Section 1 - PaperI-English Language

Passage Questions (1-5)

Read the passage and answer the questions that follow:

I was Orual the eldest daughter of Trom, King of Glome. The city of Glome stands on the left hand of the river Shennit to a traveller who is coming up from the south-east, not more than a day's journey above Ringal, which is the last town southward that belongs to the land of Glome. The city is built about as far back from the river as a woman can walk in the third of an hour, for the Shennit overflows her banks in the spring. In summer there was then dry mud on each side of it, and reeds, and plenty of waterfowl. About as far beyond the ford of the Shennit as our city is on this side of it you come to the holy house of Ungit.

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1) Where is the city of Glome?

A) On the left-hand of the river Shennit.
B) On the right-hand side of the river Shennit.
C) On theanti-clock side of the holy house of Ungit.
D) On the left-hand side of the holy house of Ungit.

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2) Who is the speaker in the passage?

A) A man.
B) King of Glome.
C) A farmer.
D) Orual.

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3) The river Shennit overflows its banks during

A) Summer.
B) Spring.
C) Autumn.
D) Winter.

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4) How long does it take for a woman to reach the city from the river?

A) A day.
B) Half an hour.
C) A third of an hour.
D) An hour.

5) Which is the last southward town?

A) Ungit.
B) Shennit.
C) Glome.
D) Ringal.

6) Fill in the blank with the correct option:
Some students who were doing a six month's _____ in Spanish were playing on _____ sand.

A) course, course
B) course, coarse
C) coarse, coarse
D) coarse, course

7) The idiom "As one door closes another opens" means

A)   You shouldn't be discouraged by failure as other oppurtunities will soon present themselves
B)   You should be discouraged by failure as no oppurtunities will come to you knocking your door
C)   You should close this door to open another to avoid banging
D)   Opening one door does not mean other doors will be easy to open

8) Fill in the blank with correct prefix or suffix:

He _____haled the smoke towards the ceiling.

A) up
B) out
C) pre
D) ex

9) Which is the correctly spelt word out of the following choices?,,,

A) quiescant
B) quiessent
C) quiecent
D) quiescent

10) Choose the option that best describes the idiom "By a canvas".

A) By a big margin
B) By a small margin
C) By no margin
D) By the picture of

Section 2 - PaperI-Education and General Awareness

11) A cannon ball (shell) is fired from a cannon and it explodes in the mid air. In this regard, which one of the following statements is CORRECT for the cannon ball?

A) Total momentum of the system increases
B) Total momentum of the system decreases
C) Total kinetic energy of the system increases
D) Total kinetic energy of the system decreases

12) Who among the following leaders was not a leader of the socialist parties in India?

A) Achyut Patwardhan
B) Asoka Mehta
C) Acharya Narendra Dev
D) E. M. S. Namboodiripad

13) Which of the following is a type of school dating back to the vedic period?

A) The Jain monastery
B) The Gurukul system
C) The Buddhist monastery
D) The Church

14) In the year 1917, Sir Michael Sadler chaired the

A) Bombay University Commission
B) Madras University Commission
C) Calcutta University Commission
D) Delhi University Commission

15) Who is given the responsibility to track student attendance and bringing dropouts back to school?

A) Teachers
B) Principals
C) Social workers
D) School Management Committee Members

Section 3 - PaperI-Reasoning

16) Choose the conclusion/conclusions that logically follows the given statements, by selecting an appropriate option.

Statements:

(a) All singers are girls

(b) All the girls are good

Conclusions:

(I) All the singers are good

(II) Some girls are singers

A) Only conclusion (I) follows
B) Only conclusion (II) follows
C) Both conclusions follow
D) Neither conclusion (I) Nor (II) follows

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17) In a certain code language, if the word SCHOOL is coded as TBINPK, then how will the word BOOK be coded in that language?

A) CNPJ
B) CNNJ
C) CNNP
D) CNPN

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18) In the following questions, mark:

1, if statement I alone is sufficient to answer the problem.

2, if statement II alone is sufficient to answer the problem.

3, if statements I and II both taken together are sufficient to answer the problem.

