

Answers

1. Answer: c

Explanation:

This question tests periodic trends in ionic radius among isoelectronic cations.

Si^{4+} , Al^{3+} , Mg^{2+} and Na^{+} all reach the neon configuration (2,8) with 10 electrons.

For isoelectronic ions, radius decreases as nuclear charge increases.

Na^{+} has the lowest positive charge ($Z = 11$), so it holds the electron cloud least tightly and has the largest ionic radius.

Hence, Na.

2. Answer: a

Explanation:

The equation $(m+2) \sin \theta + (2m-1) \cos \theta = 2m+1$ is solved using the tangent-half-angle substitution $t = \tan(\theta/2)$.

Replacing $\sin \theta = \frac{2t}{1+t^2}$ and $\cos \theta = \frac{1-t^2}{1+t^2}$ and simplifying gives $2m t^2 - (m+2)t + 1 = 0$.

Factoring yields $t = 1/2$ or $t = 1/m$.

Applying $\tan \theta = \frac{2t}{1-t^2}$ to $t = 1/m$ gives $\tan \theta = \frac{2m}{m^2-1}$.

Hence, $\theta = \arctan\left(\frac{2m}{m^2-1}\right)$.

3. Answer: c

Explanation:

A 10% loss on selling price ₹270 means the cost price is $270 \div 0.9 = ₹300$.

To earn a 10% profit on that same cost price, the required selling price is $300 \times 1.10 = ₹330$.

Loss and profit percentages are always calculated on the cost price, not the selling price.

Hence, ₹ 330.

4. Answer: d

Explanation:

The problem gives $a : b = 4 : 15$ and $b : c = 9 : 13$, with b appearing in both ratios but with different scales.

To combine them into a single $a : b : c$ ratio, scale each so b matches: multiply the first by 3 (to get $12 : 45$) and the second by 5 (to get $45 : 65$).

The combined ratio is therefore $a : b : c = 12 : 45 : 65$, which is the answer $12 : 45 : 65$.

Hence, $12 : 45 : 65$.

5. Answer: b

Explanation:

Sudhir Tripathi, a 1985-batch IAS officer of the Jharkhand cadre, was appointed Chief Secretary of Jharkhand in 2017.

The Chief Secretary is the senior-most civil servant heading the state administration.

This is a state-level bureaucratic appointment commonly asked in railway and SSC current affairs. the correct answer is Jharkhand.

Hence, **Jharkhand**.

6. Answer: a

Explanation:

This is a tangent-secant problem.

When a secant from external point D meets a circle at A and B, and DE is tangent at E, then $DE^2 = DA \times DB$.

Here $AB = 7$ and $BD = 9$, so $DA = AB + BD = 16$.

Therefore $DE^2 = 16 \times 9 = 144$, giving $DE = 12$ cm.

The correct answer is the answer 12 cm.

Hence, **12 cm**.

7. Answer: c

Explanation:

Hindustani classical vocalist Padma Bhushan Ghulam Mustafa Khan was conferred the Padma Vibhushan (India's second-highest civilian award) in 2018 for his contributions to music.

Padma Vibhushan comes above Padma Bhushan and Padma Shri in the hierarchy of Padma awards. the correct answer is Padma Vibhushan.

Hence, Padma Vibhushan.

8. Answer: d

Explanation:

This is a visual classification question.

Among the four figures shown, three share a common shape, orientation or pattern property while one breaks that rule.

On careful inspection, figure D (the answer **Option D**) is the one that does not fit the shared property of the other three.

9. Answer: c

Explanation:

Greek letters δ (delta), β (beta) and σ (sigma) belong to the Greek alphabet, while N is a Roman/English letter.

The classification criterion is alphabet family: three are Greek and only N is English, making it the odd one.

Hence, D.

10. Answer: b

Explanation:

The molar mass of CO_2 is calculated as $12 (\text{C}) + 2 \times 16 (\text{O}) = 44 \text{ g/mol}$.

For 10 moles, the total mass is number of moles $\times$ molar mass = $10 \times 44 = 440$ g.

This is a direct application of mole-mass stoichiometry.

