

12. If % x # = 20; # x & = 32; % x & = 40; * x & = 72. Then what is the value of * ?
A. 8
B. 7
C. 9
D. 6

13. In a certain code language, if the value of 'INVADER' = 42 and 'SECURE' = 30, then what is the value of 'SITUATION'?
A. 81
B. 63
C. 72
D. 90

14. In a certain code language, if the value of 38 + 15 = 66 and 29 + 36 = 99, then what is the value of 82 + 44 = ?
A. 77
B. 80
C. 88
D. 92

15. In a certain code language, if the value of 'CUSTOM' = 19 and 'LABOUR' = 96, then What is the value of the word 'WORK'?
A. 42
B. 76
C. 46
D. 67

16. In a certain code language, if the value of 13 * 14 = 23 and 28 * 57 = 81, then what is the value of 65 * 49 = ?
A. 100
B. 90
C. 110
D. 120

17. In a code language 'How are you' is coded as '3 4 5', 'Who are you' is coded as '4 1 3', 'They are good' is coded as '6 4 9' and 'She is good' is coded as '7 9 2'. What is the code for 'you'?
A. 3
B. 2
C. 4
D. 5

18. If in a certain code language, $#@ means good sweet fruit; %$& means good red rose and *@% means rose and fruit which of the following digits stands for sweet in that language?
A. $
B. @
C. #
D. %

Directions for Q19 - Q21:
Study the following information to answer the given questions.
In a certain code
'Basic material is available' is written as 'de kl ce dp'.
'Basic questions are solved' is written as 'sa kc bk de'.
'Almost questions available solved' is written as 'dp fc bk sa'.
'are material good enough' is written as 'kl ts kc mt'.

19. Which of the following is the code for 'is are'?
A. kl dp
B. sa fc
C. ce de
D. ce kc

20. If 'questions make difference' is coded as 'cl km sa', then which of the following is the code for 'solved are available'?

A. kc bk sa
B. dp mt kl
C. bk kc dp
D. de fc dp

21. What can be the code of 'almost material unique'?
A. fc bk op
B. fc de kl
C. kl op mt
D. fc kl jf

Directions for Q22 - Q24:
Study the following information carefully and answer the following questions.
In alphabetical series A - Z, each letter except vowels and Z is assigned a different number from 1 - 10 (for example B is coded as 1, C - 2, ..., M - 10)and again those numbers get repeated(for example N - 1, P - 2, ... so on).
Also each vowel and Z is assigned a different symbol viz. #, $, %, @, &, *.
For example:
'Remain am Brown' is coded as 4 ∗ 10@#1 @10 14$81
'You are good' is coded as 10$% @4* 5$$3
'Zenith in topper' is coded as &*1#66 #1 6$22*4.

22. What can be the code of 'bankers' ?
A. 1@18 ∗ 52
B. 1@81 ∗ 45
C. 1@18 ∗ 54
D. 1@18 ∗ 45

23. What can be the code of 'digital library' ?
A. 3#5#6$9 9#41@410
B. 3#5#6@9 9#14@410
C. 3#5#6@9 9#14@401
D. 3#5#6@9 9#14@140

24. What can be the code of 'complexity'?
A. 2$1029 ∗ 96#10
B. 2$1029 ∗ 9#160
C. 2$1029 ∗ 9#610
D. 2$1029 ∗ 9#601

Direction for Q25 & Q26:
Study the following information carefully to answer the given questions

Letter	M	P	F	Q	V	L	U
Code	@	0	7	*	9	%	1

G	S	E	X	K	T	Z	C
#	5	!	?	3	©	8	$

Conditions
i.If the first letter is a vowel and the last letter is a consonant, the codes are to be interchanged.
ii. If the first letter is consonant and the last letter is a vowel, both are to be coded as the code for the last letter.
iii. If both the first and the last letters are vowels, both are to be coded as '&'.