4, if statements I and II taken together are NOT sufficient to answer the problem.

P is a two digit integer. Is P a prime number?

I. (P + 2) and (P - 2) are prime.

II. P + 10 is prime.

A) 1

B) 2

C) 3

D) 4

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19) In the following questions, mark:

1, if statement I alone is sufficient to answer the problem.

2, if statement II alone is sufficient to answer the problem.

3, if statements I and II both taken together are sufficient to answer the problem.

4, if statements I and II taken together are NOT sufficient to answer the problem.

What is the average of 3a and 12b?

I. a + 4b = 20

II. a and b are postive integers whose sum is 8.

A) 1

B) 2

C) 3

D) 4

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20) Amit is facing North. He first turns left, then again turns left, then he turns right and again turns right. In which direction is Amit facing now?

A) East

B) North-east

C) North

D) South-east

Section 4 - PaperI-Teaching Aptitude

21) What is the foremost aim of an inclusive education set up?

A) educating children with disability and learning difficulty in regular schools
B) educating children who are talented
C) educating in a holistic manner
D) educating rural and urban children together

22) The ability of storing information that is memorised and reproduce when required is referred to as _____

A) memorising and forgetting respectively
B) recall and retention respectively
C) retention and recall respectively
D) forgetting and memorising respectively

23) 10+2+3 year structure of education was proposed by

A) Radhakrishnan commission
B) Rama Murthy commission
C) Kothari commission
D) Wardha committee

24) The aim of a particular classroom session was to put forth before students only objective facts and scientifically verifiable information. This classroom session is designed by which type of teacher?

A) An Idealist
B) A Naturalist
C) A Humanist
D) A Realist

25) The settled principles, tenets, working rules or general truths through which form of teaching becomes interesting, easy and effective?

A) Maxims of teaching
B) Grammar of teaching
C) Dos and don'ts of teaching
D) Basics of teaching

26) Which of the following classroom environments are likely to help ADHD (attention-deficit/hyperactivity disorder) students?

A) Teacher A has a very structured classroom environment. Seating is fixed and timetable is fixed.
B) Teacher B likes every child to do the tasks of listening, speaking, reading and writing in that order.
C) Teacher C does a lot of board work and every child must note down everything from the board.
D) Teacher D is flexible, children choose their seating and tasks

27) Which of the following techniques can be used by a teacher to understand the psychological problems of students?

A) Using attitude scale to assess attitude
B) Using psychometric instruments like scale, checklist and observation
C) Using achievement test to assess achievement
D) Using personality test to assess personality

28) Emotional Intelligence is _____.

A) the ability to perceive and express emotion accurately and adaptively.
B) the ability to use intelligence rather than emotion in making judgements.
C) the ability to rely on your emotional stability rather than intellectual ability.
D) the ability to be intelligent and control your emotions.

29) Where was the first Indian Institute of Skills on 19th Dec 2016 unveiled?

A) Delhi
B) Bombay
C) Kanpur
D) Pune

30) Which of the following types of learning is most appropriate when a teacher wants the learners to memorise something?

A) Discrimination
B) Motor
C) Verbal
D) Cognition

Section 5 - PaperII-Physical Science

31) Which among the following is the SI unit of dipole moment?

A) Coulomb x meter^3
B) Coulomb/meter^2
C) Coulomb x meter
D) Coulomb/meter

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32) An example for displacement reaction is

A) $MgCO_3 \rightarrow MgO + CO_2$

B) $2H_2 + O_2 \rightarrow 2H_2O$

C) $2Pb(NO_3)_2 \rightarrow 2PbO + 4NO_2 + O_2$

D) $2Na + 2H_2O \rightarrow 2NaOH + H_2$

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33) The volume knob on a radio varies the resistance on a line that goes to the speakers. At a low volume the resistance is 10,000 Ω. At a high volume the resistance is 10 Ω. If the stereo maintains 35 volts into the speaker then, what are the two currents going into the speaker?