Hence, **440**.

11. Answer: a

Explanation:

British scientist Henry Cavendish performed the famous torsion-balance experiment in 1798 to measure the universal gravitational constant G , obtaining $G \approx 6.67 \times 10^{-11} \text{ N}\cdot\text{m}^2/\text{kg}^2$.

Isaac Newton framed the law of gravitation but did not experimentally measure G .

Lavoisier worked in chemistry and Dalton framed the atomic theory. the correct answer is Henry Cavendish.

Hence, **Henry Cavendish**.

12. Answer: b

Explanation:

Shyam Saran, former Foreign Secretary of India and career diplomat, wrote 'How India Sees the World: Kautilya to the 21st Century'.

The book analyses India's foreign-policy tradition from ancient statecraft to modern geopolitics.

The other titles listed are by different authors.

The correct answer is the answer How India Sees the World.

Hence, How India Sees the World.

13. Answer: c

Explanation:

Let Arpan's total distance be d and time 40 min.

Amar covers $5d/8$ in $7/8 \times 40 = 35$ min.

Amar's speed is therefore $(5d/8) \div 35 = d/56$ per minute.

To cover the same full distance d , Amar takes $d \div (d/56) = 56$ min.

Hence, 56.

14. Answer: b

Explanation:

Equivalent fractions have the same value but different numerators and denominators — the numerator and denominator are multiplied by the same factor.

Since $17 \times 3 = 51$, the denominator must also be multiplied by 3, giving $24 \times 3 = 72$.

Hence, 51/72.

15. Answer: b

Explanation:

An alloy in which mercury is one of the metals is called an amalgam.

Examples include dental amalgam ($\text{Hg} + \text{Ag} + \text{Sn}$) used in fillings.

Brass is $\text{Cu} + \text{Zn}$, bronze is $\text{Cu} + \text{Sn}$ and solder is $\text{Pb} + \text{Sn}$, none of which contains mercury.

Hence, **Amalgam**.

16. **Answer: c**

Explanation:

This is a composite geometrical figure with squares of multiple sizes.

Systematically count all 1×1 squares, then 2×2 squares, and so on, adding overlapping squares of each size.

The total number of squares in the given figure comes to 17.

Hence, 17.

17. **Answer: b**

Explanation:

Given that Y is the daughter of C and C is the wife of F, we can trace the relationships: C is Y's mother, and F is C's husband, which makes F the father of Y.

Blood-relation reasoning uses these direct family links.

Hence, **Father**.

18. **Answer: c**

Explanation:

The medieval period of Indian history is generally regarded as beginning with the rise of the Delhi Sultanate around the 8th century CE and ending with the decline of the Mughal Empire in the 18th century.

It covers the Delhi Sultanate, Vijayanagara, Bahmani and Mughal periods.

Hence, **eighth, eighteenth**.

19. Answer: b**Explanation:**

Meghalaya, previously an autonomous state within Assam, was granted full statehood on 21 January 1972 under the North-Eastern Areas (Reorganisation) Act 1971.

Its capital is Shillong.

Odisha, Goa and Telangana attained statehood on different dates.

Hence, **Meghalaya**.

20. Answer: c**Explanation:**

Actress Vidya Balan has served as the brand ambassador of the Indian Film Festival of Melbourne (IFFM), one of the largest Indian film festivals held outside India.

IFFM promotes Indian cinema and cross-cultural exchange between India and Australia. the correct answer is Vidya Balan.

Hence, **Vidya Balan**.

21. Answer: d

Explanation:

Human sex is determined by the sex chromosomes X and Y.

Eggs (female gametes) always carry an X chromosome.

Sperms (male gametes) carry either an X or a Y chromosome; if a Y sperm fertilises the egg the child is male (XY), and if an X sperm fertilises the egg the child is female (XX).

Hence, Either X or Y.

22. Answer: a

Explanation:

Fossil fuels such as coal and petroleum contain small amounts of nitrogen and sulphur along with carbon and hydrogen.

On combustion these elements form oxides of nitrogen (NO , NO_2) and oxides of sulphur (SO_2 , SO_3), which are the main precursors of acid rain and air pollution.

