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*** ENGLISH ***

Direction (Q. No. 1 to 7) : In these questions, out of the four alternatives, choose the one which best expresses the meaning of the given word.

Q.1 Amenable
(1) Religious   (2) Tactful
(3) Responsive   (4) Kind hearted

Q.2 Trail-blazing
(1) Interesting   (2) Pioneering
(3) Changing   (4) Challenging

Q.3 Nefarious
(1) Clever   (2) Necessary
(3) Wicked   (4) Short sighted

Q.4 Augmented
(1) Changed   (2) Restored
(3) Increased   (4) Curtailed

Q.5 Emulate
(1) Imitate   (2) Modify
(3) Neglect   (4) Instigate

Q.6 Fictitious
(1) Real   (2) Fabricated
(3) Genuine   (4) Authentic

Q.7 Tenacious
(1) Resolute   (2) Doubtful
(3) Vacillating   (4) Nervous

Direction (Q. No. 8 to 12) : Fill in the blanks with a word from amongst the choices given.

Q.8 Please write your name _____ ink.
(1) by   (2) from
(3) with   (4) in

Q.9 He _____ the knot.
(1) opened   (2) closed
(3) loose   (4) untied

Q.10 Each of the boys must read in _____ turn.
(1) their   (2) your
(3) his   (4) its

Q.11 He has lost the match _____ his rival.
(1) from   (2) with
(3) to   (4) by

Q.12 He _____ his father's murder.

(1) avenge   (2) revenge
(3) avenged   (4) revenged

Direction (Q. No. 13 to 16) : In these questions, out of the four alternatives, choose the one which can be substituted for the given words/sentences.

Q.13 Fear of enclosed spaces.
(1) Agoraphobia   (2) Acrophobia
(3) Claustrophobia   (4) Xenophobia

Q.14 The use of many words where only a few are necessary.
(1) Circumvention   (2) Circumlocution
(3) Circumscription   (4) Circumspection

Q.15 One who is compassionate and benevolent.
(1) Pusillanimous   (2) Resilient
(3) Altruist   (4) Narcissist

Q.16 A person who is reserved and uncommunicative in speech.
(1) Loquacious   (2) Talkative
(3) Taciturn   (4) Gabby

Q.17 Find the correctly spelt word out of the four words given.
(1) Conscientitious   (2) Conscientious
(3) Concientitious   (4) Consciencitious

Q.18 Find the correctly spelt word out of the four words given.
(1) Persecution   (2) Persecucion
(3) Parsecution   (4) Pursecution

Direction (Q. No. 19 to 23) : Four alternatives are given for the idiom/phrase in italics in the sentence. Choose the one which best expresses the meaning of the idiom/phrase

Q.19 He is *in the doldrums* ever since his pet died.
(1) in low spirits   (2) within door
(3) in angry mood   (4) in a crazy state

Q.20 They *hit it off straight away* , Daddy and Walter.
(1) quarrel with each other
(2) threaten each other
(3) became friendly immediately
(4) became angry immediately

Q.21 You have an exam tomorrow? *Break a leg!*
(1) work hard   (2) take rest
(3) good luck   (4) work smartly

Q.22 My friend decided to *call it a day*.
(1) take a nap   (2) continue working

(3) hurriedly finish the work   (4) stop working

Q.23 She was *on cloud nine* after completing the project.
(1) proud   (2) ecstatic
(3) tired   (4) hungry

Direction (Q. No. 24 to 27) : In these questions, out of the four alternatives, choose the one which is opposite to the meaning of the given word.

Q.24 Enigmatic
(1) Cryptic   (2) Mysterious
(3) Unhealthy   (4) Obvious

Q.25 Solicit
(1) Sponge   (2) Postulate
(3) Approach   (4) Avoid

Q.26 Adorable
(1) Charming   (2) Despicable
(3) Amenable   (4) Amicable

Q.27 Urbane
(1) Rural   (2) Affable
(3) Uncivilized   (4) Debonair

Direction (Q. No. 28 to 29) : A part in the following sentences is underlined, which may or not be correct. Improve the sentence by choosing one of the options. If no improvement is possible choose the option accordingly.