A) 1 milli amperes and 1 amperes
B) 10 milli amperes and 10 amperes
C) 3.5 milli amperes and 3.5 amperes
D) 0.35 milli amperes and 10 amperes

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34) An ideal black body at room temperature is thrown into a furnace. It is observed that

A) initially it is the darkest body and at later times the brightest
B) it is the darkest body at all times
C) it cannot be distinguished at all times
D) initially it is the darkest body and at later times it cannot be distinguished

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35) In which of the following cases, the net forces are unbalanced?

A) An object floating in air
B) A cork floating on the surface of water
C) A ball freely falling from a certain height
D) A kite skillfully held stationary in the sky

36) Which among the following combination of bond pairs and lone pairs is ICl_2^- CORRECT for ion?

A) 2 bond pairs and 3 lone pairs
B) 2 bond pairs and 2 lone pairs
C) 2 bond pairs and 4 lone pairs
D) 2 bond pairs and 1 lone pairs

37) What will be the Pauling electronegativity of fluorine if the Ionization potential and electron affinity values are 17.42 eV and 3.4 eV respectively?

A) 3.81
B) 4.3
C) 2.5
D) 3.72

38) The thermal decomposition reaction of Magnesium bicarbonate is

A) $Mg(HCO_3)_2$ (heat) $\rightarrow MgCO_3 + H_2O + CO_2$
B) $Mg(HCO_3)_2$ (heat) $\rightarrow MgCO_3 + CH_2 + 1.5\ O_2$
C) $Mg(HCO_3)_2$ (heat) $\rightarrow Mg(OH)_2 + C_2H_4 + 2H_2O + O_2$
D) $Mg(HCO_3)_2$ (heat) $\rightarrow Mg(OH)_2 + C_2H_8 + 2O_2$

39) The chemical equation for the reaction of quick lime with water to give calcium hydroxide is,

A) $CaO + H_2O \rightarrow Ca_2(OH)$ (Slaked lime)
B) $CaO + H_2O \rightarrow Ca_2(OH)_2$ (Slaked lime) + heat
C) $CaO + H_2O \rightarrow Ca_3(OH)_2$ (Slaked lime) + heat
D) $CaO + H_2O \rightarrow Ca(OH)_2$ (Slaked lime) + heat

40) N identical cells are connected to form a battery. When the terminals of the battery are joined directly (short-circuited), current I flows in the circuit. To obtain the maximum value of I

A)   all the cells should be joined in series
B)   all the cells should be joined in parallel
C)   two rows of N/2 cells each should be joined in parallel
D)   √N rows of √N cells each should be joined in parallel, given that √N is an integer

41) A nonconducting ring of radius R has charge Q distributed unevenly over it. If it rotates with an angular velocity ω, the equivalent current will be

A) zero

B) $Q\omega$

C) $Q\omega/2\pi$

D) $Q\omega/2\pi R$

42) Two rods, one of the aluminium and the other made of steel, having initial length L_1 and L_2 are connected together to form a single rod of length $L_1 + L_2$. The coefficients of linear expansion for aluminium and steel are α_a and α_s respectively. If the length of each rod increases by the same amount when their temperature are raised by 1 °C, then find the ratio $L_1/(L_1 + L_2)$

A) α_s/α_a

B) $\alpha_s \times \alpha_a$

C) $\alpha_s/(\alpha_a+\alpha_s)$

D) $\alpha_a/(\alpha_a+\alpha_s)$

43) Two sitar strings A and B are slightly out of tune and produce beats of frequency 6 Hz. When the tension in string A is slightly decreased, the beat frequency is found to be reduced to 3 Hz. If the original frequency of A is 324 Hz, the frequency of B is

A) 318 Hz

B) 321 Hz

C) 327 Hz

D) 330 Hz

44) A solid rubber ball of density 'd' and radius R falls vertically through air. Assume that the air resistance acting on the ball is F = KRV, where K is constant and V is its velocity. Because of the air resistance, the ball attains a constant velocity called terminal velocity V_r after some time. Then V_r is

A) πR^2dg/K

B) πR^2dg/2K

C) 2πR^2dg/3K

D) 4πR^2dg/3K

45) A body hangs from a spring balance supported from the roof of an elevator. If the elevator has an upward acceleration of 2.45 m/s^2 and the balance reads 50 newtons. What is the true weight of the body? (Given, g = 9.8 m/s^2)

A) 50 N

B) 30 N

C) 40 N

D) 60 N

46) What is the effective nuclear charge (Z_{eff}) felt by a 4s electron of Co?