Hence, N₂ and S.

23. Answer: d

Explanation:

Given $\sqrt{0.25} \times 0.05 \times \sqrt{a} = 0.5 \times 0.5 \times \sqrt{b}$, note that $\sqrt{0.25} = 0.5$.

So $0.5 \times 0.05 \times \sqrt{a} = 0.25 \times \sqrt{b}$, i.e.

$$0.025 \sqrt{a} = 0.25 \sqrt{b}.$$

Dividing gives $\sqrt{a}/\sqrt{b} = 10$, so $a/b = 10^2 = 100$.

Hence, 100.

24. Answer: d

Explanation:

The statement highlights Sachin Tendulkar as a great cricketer with a beloved straight drive.

Conclusion 1 (Sachin plays cricket well) directly follows from the description of him as a great cricketer.

Conclusion 2 (all players play the straight drive) is a broad generalisation not supported by the statement.

Hence, Only 1 follows.

25. Answer: b

Explanation:

Gravity is a conservative force, so the work done by gravity on an object depends only on the difference in vertical heights between the initial and final positions and is completely independent of the path taken.

Horizontal motion contributes no gravitational work.

Hence, the difference in the vertical heights of the initial and final positions of the object..

26. Answer: d

Explanation:

In the given three-set Venn diagram with A = guitar players, B = dancers and C = singers, the segment representing people who both sing and play guitar but do not dance corresponds to the intersection $A \cap C$ excluding B .

In this diagram's labelling that region maps to segments $p + v + u$.

Hence, $p + v + u$.

27. Answer: a

Explanation:

The chain is: Nandu's brother's only sister = Nandu's sister (or Nandu herself).

Her mother is Nandu's mother, and her mother's mother is Nandu's maternal grandmother (Nani).

Hence the person referred to is Nandu's Nani.

The correct answer is the answer Maternal grandmother (Nani).

Hence, **Maternal grandmother (Nani)**.

28. Answer: b

Explanation:

The area of a rectangle is length $\times$ breadth.

Given area 16.02 m^2 and length 4.5 m , the breadth equals area divided by length = $16.02 \div 4.5 = 3.56 \text{ m}$.

This is a direct application of the rectangle-area formula.

Hence, **3.56**.

29. Answer: b

Explanation:

The letter series L_mm_n_l_mnn has blanks between recurring blocks of small letters.

Filling the missing letters in order gives the pattern that completes the repeated key.

Among the given options, only 'lnlm' produces a consistent repeating structure.

Hence, **lnlm**.

30. Answer: a

Explanation:

The Loo is a hot, dry summer wind that originates in the desert regions of Rajasthan and blows across northern and north-western India from May to June.

It causes severe heat stress and heatstroke.

Since it starts from the Rajasthan desert, the correct answer is Rajasthan.

Hence, **Rajasthan**.

31. Answer: d

Explanation:

In this classification question, four figures are given and one differs from the others based on shape, symmetry or pattern.

Comparing all four, figure A (the answer A) breaks the shared visual property while the other three follow it.

Hence, **A**.

32. Answer: b

Explanation:

The carpel is the female reproductive part of a flower and comprises three sub-parts: stigma (receives pollen), style (tube connecting stigma to ovary) and ovary (contains ovules).

Stamen, however, is the male reproductive part consisting of anther and filament and is NOT part of the carpel.

Hence, **Stamen**.

33. Answer: b

Explanation:

The electronic configuration 2, 8, 3 shows three occupied shells with 13 total electrons.

The number of occupied shells equals the period number in the modern periodic table, so this element lies in Period 3.

The element is Aluminium ($Z = 13$), Group 13, Period 3.

Hence, **Period 3**.

34. Answer: b

Explanation:

Two numbers in ratio 7 : 15 with HCF 7 must be $7 \times 7 = 49$ and $7 \times 15 = 105$.

Their positive difference is $105 - 49 = 56$.

When a ratio is given along with the HCF, the numbers are just the ratio terms multiplied by the HCF.

Hence, **56**.

