

1. The sum of all two digit numbers which are not divisible by 11 is
(A) 4410 (B) 4400 (C) 4311 (D) 4301.

2. Suppose a plant grows in height by 5% every day compared to the height of the previous day. If the height of the plant is 80 cm on a particular day, what will the height 3 days later ?
(A) 92 cm (B) 92.21 cm (C) 92.61 cm (D) 95 cm

3. Suppose the radius of a circle, the length of a rectangle and the breadth of the rectangle are increased by the same factor. If the proportionate increases in the areas of the circle and the rectangle are P and Q respectively, which between P and Q is larger ?
(A) P
(B) Q
(C) Both are equal.
(D) Depends on the ratio of the radius of the circle to the mean of the length and the breadth of the rectangle.

4. Among 200 faculty members in an academic Institute, 150 live in the campus, 130 are below 50 years and 160 are non-vegetarian. Then the minimum number and the maximum number of faculty members satisfying all three criteria are
(A) 0 & 80 (B) 0 & 130 (C) 40 & 80 (D) 40 & 130.

5. Suppose one has to predict the outcome of each of 10 games: win, tie or loss for a team. Among the different predictions that can be made for these 10 games, how many will have correct predictions for exactly 5 games ?
(A) 252 (B) 8064 (C) 4032 (D) 32

6. Suppose for a positive number a , f defined as

$$f(x) = x^2 + x + 1, \text{ if } |x| \leq a$$
$$ax + b, \text{ otherwise}$$

is continuous everywhere, then

- (A) $a = 1, b = 2$
(B) $a = \frac{1}{2}, b = 1$
(C) $a = 1, b$ cannot be uniquely determined
(D) $a = \frac{1}{2}, b$ cannot be uniquely determined.
7. Suppose the probability of obtaining a head in tossing a coin is 0.3. If an individual continues to toss a coin till he/she has obtained at least one head and one tail, the probability that the total number of tosses required to satisfy the objective is 3 is
- (A) 0.21 (B) 0.42 (C) 0.063 (D) 0.147.
8. Which of the following is a factor of $x^6 + 27$?
- (A) $x + 3$ (B) $x - 3$ (C) $x^2 + 3x - 3$ (D) $x^2 - 3x + 3$
9. Suppose a, b and c are sides of a triangle such that
- $$a^2 + b^2 + c^2 = ab + bc + ca$$
- Which of the following statements is true?
- (A) The triangle is necessarily equilateral.
(B) The triangle is isosceles but not necessarily equilateral.
(C) The triangle is necessarily acute angled but can have unequal sides.
(D) The triangle can be right angled.
10. The number of negative roots of the equation $x^2 - |x| - 12 = 0$ is
- (A) 0 (B) 1 (C) 2 (D) 4.

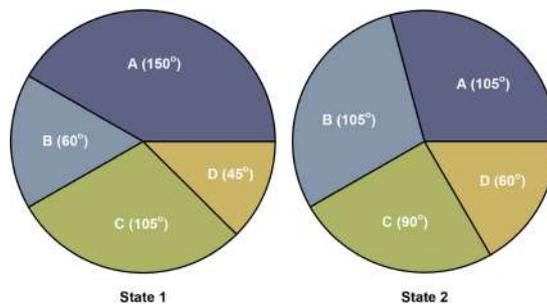
11. The last digit of the number $99! - \{98! + 97! + \dots + 1!\}$ is
 (A) 1 (B) 3 (C) 5 (D) 7.
12. Suppose n is a positive integer. Define S and T as follows:

$$S = {}^n C_1 + {}^n C_2 + \dots + {}^n C_n, \quad T = {}^n C_1^2 + {}^n C_2^2 + \dots + {}^n C_n^2$$
 (A) S is odd for all n but T is not odd for all n .
 (B) T is odd for all n but S is not odd for all n .
 (C) Both S and T are odd for all n .
 (D) Neither S nor T is odd for all n .
13. Consider the following two statements about the greatest common divisor (g.c.d.) and the least common multiplier (l.c.m.) of two positive integers.
 (i) the product of the g.c.d. and the l.c.m. is equal to the product of the numbers;
 (ii) the l.c.m. is divisible by the g.c.d.
 (A) Both statements are true.
 (B) Statement (i) is true, but statement (ii) is not necessarily true.
 (C) Statement (ii) is true, but statement (i) is not necessarily true.
 (D) Neither of the statements is necessarily true.
14. Consider five numbers x_1, x_2, x_3, x_4 and x_5 such that the mean of the numbers is x_0 . Suppose that the mean of the squared deviations of the numbers from their mean is equal to x_0^2 . The ratio of the sum of squares of all the numbers to the square of the sum of the numbers is
 (A) 1:2 (B) 1:4 (C) 1:5 (D) 2:5.