A) 4.5
B) 3.9
C) 5.2
D) 3.2

47) When potassium metal reacts with water, it gives potassium hydroxide and hydrogen gas. The chemical equation for the reaction is

A) $2K + 2H_2O \rightarrow 2K(OH)_2 + H_2$
B) $2K + 2H_2O \rightarrow K_2OH + H_2 + O_2$
C) $2K + 2H_2O \rightarrow 2KOH + H_2$
D) $2K + 2H_2O \rightarrow 2KOH + H_2 + O_2$

48) A straight conductor of uniform cross-section carries a current I. Let s = specific charge of an electron. The momentum of all the free electrons per unit length of the conductor, due to their drift velocities only, is

A) Is
B) I/s
C) $\sqrt{(I/s)}$
D) $(I/s)^2$

49) A closed organ pipe of length L and an open organ pipe contain gases of densities ρ_1 and ρ_2 respectively. The compressibility of gases are equal in both the pipes. Both the pipes are vibrating in their first overtone with same frequency. The length of the open organ pipe is

A) $2L/3\sqrt{(\rho_2/\rho_1)}$
B) $2L/3\sqrt{(\rho_1/\rho_2)}$
C) $(4L/3)\sqrt{(\rho_1/\rho_2)}$
D) $(4L/3)\sqrt{(\rho_2/\rho_1)}$

50) An iron chain lies on a rough horizontal table. It starts sliding when one fourth of its length hangs over the edge of the table. The coefficient of static friction between the chain and the surface of the table is

A) 1/2
B) 1/3
C) 0
D) 1/4

Section 6 - PaperII-Biological Science

51) The element plays an important role in opening and closing of stomata is

 A) Phosphorus
 B) Potassium
 C) Magnesium
 D) Boron

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52) Which of the following types of cell usually lacks mitochondria?

 A) Human nerve cell
 B) Mature human erythrocyte
 C) Human liver cell
 D) Frog liver hepatocyte

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53) As per the binomial nomenclature the scientific name of Wheat is:

 A) Canis familiaris
 B) Triticum aestivum
 C) Musca domestica
 D) Ocimum sanctum

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54) Animals eat other herbivores come under category of

 A) Producers
 B) Primary Consumers
 C) Secondary Consumers
 D) Tertiary Consumers

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55) Which of the following options is an example of an in-situ approach of biodiversity conservation?

 A) Herbarium
 B) Sacred lakes
 C) Botanical gardens
 D) Field gene banks

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56) Which among the following is the amount of essential micronutrients required by plants?

 A) Less than 10 mmole/kg of dry matter
 B) 10-20 mmole/kg of dry matter
 C) 25-40 mmole/kg of dry matter
 D) More than 45 mmole/kg of dry matter

57) The number of carbon in the primary CO2 acceptor of C3 plant is

A) 3
B) 4
C) 5
D) 6

58) As per the Fluid Mosaic Model, plasma membrane is composed of a phospholipids, carbohydrates, proteins, and cholesterol. Which of the following options is CORRECT for the head and tail portions of phospholipids respectively?

A) Polar, non-polar
B) Non-polar, polar
C) Polar, polar
D) Non-polar, non-polar

59) What are the sites of transcription in eukaryotes and prokaryotes respectively?

A) Cytosol, nucleus
B) Nucleus, cytosol
C) Ribosomes, nucleus
D) Cytosol, ribosomes

60) Match the following plants in List II with their corresponding type in List I.

List I	List II
(a) Pteridophyta	(i) Mosses
(b) Gymnosperms	(ii) Ferns
(c) Angiosperms	(iii) Ginkgo
(d) Bryophytes	(iv) Maize

A) (a)-(iii), (b)-(ii), (c)-(iv), (d)-(i)
B) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)
C) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)
D) (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)

61) There is a class of fungi which has aseptate and multinucleated mycelium. Identify the name of this class of fungi and its non-ciliated spores respectively.