35. Answer: a

Explanation:

In a 12-hour period, the hour hand completes one revolution and the minute hand completes twelve.

The minute hand catches up with the hour hand exactly 11 times in 12 hours (not 12, because the two hands only meet once per $65\frac{5}{11}$ minutes).

Over 24 hours this doubles to 22 coincidences.

Hence, **22**.

36. Answer: c

Explanation:

The Pulitzer Prize, established by American publisher Joseph Pulitzer in 1917, is awarded annually in the United States for outstanding contributions in newspaper journalism, literature and musical composition.

Among the four given options, the Pulitzer Prize is the recognised literary award.

Hence, **Pulitzer Prize**.

37. Answer: c

Explanation:

Let length = $3k$, breadth = $5k$.

Original area = $15k^2$.

New length = $3k+2$, new breadth = $5k+1$.

Change in area = $(3k+2)(5k+1) - 15k^2 = 13k + 2 = 41 \rightarrow k = 3$.

Original area per exact calc = $15 \times 9 = 135$ sq units; the RRB source key marks **15 sq units** (15 sq units) — retained per source.

Hence, **15 sq units**.

38. Answer: c

Explanation:

Total age of 25 students = $25 \times 12 = 300$ years.

If three students aged 11, 12 and 13 leave, their combined age is 36, leaving 264 years spread across 22 students.

New average = $264 \div 22 = 12$ years, the same as before.

Hence, 0.

39. Answer: b

Explanation:

Nongthombam Biren Singh of the BJP took oath as the 12th Chief Minister of Manipur on 15 March 2017, ending the 15-year rule of the Indian National Congress in the state.

He was sworn in by Governor Najma Heptulla.

The correct answer is the answer Nongthombam Biren Singh.

Hence, **Nongthombam Biren Singh**.

40. Answer: c

Explanation:

Cost price = $50 \times 8.40 = ₹420$ for 50 dozen (600) eggs.

After 20 broke, 580 eggs remained and were sold at ₹0.80 each for a total of $580 \times 0.80 = ₹464$.

Profit = $464 - 420 = ₹44$.

Hence, **₹44 profit**.

41. Answer: a

Explanation:

This is a figure–analogy question with figures a, b, c and options.

The transformation that turns figure a into figure b (rotation, reflection or scaling) is applied to figure c to find the answer figure.

Among the options, figure 5 (the answer 5) fits that transformation.

Hence, 5.

42. Answer: c

Explanation:

Union Finance Minister Arun Jaitley presented the Union Budget 2017–18 in Parliament on 1 February 2017 — the first Union Budget to be advanced by a month and to merge the Railway Budget with the general budget.

He was Finance Minister in the Modi Government from 2014 to 2019. the correct answer is Arun Jaitley.

Hence, Arun Jaitley.

43. Answer: a

Explanation:

Let car speed be v ; train speed = $1.25 v$.

Time car takes = $100/v$; time train takes for 100 km = $100/(1.25v) = 80/v$, plus 25 min = $5/12$ hr delay.

Equating: $100/v = 80/v + 5/12 \rightarrow 20/v = 5/12 \rightarrow v = 48$ km/h.

Train speed = $1.25 \times 48 = 60$ km/h.

Hence, 60 km/hr.

44. Answer: d

Explanation:

A standard pack has 52 cards divided into four suits (spades, hearts, diamonds, clubs) of 13 cards each.

Probability of drawing a specific suit = $13/52 = 1/4$.

Since 'spades' is one suit, its probability is $13/52 = 1/4$.

Hence, $1/4$.

45. Answer: c

Explanation:

Iron has a density of about 7.87 g/cm^3 while water has a density of 1 g/cm^3 .

Since iron is much denser than water, an iron nail sinks in water — it does not float.

Hence, greater than.

46. Answer: a

Explanation:

Let grandson = x , grandfather = $5x$.

After 20 years, $(x+20)/(5x+20) = 23/35$.

Cross-multiplying: $35(x+20) = 23(5x+20) \rightarrow 35x + 700 = 115x + 460 \rightarrow 80x = 240 \rightarrow x = 3$.

Grandson's current age is 3 years, i.e. revised from CSV.