15. Suppose each of a set of students carried out a chemical experiment and recorded the final temperature in degrees Celsius and the weight of the products obtained in grams. Each of them then converted his/her recorded temperature to degrees Fahrenheit and weight to milligrams. If the correlation coefficients between temperature and weight are calculated before and after the conversion, which will be higher ?
- (A) Before the conversion.
 - (B) After the conversion.
 - (C) Both will be equal.
 - (D) Depends on the number of students carrying out the experiment.
16. In an examination, 30% of the male students and 30% of the female students obtained a score greater than 80%. The overall percentage of students who have obtained a score greater than 80%
- (A) can be determined with the available information
 - (B) cannot be determined unless the ratio of male to female students is known
 - (C) cannot be determined unless either the number of male students or the number of female students is known
 - (D) cannot be determined unless the number of male students and the number of female students are known.
17. If statement A is true, statement B is true but statement C is false. If statement C is true, statements D and E are both false. It follows that
- (A) if statement B is false, statement D is false
 - (B) if statement E is true, statements A and B are both true
 - (C) all five statements cannot be simultaneously false
 - (D) each of statements B, C, D and E can be individually true with the other three statements false.

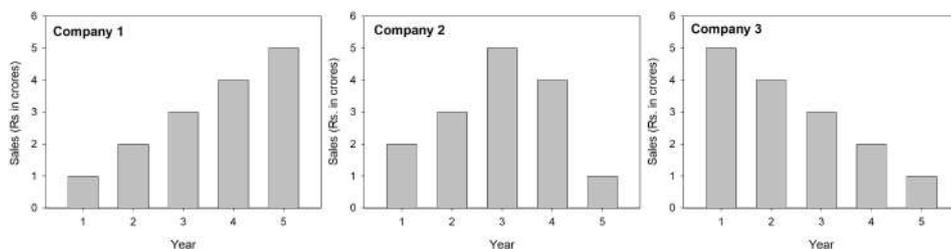
18. A committee meets on the 30th of every month provided it is not a Sunday. In a particular calendar year, the committee met only once before May 1. Then the committee will
- (A) meet in May as well as in June
 (B) meet in May but not in June
 (C) not meet in May but will meet in June
 (D) meet neither in May nor in June.

19. The following two pie-charts show the relative land area allocated for four different crops A, B, C and D in two different states of India



The total land area allocated to the four crops in the second state is twice that in the first state. For which crop is the difference between the actual allocated land areas in the two states the maximum ?

- (A) Crop A (B) Crop B (C) Crop C (D) Crop D
20. The bar diagrams below show the annual sales (in crores INR) of three companies over five consecutive financial years.



Which company had the least variation in its sales over the five years?

- (A) Company 1 (B) Company 2
 (C) Company 3 (D) All three companies had same variation

Questions 26-30 pertain to the following passage which is an abridged version of a famous speech:

Long years ago, we made a tryst with destiny, and now the time comes when we shall redeem our pledge, not wholly or in full measure, but very substantially. At the stroke of the midnight hour, when the world sleeps, India will awake to life and freedom. A moment comes, which comes but rarely in history, when we step out from the old to new, when an age ends, and when the soul of a nation, long suppressed, finds utterance...

...The ambition of the greatest man of our generation has been to wipe every tear from every eye. That may be beyond us, but so long as there are tears and suffering, so long our work will not be over. And so, we have to labour and to work, and work hard, to give reality to our dreams. Those dreams are for India, but they are also for the world.

26. The speech refers to a
(A) victory (B) tragedy (C) transition (D) revolt.
27. Which word in the above speech means “meeting” ?
(A) tyrst (B) redeem (C) stroke (D) utterance
28. What according to the speech has been the ambition of the greatest man of our generation ?
(A) To avoid anything that may hurt others.
(B) To reduce hardships of others.
(C) To remove all obstacles to others’ happiness.
(D) To help realize others’ dreams.

29. The phrase “when the world sleeps, India will awake to life and freedom” means:
- (A) the rest of the world may be indifferent to India’s awakening
 - (B) India will have to work hard even if the rest of the world does not cooperate
 - (C) India will have a new dawn that is full of promises
 - (D) India will be eradicated of suffering.
30. What does the last sentence of the speech imply ?
- (A) India needs to dream separately for itself as well as for the rest of the world.
 - (B) India needs to take the leadership in realizing the dreams of the world.
 - (C) Realizing India’s dreams may not be sufficient to realize the dreams of the rest of the world.
 - (D) Dreams transcend national boundaries.