Q.28 Anisha is very active and will finish the work *within no time*.
(1) with no time   (2) from no time
(3) in no time   (4) no improvement

Q.29 The thieves broke *down* the house.
(1) into   (2) out
(3) up   (4) no improvement

Direction (Q. No. 30 to 32) : Reorder P, Q, R, S to make a meaningful sentence.

Q.30 P: are the key words
Q: for
R: practice and consistency
S: Mathematics
(1) PQRS   (2) QSPR
(3) RPQS   (4) SRQP

Q.31 P: he can't hear
Q: being completely
R: anything
S: deaf
(1) SPQR   (2) QSPR
(3) PQRS   (4) SRPQ

Q.32 P: had
Q: eaten the fish than I started feeling sick
R: I
S: no sooner
(1) PSRQ   (2) SRPQ
(3) SPRQ   (4) PRSQ

Direction (Q. No. 33 to 40) : In these questions, you have two brief passages with 4 questions following each passage. Read the passage carefully and choose the best answer out of the four alternatives.

PASSAGE – 1 : The dog fence in Australia has been erected to keep out hostile invaders in this case hosts of yellow dogs called dingoes. The empire it preserves is that of wool growers. Yet the fence casts a much broader ecological shadow. For the early explorers, a kangaroo or wallaby sighting marked a noteworthy event. Now try not to see one. Without a native predator there is no check on the marsupial population. The kangaroos are now more cursed than the dingoes. They have become rivals of sheep, competing for water and grass. The State Governments now cull more than three million kangaroos a year to keep Australia's national symbol from overrunning the pastoral lands.

Q.33 The fence is meant to keep the
(1) Kangaroo in and the dingo out
(2) Kangaroo in and the sheep out
(3) Sheep in and the kangaroo out
(4) Sheep in and the dingo out

Q.34 Australia's national symbol is
(1) Kangaroo   (2) Wallaby
(3) Sheep   (4) Dingo

Q.35 What has led to the unchecked growth of the marsupial population?
(1) The building of fences
(2) The absence of a native predator
(3) The culling of kangaroos
(4) The availability of water and grass

Q.36 How many kangaroos are culled in Australia every year?
(1) 3 lakhs   (2) 30 lakhs
(3) 3 crores   (4) 30 crores

PASSAGE – 2 : There were three kinds of boarders in the convent. The first class boarders, who were given a breakfast of cereal, eggs and toast, meat at lunch time, snacks at tea and pudding after supper; the second class girls, who had only cereal at the breakfast, rice and fish curry at lunch and no pudding at supper; the third class boarders, who got only a gruel made of maize in the morning, rice at lunch and gruel again at night. Worse off than even the third class boarders were the children without parents. They were the ones who cleaned the

lavatories, swept the droppings of the turkeys and the dead leaves from the kitchen yard, chopped firewood, helped in the kitchen and ate only two meals of gruel a day. They were white and exuded the smell of rancid coconut oil which they had applied to their dusty hair. These children were nearly always busy filling up the wooden tubs in the many bathrooms that they hated drawing water from the well for their own baths. They therefore bathed only once a week .The oldest of these children was a 70 years old lady called Rocky Mariam who cooked food for all of them. Her laughter resembled the cackle of birds. She was called Felicitas and was respected by all the children.

Q.37 The fact that the orphans were treated in such a harsh manner shows that the members running the convent were
(1) Discriminatory   (2) Miser
(3) Indifferent   (4) Pusillanimous

Q.38 The orphans bathed only once a week because
(1) They had no regard for cleanliness
(2) They were not allowed to take bath everyday
(3) They were not permitted to fill water for their baths
(4) They hated to fill water for themselves

Q.39 The lavatories were cleaned by
(1) The orphans
(2) The first class boarders
(3) The second class boarders
(4) The third class

Q.40 The cook was known as
(1) Felicitas   (2) a strict lady
(3) Rocky Mariam   (4) Both (1) and (3)

*** MATHEMATICS ***

Q.41 If b and c are odd integers, then the equation has $x^2 + bx + c = 0$ has
(1) Two odd roots
(2) Two integer roots, one odd and one even.
(3) No integer roots
(4) None of these

Q.42 If $\alpha^2 = 5\alpha - 3$, $\beta^2 = 5\beta - 3$, then value of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$
(1) $\frac{19}{3}$ (2) $\frac{25}{3}$
(3) $\frac{-19}{3}$ (4) None of these