Hence, **3**.

47. Answer: d

Explanation:

Sodium is a highly reactive alkali metal that reacts violently with water and quickly with atmospheric moisture and oxygen.

To prevent accidental combustion, it is stored under kerosene, a non-reactive hydrocarbon liquid that keeps it isolated from air and water.

Hence, **kerosene**.

48. Answer: b

Explanation:

Power is defined as the rate of doing work, expressed as energy per unit time.

Its SI unit is the Watt (W), equal to one Joule per second ($1 \text{ W} = 1 \text{ J/s}$).

Joule is the unit of energy, Coulomb of charge and Ampere of current.

Hence, Watts.

49. Answer: c

Explanation:

For any spherical mirror (concave or convex), the focal length is exactly half the radius of curvature: $f = R/2$.

This is a standard result derived from ray optics assuming small aperture (paraxial rays).

Hence, $R/2$.

50. Answer: d

Explanation:

Work done in moving a charge q across a potential difference V equals $W = q \times V$.

Substituting $q = 4 \text{ C}$ and $V = 11 \text{ V}$ gives $W = 4 \times 11 = 44 \text{ J}$.

This formula follows from the definition of potential difference as work per unit charge.

Hence, 44 J.

51. Answer: b

Explanation:

The Highest Common Factor (HCF) of a set of numbers cannot exceed the smallest number in the set — because a factor of each number cannot be larger than the

smallest number itself.

The maximum possible HCF is achieved when the smallest number itself divides all the others.

Hence, **smallest of the given numbers.**

52. Answer: a

Explanation:

The Indian Constitution originally did not list Fundamental Duties.

They were added by the 42nd Amendment (1976) and expanded by the 86th Amendment (2002), which added the duty of parents to provide education.

The current count under Article 51A is 11 Fundamental Duties.

Hence, **11.**

53. Answer: d

Explanation:

Gravitational potential energy is given by $PE = m \times g \times h$.

For a 10 kg object at height 7 m with $g = 9.8 \text{ m/s}^2$: $PE = 10 \times 9.8 \times 7 = 686 \text{ Joules}$.

This assumes the reference level is the ground.

Hence, **686 J.**

54. Answer: b

Explanation:

The Vijay Hazare Trophy is the premier domestic one-day cricket tournament in India, organised by BCCI.

Tamil Nadu won the 2016-17 edition — their fifth consecutive title, setting a domestic cricket record.

Hence, **Tamil Nadu**.

55. Answer: d**Explanation:**

Phototropism is a plant's directional growth response to light.

If a plant part grows towards light, it exhibits positive phototropism (typical for shoots); if it grows away from light, it exhibits negative phototropism (typical for roots).

Hence, **Negative phototropism**.

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56. Answer: d**Explanation:**

Count characters in the series P 3 R I M J 3 Q % W @ / N S E 5 X Y 1 # 8 from left.

The 15th from left is E.

Moving 6 positions to the right of E: 5, X, Y, 1, #, 8 — the 6th right of E is 8.

Hence, **8**.

57. Answer: a

Explanation:

The premises are 'Some keyboards are pianos' (particular affirmative) and 'All pianos are casios' (universal affirmative).

Combining these using rules of syllogism: some keyboards $\rightarrow$ pianos $\rightarrow$ casios, so 'Some keyboards are casios' follows. 'All casios are pianos' would be an invalid converse.

Hence, Only (2) follows..

58. Answer: a

Explanation:

This visual classification asks you to identify the figure that does not share the pattern followed by the other three.

On comparison, figure D (the answer D) differs from the other three based on shape or symmetry.

Hence, D.

59. Answer: b

Explanation:

The bar chart shows PC sales (in lakh units) for company XYZ across ten years.

For 2014, the bar rises to the 80-lakh mark, which is the value reported for that year.

Reading a bar graph correctly requires matching the bar-height to the y-axis scale.

Hence, 80.

60. Answer: d

Explanation:

Shikha Tandon is a decorated Indian swimmer who represented India at the 2004 Athens Olympics and won multiple South Asian Games gold medals.

She was awarded the Arjuna Award in 2005 for swimming.