25. QGMCLE
A. !#@$%!
B. &#%$?&
C. 7#?$%8
D. ∗#@$%!

26. PEZTVL
A. %!8©90
B. @0!5#?
C. 0!8©9%
D. 1!∗?9%

27. If Shirt is called Specks, Specks is called Trouser, Trouser is called hat, Hat is called Table, Table is called Comb, Comb is called Watch, then which of the following is used to wear on head?
A. Comb
B. Table
C. Watch
D. trouser

28. If SAND is called AIR, Air is called PLATEAU, PLATEAU is called WELL, WELL is called ISLAND and Island is called SKY, then from where will a woman draw water from?
A. WELL
B. ISLAND
C. SKY
D. AIR

29. In a certain code language, 'YIELD' is written as 'YHBGX' and 'FORT' is written as 'POME'. How is 'HEIGHT' written in that code language?
A. NCDFCG
B. NCCECG
C. NBCFCG
D. NCCFCG

Directions for Q30 - Q33:
Study the following information to answer the given questions.
In a certain code,
'types windows tired compute' is written as 'v16# v18# y04& e16!'.
'examine english contact history' is written as 'j20& g12% g13% e20@'.
'excel execute India allow' is written as 'g03# k04% g03! c12&'.
'insurance types symbols final' is written as 'u02& k18@ h14@ v16#'.

30. What is the code for 'tired'?
A. e16!
B. y04&
C. v18#
D. v16#

31. What is the code for 'three' ?
A. v18@
B. v18#
C. u18#
D. v20#

32. What is the code for 'product editing'?
A. g20% r04!
B. g20# y04!
C. s20@ r04!
D. g20% r03!

33. What is code for 'clipboard' ?
A. u02&
B. e04&
C. e02#
D. e02&

Directions for Q34 - Q37:
Study the following information to answer the given questions.
In a certain code,
'shunt three grammar some' is written as 'g#15 t@63 h@35 h#08'.
'talent demand back theme' is written as 'y@24 g#15 g@48 w@48'
'father where too Delhi' is written as 'u@48 w#15 d#15 g#03'.
'incredible proceed loan citi' is written as 'k@63 x#08 r#80 o@24'.

34. Which is the code for 'comment' ?
A. e@35
B. x@63
C. x#23
D. d#48

35. What is the code of 'theme'?
A. g@48
B. w@48
C. g#15
D. k@63

36. What is the code of 'the credit loan' ?
A. r#80 x@48 g#03
B. o@24 u@15 g#03
C. k@63 t#48 r#08
D. o@24 x@48 g#03

37. Which is the code for 'software games'?
A. i@48 t@35
B. h#48 t@35
C. h@48 t#15
D. g#48 t#08

38. What is the value of A, B, C and D in the following matrix?

A	17	14	11
B	15	16	21
C	12	19	22
23	D	13	8

A. A = 20, B = 10, C = 18, D = 9
B. A = 10, B = 18, C = 9, D = 10
C. A = 20, B = 10, C = 9, D = 18
D. A = 10, B = 20, C = 18, D = 9

39. In this question, a word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in the two given matrices. The columns and rows of Matrix I are numbered from 0 to 4 and those of Matrix II from 5 to 9. A letter from these matrices can be represented first by its row and then the column number e.g. B can be represented by 20, 43, etc. Similarly you have to identify the correct set for the 'RAIN'.

Matrix I

	0	1	2	3	4
0	D	O	B	A	I
1	O	B	A	I	D
2	B	A	I	D	O
3	A	I	D	O	B
4	I	D	O	B	A

Matrix II

	5	6	7	8	9
5	W	N	R	M	L
6	N	R	M	L	W
7	R	M	L	W	N
8	M	L	W	N	R
9	L	W	N	R	M

A. 57, 12, 31, 56
B. 57, 21, 23, 79
C. 66, 44, 42, 96
D. 75, 30, 31, 87

40. In this question, a word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in the two given matrices. The columns and rows of Matrix I are numbered from 0 to 4 and those of Matrix II from 5 to 9. A letter from these matrices can be represented first by its row and then the column number. Similarly you have to identify the correct set for the word 'BOLD'.