A) Phycomycetes, aplanospores
B) Basidiomycetes, basidium
C) Ascomycetes, conidia
D) phycomycetes, zoospores

62) Which of the following is INCORRECT about humus?

A) Highly resistant to microbial action
B) Colloidal in Nature
C) Reservoir of Nutrients
D) Undergo decomposition at very fast rate

63) Mammals from colder climates generally have shorter ears and limbs to minimize heat loss. This is called

A) Hedge rule
B) Tansley rule
C) Fourier rule
D) Allen's rule

64) Which of the following options is NOT one of the R's associated with the slogan used for environment protection?

A) Refuse
B) Recycle
C) Reform
D) Reduce

65) Mangroves are characterized by the presence of which of the following options?

A) Fringing reefs and bright flowering plants
B) Pneumatophores and vivipary
C) Carpet of short grass and bright flowering plants
D) Fringing reefs and barrier reefs

66) Which layers of uterus wall is involved in the contraction during delivery of the baby?

A) Perimetrium
B) Myometrium
C) Endometrium
D) Serosa

67) Dr. Anfison is experimenting on mitochondria. He designed two experiments to check the function of mitochondria in a cell. In control set up he removed mitochondria from cell while in experiment set up he did NOT do anything to the cell. Which of the following statements is TRUE for his control set up results?

A) Oxidative phosphorylation will occur but ATP synthesis will not take place
B) Oxidative phosphorylation will not occur but ATP synthesis will take place
C) Both oxidative phosphorylation and ATP synthesis will take place
D) Both oxidative phosphorylation and ATP synthesis will not take place

68) Match the following organs of organisms in List I with their corresponding functions in List II.

List I	List II
(a) Flame cells of Flatworms	(i) Excretion & osmoregulation
(b) Tube feet of Echinoderms	(ii) Gives support to the body
(c) Antennae of Arthropods	(iii) Helps in capturing of food
(d) Spicules of Porifera	(iv) Helps in sensation

A) (a)-(i), (b)-(iii), (c)-(iv), (d)-(ii)
B) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)
C) (a)-(i), (b)-(iv), (c)-(ii), (d)-(iii)
D) (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)

69) The wavelength of ultraviolet radiation that causes lethal effects on human cells when exposed is in the range of

A) 100-280 nm
B) 30-80 nm
C) 400-480 nm
D) 500-580 nm

70) What are the two key criteria to determine a biodiversity hotspot?

A) Degree of threat and number of endemic species
B) Degree of threat and number of extinct species
C) Number of extinct species and number of endemic species
D) Number of extinct and extant species

Section 7 - PaperII-Mathematics

71) In $\triangle$ ABC and $\triangle$ PQR, $\angle$A = $\angle$P and AB:PQ = AC:PR, then which of the following must be true?

A) $\angle$A=$\angle$Q
B) $\angle$B=$\angle$Q
C) $\angle$C=$\angle$P
D) $\angle$B=$\angle$R

72) The sum of the two numbers is 36. If one of the two numbers exceeds the other number by 8, then what is the greater of these two numbers?

A) 14
B) 18
C) 22
D) 28

73) If a | 1, then

(Note : For any 2 integers X and Y, X | Y implies that X divides Y completely without leaving any remainder.)

A) a = ±1
B) a = -2
C) a = 0
D) a = 2

74) If U is an universal set and A is its subset where U = { x : x ∈ N and x ≤ 10 }, A = { y : y is a prime number less than 10 }, then A^c (complement of A) is equal to

A) {1, 4, 7, 8, 9, 10}
B) {1, 4, 6, 8, 9, 10}
C) {2, 3, 4, 6, 8, 9, 10}
D) {1, 4, 6, 8, 10}

75) If $6^4 = 4^2 \times 9^x$, then $x =$

A) 4
B) 2
C) 1/2
D) 1/4

76) A 60 ft wire connects a point on the ground to the top of a pole. The wire makes an angle of 60 degrees with the ground. What is the distance between the point on the ground to the foot of the pole?