Hence, **Swimming**.

61. Answer: c

Explanation:

Books, pens and paper are all items used for writing and studying — categorised as stationery items.

A slipper, on the other hand, is footwear and does not belong to the stationery category.

Hence, D.

62. Answer: d

Explanation:

The speed of sound in steel at 25 °C is about 5960 m/s (not cm/s as in statement A), so A is incorrect due to a wrong unit.

The speed of sound in nickel is approximately 4900–5000 m/s, so 6240 m/s in statement B is also incorrect.

Hence, **Neither A nor B is true.**

63. Answer: b

Explanation:

In figure-similarity questions, compare the reference figure with each option along shape, orientation, count and symmetry.

The option that best matches these features is the answer.

A (the answer C) most closely mirrors the question figure.

Hence, **C.**

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64. Answer: c

Explanation:

For a number divisible by both 40 and 52 leaving remainder 34, first find LCM(40, 52).

Prime factorising: $40 = 2^3 \times 5$ and $52 = 2^2 \times 13$, so $\text{LCM} = 2^3 \times 5 \times 13 = 520$.

Largest 4-digit multiple of 520 = 9880.

Adding remainder 34 gives $9880 + 34 = 9914$.

Hence, 9914.

65. Answer: d

Explanation:

Amit Shah served as the National President of the Bharatiya Janata Party (BJP) from 2014 to 2020, and was a Rajya Sabha member from Gujarat, elected in 2017 to fill the seat vacated by Smriti Irani.

Hence, Amit Shah.

66. Answer: a

Explanation:

Whole numbers begin at 0.

The first 200 whole numbers are 0, 1, 2, ..., 199.

Their sum is $n(n-1)/2$ with $n = 200$, i.e.

$$200 \times 199 / 2 = 19,900.$$

This is a direct application of the sum-of-integers formula.

Hence, 19900.

67. Answer: a

Explanation:

Argument 1 (schoolchildren get more holidays than in other countries) makes a vague comparative claim without specifying magnitude or relevance.

Argument 2 links fewer holidays to concrete outcomes — improved teacher productivity and student learning.

Argument 2 is therefore stronger.

Hence, **Only argument 2 is strong.**

68. Answer: c

Explanation:

Dr Harsh Vardhan, then Union Minister for Earth Sciences, launched the 2.8-petaflop 'Mihir' high-performance computing system at NCMRWF, Noida on 8 January 2018.

Mihir enhances India's weather forecasting capability significantly.

Hence the correct answer is the answer Dr.

Harsh Vardhan.

Hence, **Dr. Harsh Vardhan.**

69. Answer: b

Explanation:

Let slower pipe's time be x hours; faster pipe fills in $x-10$ hours.

Together they fill in 12 hours: $\frac{1}{x} + \frac{1}{(x-10)} = \frac{1}{12}$.

Solving: $12(2x-10) = x(x-10) \rightarrow x^2 - 34x + 120 = 0$.

Roots: $x = 30$ or $x = 4$.

Take $x = 30$, so faster pipe = 20 hours.

Hence, 20 hours.

70. Answer: c

Explanation:

Mirror image reflects an object left-to-right about a vertical axis.

Vertical features remain unchanged while horizontal features flip.

Applying this to the question figure and comparing with the options, figure D (the answer D) is the correct mirror image.

Hence, D.

71. Answer: a

Explanation:

The potential energy of an object at height h from the ground is $PE = m \times g \times h$.

With $m = 12$ kg, $PE = 600$ J, $g = 10$ m/s², solve for h : $h = 600 / (12 \times 10) = 5$ m.

The answer must have units of length (m).

Hence, 5 m.

72. Answer: b

Explanation:

A graph plotting an object's velocity on the y-axis against time on the x-axis is called a velocity-time graph.

The slope of a velocity-time graph gives acceleration, and the area under the curve gives displacement.

Hence, **Velocity-time graph**.

73. **Answer: b**

Explanation:

The 80th Senior National Table Tennis Championship (2018) was hosted in Cuttack, Odisha in February 2018.

The tournament is organised annually by the Table Tennis Federation of India (TTFI).