Matrix I

	0	1	2	3	4
0	D	O	B	A	I
1	O	B	A	I	D
2	B	A	I	D	O
3	A	I	D	O	B
4	I	D	O	B	A

Matrix II

	5	6	7	8	9
5	W	N	R	M	L
6	N	R	M	L	W
7	R	M	L	W	N
8	M	L	W	N	R
9	L	W	N	R	M

A. 41, 66, 23, 55
B. 34, 24, 68, 32
C. 23, 57, 30, 68
D. 14, 89, 12, 78

BLOOD RELATIONS, DIRECTIONS, & SERIES

1. Pointing to a man in a photograph, Asha said, "His mother's only daughter is my mother". How is Asha related to that man?
   A. Wife
   B. Sister
   C. Niece
   D. Nephew

2. Rahul told Anand, "Yesterday I defeated the only brother of the daughter of my paternal grandmother." Whom did Rahul defeat?
   A. Son
   B. Brother
   C. Cousin
   D. Father

3. If 'A$B' means 'A is brother of B' '*A@B*' means 'A is wife of B', '*A#B*' mean 'A is daughter of B' and '*A!B*' means 'A is father of B' then which of the following expressions indicates the relationship 'K is father-in-law of H'?
   A. *H@J$L#P!K*
   B. *H@J$P!L#K*
   C. *H@J$L#K!P*
   D. *H@P$J!L#K*

4. X - Z means X is the mother of Z; X* Z means X is the father of Z; X + Z means X is daughter of Z. Now if M - N * T + Q then which of the following is false?
   A. T is N's daughter
   B. M is mother in law of Q
   C. T is granddaughter of M
   D. N is wife of Q

5. In a beach, Rina is walking with her children's and there she met Samuel and Susa. Samuel introduces Susa to those children as "this person is the daughter of your mother's father's mother and is my sister". How is Samuel and Susa related to Rina?
   A. Brother, sister
   B. Uncle, aunt
   C. Cousin, aunt
   D. None of these

6. In one family there are several children in which each girl has as many brothers as she has sisters but each boy has sisters which are twice of brothers he has. Then how many brothers and sisters are they?
   A. 4 Brothers, 3 Sisters
   B. 4 Sisters, 3 Brothers
   C. 4 Brothers, 4 Sisters
   D. Cannot say

7. In Mr. Mehta's family, there are one grandfather, one grandmother, two fathers, two mothers, one father-in-law, one mother-in-law, four children, three grandchildren, one brother, two sisters, two sons, two daughters and one daughter-in-law. How many members are there in Mr. Mehta's family?
   A. 17 members
   B. 23 members
   C. 9 members
   D. 7 members

8. A family comprises seven members namely M, N, O, P, Q, R, and S. Among them four are adults and three are children. Of the three children, only R and S are girls. M and P are brothers and M is a pilot. Q is an airhostess married to one of the brothers and has two children. N is married to P and S is their child. Who is O?
   A. M's son
   B. R's father
   C. Q's daughter
   D. P's son

9. A group comprising five persons namely M, N, O, P, and Q includes one professor of civil engineering and one of mechanical engineering. In the group, M and P are unmarried women. No woman is either a chemical or a mechanical or a civil engineer. There is just one married couple in the group with Q as the husband. N is the brother of O and is neither a chemical engineer nor a mechanical engineer. What is the profession of Q?
   A. Civil Engineer
   B. Chemical Engineer
   C. Mechanical Engineer
   D. Cannot be determined

10. There are six persons A, B, C, D, E and F. C is the sister of F. B is the brother of E's husband. D is the father of A and grandfather of F. There are two fathers, three brothers and a mother in the group. Which of the following is a group of brothers?
    A. ABF
    B. ABD
    C. BFC
    D. BDF

11. Arora has three children – Sangeeta, Vimal and Ashish. Ashish married to Monika, the eldest daughter of Mr. and Mrs. Roy. The Roys married their youngest daughter to the eldest son of Mr. and Mrs. Sharma, and they had two children named Amit and Shashi. The Roys have two more children, Roshan and Vandana, both elder to Veena. Sameer and Ajay are sons of Ashish and Monika. Rashmi is the daughter of Amit. How is Mrs. Roy related to Ashish?
    A. Aunt
    B. Mother-in-law
    C. Mother
    D. Sister-in-law