Q.43 Mean of n numbers $x_1, x_2, x_3, \ldots \ldots \ldots, x_n$ is m. If x_n is replaced by x, then new mean is:
(1) $m - x_n + x$ (2) $\frac{(n-1)m + x}{n}$
(3) $\frac{nm - x_n + x}{n}$ (4) $\frac{m - x_n + x}{n}$

Q.44 If the area of three adjacent faces of cuboid are x, y and z respectively, then the volume of cuboid is:
(1) xyz   (2) $\sqrt{xyz}$
(3) 3xyz   (4) $\sqrt{3xyz}$

Q.45 The radius of a sphere is r cm. It is divided into two equal parts. The whole surface area of two parts will be:
(1) $8\pi r^2 \text{ cm}^2$ (2) $4\pi r^2 \text{ cm}^2$
(3) $3\pi r^2 \text{ cm}^2$ (4) $6\pi r^2 \text{ cm}^2$

Q.46 To draw a pair of tangents which are inclined to each other at an angle of 35°, it is required to draw tangents at the end of these two radii of the circle, the angle between which is:
(1) 105°   (2) 140°
(3) 70°   (4) 145°

Q.47 Value of $2(\sin^6\theta + \cos^6\theta) - 3(\sin^4\theta + \cos^4\theta) + 1$
(1) 0   (2) - 1
(3) 6   (4) None of these

Q.48 If $\cos(81 + \theta)^\circ = \sin\left(\frac{k}{3} - \theta\right)^\circ$, where $'\theta'$ an acute angle is, then the value of k is:
(1) 18°   (2) 9°
(3) 27°   (4) 81°

Q.49 The perimeter of a triangle with vertices (0,4), (0,0) and (3,0) is
(1) 12   (2) 5
(3) 11   (4) $7 + \sqrt{5}$

Q.50 The angles of elevation of the top of a tower from two points distant s & t from its foot are complementary, then the height of tower is:
(1) st   (2) $\sqrt{st}$
(3) s^2t^2 (4) $\frac{s}{t}$

Q.51 For which values of a and b, will the following pair of linear equations have infinitely many solutions?
$x + 2y = 1, (a - b)x + (a + b)y = a + b - 2$
(1) a = 2, b = 1   (2) a = 2, b = 2
(3) a = - 3, b = 1   (4) a = 3, b = 1

Q.52 If $d_1, d_2 (d_2 > d_1)$ be the diameters of two concentric circles and c be the length of a chord of a circle which is tangent to the other circle, then
(1) $d_2^2 = c^2 + d_1^2$ (2) $d_2^2 = c^2 - d_1^2$
(3) $d_1^2 = c^2 + d_2^2$ (4) $d_1^2 = c^2 - d_2^2$

Q.53 A circle drawn with origin as the centre passes through $\left(\frac{13}{2}, 0\right)$. The point which does not lie in the interior of the circle is
(1) $\left(\frac{-3}{4}, 1\right)$ (2) $\left(2, \frac{7}{3}\right)$
(3) $\left(5, \frac{-1}{2}\right)$ (4) $\left(-6, \frac{5}{2}\right)$

Q.54 For the following distribution

C.I	0-10	10-20	20-30	30-40	40-50
f	20	30	40	42	18

The sum of lower limits of the modal class and the median class is
(1) 20   (2) 30
(3) 40   (4) 50

Q.55 $\frac{A}{3}$ is an integer but $\frac{A}{6}$ is not. $\frac{B}{5}$ is an integer but $\frac{B}{10}$ is not. Which of the following may not be an integer?
(1) $\frac{5A - 3B}{15}$ (2) $\frac{5A - B}{20}$
(3) $\frac{5A - 3B}{30}$ (4) $\frac{5A - B}{10}$

Q.56 If $25 \leq x \leq 49$ and $y = \frac{x^2 + 3\sqrt{x}\,(x + 9) + 81}{x + 6\sqrt{x} + 9}$, then y satisfies:
(1) $18 \leq y \leq 36$ (2) $20 \leq y \leq 45$
(3) $19 \leq y \leq 38$ (4) $23 \leq y \leq 20$

Q.57 Find the number of factors of 1225.
(1) 6   (2) 4
(3) 9   (4) 2

Q.58 AB is a chord of circle with centre O. M is the midpoint of AB and P is a point on BA produced. If PB is 8 cm and PA is 3 cm, then what is the difference of PM^2 and AM^2 in cm^2?
(1) 20   (2) 40
(3) 26   (4) 24