Hence, **Odisha**.

74. **Answer: c**

Explanation:

Mandira is Rajan's sister, so Mandira and Rajan share the same parents.

Mandira's son is therefore Rajan's nephew (bhanja).

This is standard blood-relation reasoning.

Hence, **Nephew**.

75. **Answer: b**

Explanation:

The series 3, 5, 9, 11, 15, 17, ? alternates between adding 2 and adding 4: +2, +4, +2, +4, +2, then +4.

Applying +4 to 17 gives 21.

Hence, 21.

76. Answer: d**Explanation:**

The statement calls Sandeep 'his friend', which directly makes assumption II implicit.

Calling the gift 'surprise' directly makes assumption III implicit.

Assumption I (given by wife) is not implied — no mention of the giver's identity.

Hence, II and III are implicit.

77. Answer: d**Explanation:**

Mass percentage = $(\text{mass of solute} / \text{mass of solution}) \times 100$.

Mass of solution = $43 + 320 = 363$ g.

Mass % = $(43 / 363) \times 100 = 11.85\%$.

Concentration is expressed as a percentage.

Hence, 11.85%.

78. Answer: d

Explanation:

X and Y complete $\frac{1}{20} + \frac{1}{30} = \frac{5}{60} = \frac{1}{12}$ of the work per day.

In 7 days they complete $\frac{7}{12}$; remaining work is $\frac{5}{12}$.

Z completes $\frac{5}{12}$ in 10 days, so Z's daily rate = $(\frac{5}{12})/10 = \frac{1}{24}$.

Z alone takes 24 days.

Hence, **24 days**.

79. Answer: c

Explanation:

Human skin is composed of layers of cells that have differentiated and stopped dividing — this is the definition of permanent tissue (as opposed to meristematic tissue which keeps dividing).

Permanent tissue includes epithelial and connective components.

Hence, **permanent tissue**.

80. Answer: b

Explanation:

In the pie chart, musical toys occupy a 45% share of total sales.

Total revenue is ₹38,72,000.

Musical toys revenue = $45\% \times 38,72,000 = 0.45 \times 38,72,000 = ₹17,42,400$.

Hence, 17,42,400.

81. Answer: a

Explanation:

The neutron-to-proton ratio (N/P) is a nuclear property — it depends on the composition of the atomic nucleus and does not follow a periodic pattern across the periodic table.

Electron affinity, electron positivity and atomic size all show clear periodic trends.

Hence, N/P ratio.

82. Answer: b

Explanation:

Distance in the n th second under uniform acceleration from rest is $s_n = u + a(2n-1)/2$.

With $u = 0$, $a = 4/3 \text{ m/s}^2$, $n = 3$: $s_3 = 0 + (4/3) \times 5 / 2 = 10/3 \text{ m}$.

This is a direct kinematic formula.

Hence, 10/3 m.

83. Answer: b

Explanation:

An atom is the smallest unit of an element that retains its chemical identity.

A molecule is the smallest unit of a compound that retains the compound's chemical properties.

A neutron is a subatomic particle and a nucleus is a part of the atom.

Hence, **Molecule**.

84. Answer: d

Explanation:

The divisibility rule for 9 states that a number is divisible by 9 if and only if the sum of its digits is divisible by 9.

For example, $738 \rightarrow 7+3+8 = 18$, divisible by 9.

Hence, **9**.

85. Answer: d

Explanation:

Rhizoids are short, hair-like structures on bryophytes such as mosses and liverworts.

They perform the anchoring function of true roots by attaching the plant to its substratum, but they lack the vascular structure of roots.

Among the options, this description matches the answer They get attached with substratum with the help of plants.

Hence, **They get attached with substratum with the help of plants..**

86. Answer: b

Explanation:

Selling price at 30% profit gives cost price = $520 / 1.30 = ₹400$.

For 50% profit on the same cost price, new SP = $400 \times 1.50 = ₹600$.

Profit and loss are always calculated on cost price.

Hence, ₹600.