12. A child is looking for his father. He went 90 metres in the East before turning to his right. He went 20 meters before turning to his right again to look for his father at his uncle's place 30 metres from this point. His father was not there. From here he went 100 metres to the North before meeting his father in a street. What is the smallest distance between the starting point and his father's position?
    A. 80 metres
    B. 100 metres
    C. 140 metres
    D. 260 metres

13. A direction pole was on the crossing. Due to an accident the pole turned in such a manner, that the pointer which was showing east started showing south. One traveler went to the wrong direction thinking it to be west. In what direction was he actually traveling?
    A. South
    B. East
    C. West
    D. North

14. Read the following information carefully and answer the questions which follow:
    I. Point M is 5 meters towards the North of Point L.
    II. Point P is 10 meters towards the East of point M.
    III. Point N is 6 meters towards the East of

point L.
IV. Point O is 11 meters towards the West of point N.
If a person walks 5 m towards the South from point P and then walks after taking a right turn, which of the following points would he reach second?
A. L
B. M
C. N
D. O

15. It is known that Mr.Prithivi's school bus was facing North when it reached his school. It is also known that after starting from Prithivi's house, it turned right twice and then to the left before it reached the school. In what direction the bus was facing when it left the stop in front of Prithivi's house?
A. East
B. North
C. South
D. West

16. After 4 p.m. on a sunny day when Ramesh was returning from his school, he saw his uncle coming in the opposite direction. His uncle talked to him for some time. Ramesh saw that the shadow of his uncle was to his right side. Which direction was his uncle facing during their talk?
A. North
B. South
C. East
D. Data inadequate

17. Five friends A, B, C, D and E are staying in the same locality. B's house is to the east of A's house and to the north of C's house. C's house is to the west of D's house. D's house is in which direction with respect to A's house?
A. South-East
B. North-East
C. East
D. Data inadequate

18. A is 20 m away from C in east direction. B is standing in south of A and is facing south direction and distance between A and B is 30 m. Now to the right of B, covering 32 m towards west, D is standing. D is eating ice-cream standing on its position and facing north. After eating ice cream D starts moving towards south-east direction covering 13 m and reaches to the position of E. What is the distance between D and C and C is in which direction with respect to D?
A. 32.3m, north-west
B. 31.7m, north-west
C. 32.3m, north-east
D. 31.7m, north-east

19. There are 7 family members P, Q, R, S, T, U and V standing in ground in which there are 2 married couples. P is sister of Q who is maternal grandson of T. Maternal grandfather of Q is standing 3m to the right of Q who is facing north. The father of S has 2 maternal grandchildren. V is facing north. V is standing 4m to the south of maternal grandson of U. S is 2m to the right of V. P is 1m south of S and 1m west of U. R is sister-in-law of V and standing 9m to the north of her mother. V is father of P. U is a Female. Maternal Granddaughter of U is standing in which direction with respect to her husband?
A. South - East
B. South
C. North
D. South - West

20. Read the following information carefully to answer the questions that follow. The questions are based on following coding formats:
$ - North, @ - South, # - East, % - West, ! - Either 3 or 8 m, & - Either 4 or 9 m, © -

Either 1 or 6 m.
Examples: P @ Q means P is South of Q.
P $% Q means P is North - West of Q.
P#! Q means P is East of Q at a distance of either 3 or 8 m.
Conditions given are as: I. A % !B
II. A $!C
III. C %& D
IV. E & B
V. D © F
VI. E # F
If distance between points P and D is 8 m, P $ D, P % B, find the distance between points P and B.
A. 4 m
B. 5 m
C. 3 m
D. 8 m