Q.59 If the circumference of one circle is $\frac{5}{2}$ times that of the other, how many times the area of the smaller circle is the bigger one?
(1) $\frac{125}{8}$ (2) $\frac{25}{4}$
(3) $\frac{15}{4}$ (4) $\frac{125}{4}$

Q.60 If $x\sqrt{243} = y\sqrt{867}$, where x and y are co-prime numbers, then the value of (x - y) is:
(1) 3   (2) 4
(3) 8   (4) 6

Q.61 If $a^3 = 1 + 7$, $3^3 = 1 + 7 + b$ and $4^3 = 1 + 7 + c$, where a, b and c are different positive integers, then the value of $a + b + c$ is:
(1) 77   (2) 58
(3) 790   (4) 68

Q.62 If $(x^2 + x - 2)$ is the HCF of the expression $(x - 1)(2x^2 + ax + 2)$ and $(x + 2)(3x^2 + bx + 1)$, then the values of a and b is:
(1) $a = 3, b = 4$ (2) $a = 5, b = -4$
(3) $a = 3, b = 5$ (4) $a = 5, b = 6$

Q.63 LCM of two prime numbers x and y $(x > y)$ is 161.

The values of $3y - x$ is:
(1) 2   (2) - 2
(3) - 5   (4) 62

Q.64 A vessel of 80 liters is filled with milk and water. 70% of milk and 30% of water is taken out of the vessel. It is found that the vessel is vacated by 55%. Find the initial quantity of milk and water.
(1) 50 L, 30 L   (2) 50 L, 60 L
(3) 20 L, 40 L   (4) None of these

Q.65 The dimensions of the floor of a room are 36 m $\times 24$ m. Its floor is to be covered by square tiles of 12 cm. Find the minimum number of tiles.
(1) 70000   (2) 80000
(3) 60000   (4) None of these

Q.66 The perimeter of an isosceles triangle is 52 cm and each of its equal sides is 16 cm. Find the length of the longest altitude to one of its equal sides.
(1) $5\sqrt{29}$ cm   (2) $7.5\sqrt{29}$ cm
(3) $2\sqrt{39}$ cm   (4) $2.5\sqrt{39}$ cm

Q.67 The minute hand of a clock is 17.5 cm long. Find the area swept by it between 10:20 am and 10:45 am. Take $\left[\pi = \frac{22}{7}\right]$
(1) $401\frac{1}{24}$ cm^2 (2) $482\frac{7}{24}$ cm^2
(3) $444\frac{5}{24}$ cm^2 (4) None of these

Q.68 A circle is placed in a rectangle such that it touches both the lengths of the rectangle. If the length of the rectangle is two times the diameter of the circle, then find the ratio of the area of the rectangle and the area of circle. Take $\left[\pi = \frac{22}{7}\right]$
(1) 14 : 11   (2) 44 : 21
(3) 22 : 7   (4) 28 : 11

Q.69 If an athlete runs 1800 m around a circular path of circumference 250 m, then find the angle covered by the athlete in radians.
(1) $\frac{18\pi}{5}$ radian   (2) $\frac{72\pi}{5}$ radian
(3) $\frac{54\pi}{5}$ radian   (4) $\frac{36\pi}{5}$ radian

Q.70 If $cosec\theta$ and $cot\theta$ are the roots of the equation $cx^2 + bx + a = 0$ then which of the following is true?
(1) $b^4 = 4ab^2c + c^4$ (2) $b^4 = 4ab^2c - c^4$
(3) $c^4 = 4ab^2c + b^4$ (4) $b^4 + c^4 = 4ab^2c$

Q.71 If $\frac{\sqrt{144}}{12^2} + \frac{24^2}{\sqrt{576}} + \frac{\sqrt{5184}}{36^2} = $ x, then value of x?
(1) $20\frac{5}{36}$ (2) $24\frac{7}{36}$
(3) $22\frac{7}{36}$ (4) $24\frac{5}{36}$

Q.72 In an examination A got 10% marks less than B,

who got 25% marks more than C, Who got 20% marks less than D. If A got 360 marks out of 500 marks, the percentage of marks obtained by D was:
(1) 72%   (2) 80%
(3) 64%   (4) 60%