A) 30 ft
B) 20√3 ft
C) 15 ft
D) 10√3 ft

77) If two sides of a triangle are 6 and 8 units, then which of the following can't be the area of the triangle?

A) 1 sq. unit
B) 2 sq. unit
C) 24 sq. unit
D) 25 sq. unit

78) If 3x + 4y = 12 and 6x + ky = 50 has unique solution, then which of the following must be true for 'k'?

A) k = 8
B) k ≠ 8
C) k ≥ 8
D) k ≤ 8

79) What is the unit digit of $(17^{12} + 38^{79}) \times 1853^{1947}$ the expression ?

A) 1
B) 3
C) 7
D) 9

80) Let f : N → N such that f(x) = x^2+1 where N is the set of all natural numbers. Which of the following is true?

A) f is one to one
B) f is onto
C) f is bijective
D) f is many to one

81) If M = 16, then what is the $log_2 M$ value of ?

A) 4
B) 8
C) 16
D) 32

82) What is the number of digits in the expansion of 2^{100} given that log 2 = 0.3010?
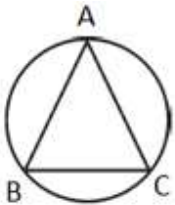
A) 30
B) 31
C) 32
D) 33

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83) If cosecA=2/√3, then the value of sinA*cosA is

A) √3/2
B) √3/4
C) √3
D) 1/√3

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84) What is the value of sin15 degrees?

A) (√3-1)/√2
B) (√3-1)/2√2
C) (√3-1)/2
D) (√3-1)/2√3

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85) In the given figure, an equilateral triangle ΔABC is inscribed in a circle. What is the ratio of the height of the triangle to the radius of the circle?

A) 3 : 1
B) 3 : 2
C) 2 : 1
D) 4 : 1

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86) If the roots of the equation $x^2 - 2ax + a^2 + a - 3 = 0$ are real and less than 3, then

A) a < 2
B) 2 ≤ a ≤ 3
C) 3 < a ≤ 4
D) a > 4

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87) If gcd(a,b) = d and c | a and c | b, then

(Note : For any 2 integers X and Y, X | Y implies that X divides Y completely without leaving any remainder.)

A) c ≤ d
B) c ≥ d
C) c = 1
D) c= -1

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88) Let A={1,2,3} and the relation R={(1,1),(2,2),(3,3),(1,2),(2,3),(2,1),(3,2),(3,1),(1,3)} is contained in A*A. The relation R is

A) Reflexive
B) Symmetric
C) Transitive
D) Equivalence

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89) Simplify the given expression $\dfrac{1}{log_x xyz} + \dfrac{1}{log_y xyz} + \dfrac{1}{log_z xyz}$

A) -1
B) 0
C) 1
D) 2

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90) A vertical pole fixed to the ground is divided in the ratio 1:9 by a mark on it with lower part shorter than the upper part. The angle of elevation of the tip of the upper part is double the angle of elevation of the tip of the shorter part from a point which is 15 m away from the base of the pole. What is the height of the vertical pole?

A) 75√5 m
B) 60√5 m
C) 45√5 m
D) 30√5 m

Question Paper No:	62187_11
Answer Key:	

1	A	31	C	61	A
2	D	32	D	62	D
3	B	33	C	63	D
4	C	34	A	64	C
5	D	35	C	65	B
6	B	36	A	66	B
7	A	37	D	67	D
8	D	38	A	68	A
9	D	39	D	69	A
10	B	40	B	70	A
11	C	41	C	71	B
12	D	42	C	72	C
13	B	43	A	73	A
14	C	44	D	74	B
15	C	45	C	75	B
16	C	46	B	76	A
17	A	47	C	77	D
18	A	48	B	78	B
19	A	49	C	79	A
20	C	50	B	80	D
21	A	51	B	81	A
22	C	52	B	82	B
23	C	53	B	83	B
24	D	54	C	84	B
25	A	55	B	85	B
26	D	56	A	86	A
27	B	57	C	87	A
28	A	58	A	88	D
29	C	59	B	89	C
30	C	60	B	90	B