21. Complete the series.
1CV, 5FU, 9IT, ... , 17OR
A. 13KS
B. 13IS
C. 13JS
D. 13LS

22. What is the next number in the following sequence?
3,4,12,6,1,8,8,4,5,6,30,?
A. 15
B. 25
C. 10
D. 5

23. Find the next number.
507, 169, 248, 62, 36, 12, 168, 42, 168, ?
A. 56
B. 42
C. 64
D. 46

24. Complete the series.
2, 9, 64, 625, 7776, ___?
A. 117649
B. 116497
C. 117643
D. None of these

25. Complete the series.
3, 8, 13, 24, 41,___?
A. 70
B. 66
C. 64
D. 62

26. What comes next in the following sequence?
0,1,1,2,0.5,2,2,4,2,2,4,3,7,2,___?
A. 4
B. 3.5
C. 3
D. 5

27. Find the next term of the series.
7, 14, 55, 110,___?
A. 121
B. 115
C. 125
D. 120

28. x_p_y___pzy___pzy
A. xyyyzz
B. xyzyzy
C. yxzyxy
D. yzxyxy

29. _yz_zx_xyx_z_zxzxy
A. xyzyy
B. yyyzz
C. yxzyx
D. xyyzz

30. ABC_E_BCE_ABE_EA_
A. DBEEE
B. BAEEE
C. DCEEE
D. DAEEE

31. Choose the odd one out.
26, 63, 124, 215, 343, 511
A. 343
B. 124

ANSWERS

PERMUTATIONS & COMBINATIONS

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

PROBABILITY

1. A	2. A	3. C	4. D	5. D	6. B	7. B	8. B	9. C	10. D
11. B	12. D	13. A	14. D	15. A	16. C	17. C	18. B	19. C	20. C
21. A	22. C	23. A	24. D	25. C	26. B	27. A	28. C	29. B	30. D
31. A	32. A	33. A	34. D	35. B	36. B	37. A	38. B	39. A	40. A

GEOMETRY

1. 45°	2. 7	3. Square	4. 120° & 60°	5. 6 sq.cm	6. D	7. D	8. B	9. A	10. B
11. D	12. B	13. A	14. D	15. B	16. C	17. D	18. B	19. C	20. D
21. A	22. B	23. A	24. A	25. B	26. D	27. C	28. B	29. B & C	30. C
31. C	32. A	33. D	34. A	35. C	36. C	37. D	38. A	39. B	40. A
41. B	42. D	43. A	44. A	45. A	46. C	47. C	48. B	49. C	50. D
51. B	52. C	53. B	54. B	55. D	56. C	57. B	58. B	59. C	60. C

STATISTICS

1. C	2. B	3. B	4. C	5. C	6. D	7. B	8. D	9. B	10. B
11. C	12. D	13. C	14. C	15. D	16. C	17. A	18. D	19. B	20. D
21. C	22. C	23. B	24. D	25. B	26. C	27. B	28. D	29. C	30. B
31. B	32. A	33. C	34. A	35. C	36. B	37. A	38. C	39. B	40. D
41. A	42. A	43. B	44. D	45. B					

BLOOD RELATIONS, DIRECTIONS, & SERIES

1. C	2. D	3. C	4. D	5. B	6. A	7. D	8. A	9. C	10. A
11. B	12. B	13. D	14. A	15. D	16. B	17. A	18. C	19. D	20. A
21. D	22. A	23. A	24. A	25. A	26. B	27. A	28. D	29. A	30. D
31. A	32. B	33. A	34. C	35. B	36. B	37. B	38. D	39. A	40. D

CODING & DECODING

1. D	2. C	3. B	4. D	5. A	6. C	7. A	8. D	9. D	10. B
11. B	12. C	13. C	14. B	15. B	16. C	17. A	18. C	19. D	20. C
21. D	22. D	23. B	24. C	25. A	26. C	27. B	28. B	29. D	30. C
31. B	32. A	33. D	34. B	35. C	36. D	37. B	38. C	39. A	40. B

CRYPTARITHMETIC

1. A	2. A	3. A	4. B	5. C	6. C	7. D	8. C	9. A	10. D
11. A	12. D	13. C	14. C	15. B	16. A	17. C	18. D	19. C	20. A
21. B	22. A	23. C	24. D	25. D	26. D	27. A	28. A	29. B	30. A