Q.73 If a sum of money in 4 years amounts to $\frac{11}{10}$ times then what will be the rate of interest?
(1) $3\frac{1}{2}\%$ (2) $2\frac{1}{2}\%$
(3) $4\frac{1}{2}\%$ (4) $3\frac{1}{4}\%$

Q.74 Average weight of a class of 35 students is 47.5 kg. If weight of the teacher is included then average weight increases by 500 gm. What is the weight of the teacher?
(1) 47.5 kg   (2) 48 kg
(3) 48.5 kg   (4) 65.5 kg

Q.75 In what time a 100 m long train moving with a speed of 30 km/hr crosses a man standing beside the railway line?
(1) 12 seconds   (2) 10 seconds
(3) 14 seconds   (4) 6 seconds

Q.76 There is a circular path around a circular field. If the difference between the circumference of the field and path is 66 m then what is the width of the path? Take $\left[\pi = \frac{22}{7}\right]$
(1) 21 m   (2) 10.5 m
(3) 13.5 m   (4) 16.5 m

Q.77 If $a = 2^3 \times 3$, $b = 2 \times 3 \times 5$, $c = 3^n \times 5$ and LCM $(a, b, c) = 2^3 \times 3^2 \times 5$, then n = ?
(1) 1   (2) 2
(3) 3   (4) 4

Q.78 The remainder on dividing given integers 'a' and 'b' by 7 are respectively 5 and 4, then the remainder when 'ab' is divided by 7 is
(1) 5   (2) 4
(3) 0   (4) 6

Q.79 The sets of Punjabi, Hindi and English books have to be stacked in such a way that all the books are stored subject wise and height of each stack is the same. The number of Punjabi books is 240, the number of Hindi books is 960 and the number of English books is 1024. The number of stack of Punjabi, Hindi and English assuming that the books are of same thickness are respectively:
(1) 15, 60, 64   (2) 64, 15, 60
(3) 60, 15, 64   (4) None of these

Q.80 If one of the zeroes of a quadratic polynomial of the form $x^2 + ax + b$ is the negative of the other, then which of the following is correct?
(1) Polynomial has no linear factor.
(2) Constant term of polynomial is negative.

(3) Both (1) and (2) are correct.
(4) Neither (1) or (2) is correct.

Q.81 Assertion: The linear equations $x - 2y - 3 = 0$ and $3x + 4y - 20 = 0$ have exactly one solution.

Reason: The linear equations $2x + 3y - 9 = 0$ and $4x + 6y - 18 = 0$ have a unique solution.

(1) Assertion is false but Reason is true.
(2) Assertion is true but Reason is false.
(3) Assertion and Reason are true.
(4) Assertion and Reason are false.

Q.82 The real roots of the equation $x^{\frac{2}{3}} + x^{\frac{1}{3}} - 2 = 0$ are:
(1) 1, 8   (2) $-1, -8$
(3) $-1, 8$ (4) $1, -8$

Q.83 The first and the last term of an A.P are 'a' and 'l' respectively. If 'S' is the sum of all the terms of the A.P and the common difference is $\frac{l^2 - a^2}{k - (l - a)}$, then 'k' is equal to
(1) S   (2) 3S
(3) 2S   (4) None of these

Q.84 If three points $[0, 0]$, $[3, \sqrt{3}]$ and $[3, \alpha]$ form an equilateral triangle, then 'α' equal to:
(1) 2   (2) - 3
(3) - 4   (4) None of these

Q.85 Assertion: If in a circle, radius of the circle is 3 cm & the distance of a point from centre of a circle is 5 cm, then length of the tangent from that point will be 4 cm.

Reason: $(\text{hypotenuse})^2 = (\text{base})^2 + (\text{height})^2$

(1) Both assertion and Reason are true.
(2) Reason is false explanation of Assertion.
(3) Both Assertion and Reason are false.
(4) Assertion is False but Reason is true.