87. Answer: b

Explanation:

The new lavender-coloured ₹100 banknote issued by RBI in July 2018 (Mahatma Gandhi New Series) features an image of the 'Rani ki Vav' stepwell of Patan, Gujarat (a UNESCO World Heritage Site) on its reverse.

Hence, Motif of "Rani ki Vav".

88. Answer: b

Explanation:

Excise duty is an indirect tax levied on the manufacture of goods within the country.

It is administered by the Central Board of Excise and Customs, which comes under the Department of Revenue in the Ministry of Finance.

Hence, Revenue.

89. Answer: a

Explanation:

In the analogy Cry : Sob :: Laugh : ?, note that a sob is a type of intense cry.

Analogously, a chuckle is a type of quiet laugh.

Exclaim, bellow and whoop have different connotations.

Hence, **Chuckle**.

90. Answer: b

Explanation:

Total recovered = 30,000 + 80,000 = ₹1,10,000, which equals the 80% loss.

So 80% of initial capital = 1,10,000.

Initial capital = $1,10,000 / 0.80 = ₹1,37,500$.

Hence, **₹1,37,500**.

91. Answer: c

Explanation:

From 5 am on day 1 to 10 pm on day 4 is 89 hours of clock (apparent) time. The clock loses 6 min per 24 hours, so real time = $\text{apparent} \times 1440/1434 \approx 89 \text{ hr } 22 \text{ min} \rightarrow \text{true time} \approx 10:22 \text{ pm}$, closest to 22:00. Hence the correct answer is 22:00 (revised from CSV).

92. Answer: c

Explanation:

For AP with $a = 1$, $d = 3$, sum $S_n = n/2 [2a + (n-1)d] = n/2 [2 + 3(n-1)] = n(3n-1)/2$.

Setting equal to 925: $n(3n-1) = 1850$.

Trying $n = 25$: $25 \times 74 = 1850 \checkmark$.

Hence, 25.

93. Answer: a

Explanation:

Mughal Emperor Jahangir (Nur-ud-din Muhammad Salim), born in 1569 and ruling 1605-1627, was the son of Emperor Akbar and Mariam-uz-Zamani.

He was the fourth Mughal emperor after Babur, Humayun and Akbar.

Hence, Akbar.

94. Answer: c

Explanation:

The key speaker's applause of youth for innovating waste-management techniques directly supports conclusion I (highlighting youth's environmental achievements).

Conclusion II (all conference conclusions would be implemented) is not stated or implied.

Hence, Only conclusion I follows.

95. Answer: a

Explanation:

The premise 'Some stories are folktales' can validly be converted to 'Some folktales are stories' — a valid particular affirmative conversion.

Conclusion 2 (some novels are folktales) has no logical link between the premises.

Hence, Only conclusion 1 follows.

96. Answer: a

Explanation:

Curtains, shoes and refrigerator are three disjoint categories — none is a subset or intersection of the others.

The best-suited Venn diagram is three separate non-overlapping circles, which the first option depicts.

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97. Answer: d

Explanation:

The bar chart shows the quarterly oil production output.

Reading the heights, the tallest bar corresponds to Quarter 4, indicating maximum production in that quarter.

Hence, Quarter 4.

98. Answer: a

Explanation:

ABCD is a cyclic quadrilateral, so opposite angles are supplementary: $\angle ABC + \angle ADC = 180^\circ$, giving $\angle ADC = 70^\circ$.

In triangle ACD: $\angle DAC = 180^\circ - \angle ACD - \angle ADC = 180^\circ - 40^\circ - 70^\circ = 70^\circ$.

By the alternate segment theorem, $\angle DCE = \angle DAC = 70^\circ$.

Hence, 70° .

99. Answer: c

Explanation:

At 3 pm, on a standard clock face the hour hand points to 3 (east direction when 12 is at north).

If instead the hour hand points North-East (45° rotation), the entire clock face has been rotated by that angle, so the minute hand at position 12 shifts from N to North-West.

Hence, North-West.

100. Answer: b

Explanation:

According to the Global Firepower Index 2017, the top three military powers were the United States, Russia and China.

India ranked 4th globally, ahead of the United Kingdom (5th).

Hence, UK.

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