Q.86 From the following ratios, a line segment cannot be divided into A ratio.
(1) $A \rightarrow \sqrt{5} : \frac{1}{\sqrt{5}}$ (2) $A \rightarrow \frac{2}{\sqrt{5}} : \frac{\sqrt{5}}{\sqrt{2}}$
(3) $A \rightarrow \frac{1}{5} : 1$ (4) $A \rightarrow \frac{1}{\sqrt{5}} : \frac{1}{\sqrt{5}}$

Q.87 A hexagonal pyramid is 24 m high. Side of the base is 4 m. The volume of the pyramid is
(1) $192\sqrt{3}$ m^3 (2) $8\sqrt{3}$ m^3
(3) $32\sqrt{3}$ m^3 (4) $24\sqrt{3}$ m^3

Q.88 The median of a set of 9 distinct observations is 20.5. If each of the largest 4 observations of the set is increased by 2, then the median of the new set:
(1) Is increased by 2

(2) Is decreased by 2
(3) Is two times the original median.
(4) Remains the same as that of original set.

Q.89 If a number x is chosen at random from numbers: -2, -1, 0, 1, 2. Then, the probability that $x^2 < 2$ is:
(1) $\frac{2}{5}$
(2) $\frac{4}{5}$
(3) $\frac{1}{5}$
(4) $\frac{3}{5}$

Q.90 Three identical cones with base radius 'r' are placed on their bases so that each is touching the other two. The radius of the circle drawn through the vertices is
(1) Smaller than r
(2) Equal to r
(3) Larger than r
(4) Depends on the height of the cones

Q.91 Two poles of height 6 m and 11 m stand vertically upright on a plane ground. If the difference between their feet is 12 m, then distance between their tops
(1) 12m
(2) 13m
(3) 14m
(4) 11m

Q.92 In given figure, express x in terms of a, b and c
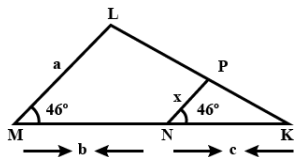
(1) $x = \frac{ab}{a+b}$
(2) $x = \frac{ac}{b+c}$
(3) $x = \frac{bc}{b+c}$
(4) $x = \frac{ac}{a+c}$

Q.93 A pendulum swings through an angle of 30° and describes an arc 19.8 cm in length. Find the length of pendulum in cm.
(1) 27.8 cm
(2) 17.8 cm
(3) 29.8 cm
(4) 37.8 cm

Q.94 Which among the following options is one of the factors of $x^2 + \frac{x}{6} - \frac{1}{6}$?
(1) $3x + 1$
(2) $2x + 1$
(3) $x - \frac{1}{5}$
(4) $x - \frac{1}{2}$

Q.95 If $\sec\theta + \tan\theta = x$, then $\tan\theta$ is
(1) $\frac{x^2 - 1}{2x}$
(2) $\frac{x^2 + 1}{2x}$
(3) $\frac{x^2 - 1}{x}$
(4) $\frac{x^2 + 1}{x}$

Directions (Question 96 to 100). : In a Christmas party, you have to make arrangements for the accommodation of 150 persons. For this purpose, you plan to build a conical tent in such a way that each person has 4 square m of the shape of the ground and 20 m^3 of the air to breathe.
Based on the above situation, choose the correct option:

Q.96 Volume of the conical tent can be obtained by using the formula:
(1) $\pi r^2 h$
(2) $\frac{2}{3}\pi r^3$
(3) $\frac{1}{3}\pi r^2 h$
(4) $\frac{4}{3}\pi r^3$

Q.97 Curved surface area of a right circular cone where symbols have their usual meaning is:
(1) $\pi r^2 l$
(2) $\pi r l$
(3) $2\pi r l$
(4) πr^2

Q.98 Total surface area of a right circular cone where symbols have their usual meaning is
(1) $2\pi r h + \pi r^2$
(2) $2\pi r + \pi r^2$
(3) $\pi r l + \pi r^2$
(4) $2\pi r^2 h$

Q.99 Two solid right circular cones have the same height and radii of their bases are r$_1$ and r$_2$. They are melted and recast into a cylinder of same height. Radius of base of the cylinder is:
(1) $\sqrt{\frac{r_1^2 + r_2^2}{3}}$
(2) $\sqrt{\frac{r_1^2 - r_2^2}{3}}$
(3) $\sqrt{\frac{2r_1^2 - r_2^2}{3}}$
(4) $\sqrt{\frac{r_1^2 - 2r_2^2}{3}}$

Q.100 What is the height of conical tent which you are planning to make?
(1) 5 m
(2) 15 m
(3) 10 m
(4) 20 m