RRB NTPC Tier I Official Paper (Held On: 18 Apr 2016 Shift 2) (Previous Year Paper)

RRB NTPC • 2016 • 100 questions • 90 minutes • Answer key and solutions

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Scan the QR code or click the link to open it.

Q1. Choose the pair from the given alternatives that are related to each other like the words of the first pair.

Moth : Insect :: Mouse : ____

A. Rodent

B. Cat

C. Mole

D. Rat

(a) A
(b) D
(c) B
(d) C

Q2. Rearrange the unordered letters in their natural order and choose the odd one.

A. UNPE

B. ILOLSGNH

C. OHALPB

D. ENANCIH

(a) D
(b) B
(c) C
(d) A

Q3. What is the unit of measurement of sound?

A. Newton

B. Decibel

C. Sones

D. Phons

(a) B
(b) A
(c) D
(d) C

Q4. The mean of a distribution is 10 and the standard deviation is 5. What is the value of variance coefficient?

A. 50%

B. 100%

C. 150%

D. 200%

(a) D
(b) A
(c) B

(d) C

Q5. The mean of 15 observations is 14. Three more observations are included and the new mean becomes 13. The mean of three new observations is:

A. 6

B. 7

C. 8

D. 11

(a) C
(b) D
(c) A
(d) B

Q6. What is the expansion of WWW in relation to computers?

A. World Wide Web

B. Web Wide World

C. Whole World Web

D. Wide Word Web

(a) B
(b) C
(c) A
(d) D

Q7. In which a convex mirror is used?

A. Rear View mirrors in vehicles

B. Glass windows

C. Makeup Mirror

D. Kaleidoscope

(a) A
(b) C
(c) B
(d) D

Q8. If 'P' represents '+', 'Q' represents '-', 'R' represents '×' and 'S' represents '÷', then the value of 10 Q 5 R 27 S 9 P 10 would be:

A. 10

B. 15

C. 5

D. 1

(a) A
(b) D
(c) C
(d) B

Q9. Ritesh bought an old bike, the bike price increases by 50% after passing through three owners. If the first and second owners get 10% and 30% respectively, then find the % profit earned by the third owner.

A. 8%

B. 11%

C. 4.9%

D. 6.9%

(a) A
(b) C

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(c) D
(d) B

Q10. If in a certain code language LEADER is written as OBADHO. How will be the word STABLE be written in that code language?

A. BYDIWV
B. BYIDWV
C. BIYDWV
D. BIDYWV

(a) C
(b) A
(c) B
(d) D

Q11. Suman, Sakshi, and Mayank form a partnership. Suman invests 5 times that of Sakshi and Sakshi invests 3/5 of Mayank's investment. The total profit earned at the end of the year was Rs. 23,000. Find the share of Sakshi.

A. Rs. 5,000
B. Rs. 3,000
C. Rs. 4,000
D. Rs. 45,000

(a) A
(b) C
(c) D
(d) B

Q12. If the ratio of two supplementary angles is 13 : 5, then find the difference between the two.

A. 60°
B. 70°
C. 80°
D. 120°

(a) C
(b) B
(c) D
(d) A

Q13. Which of the following is called 'Black Beauty'?

A. Crow's name in Panchatantra
B. Petrol in raw form
C. Another name for Rapunzel
D. A coal-coloured stone from Mars

(a) A
(b) B
(c) D
(d) C

Q14. Goa was a _____ state immediately after India's independence.

A. Indian
B. Portuguese
C. Dutch
D. British

(a) A
(b) B

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(c) D
(d) C

Q15. Which of the following lake is Saline soda lake, which was formed in the Buldhana district due to the impact of meteorite?

A. Lonar Lake
B. Nakuru Lake
C. Shala Lake
D. Mono Lake

(a) D
(b) C
(c) B
(d) A

Q16. If the standard deviation of a population is 8, what will be its variance?

A. 64
B. 16
C. 32
D. 24

(a) C
(b) D
(c) B
(d) A

Q17. If (x2 - 4x + 1) = 0, then find the value of $(x^3 + 1/(x^3))/(x^2 + 1/(x^2))$.

A. 26/7
B. 13/7
C. 6/7
D. 33/7

(a) D
(b) A
(c) B
(d) C

Q18. _____ replaced Steve Ballmer as CEO of Microsoft.

A. J. W. Thompson
B. Satya Nadella
C. Amy Hood
D. Bill Gates

(a) B
(b) C
(c) A
(d) D

Q19. Find the total prime factors in the product of { (8)10 × (9)7 × 78 }.

A. 45
B. 54
C. 52
D. 65

(a) B
(b) A
(c) D

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(d) C

Q20. The ratio of three numbers is 2 : 3 : 6 and their HCF is 45. Find the sum of these numbers.

A. 405

B. 455

C. 495

D. 525

(a) B
(b) A
(c) C
(d) D

Q21. Which Indian city is also known as 'Pink City'?

A. Jaipur

B. Jodhpur

C. Jabalpur

D. Sholapur

(a) C
(b) D
(c) A
(d) B

Q22. From which country did Bangladesh get independence?

A. India

B. UK

C. Pakistan

D. Burma

(a) B
(b) C
(c) A
(d) D

Q23. Consider the following statements and choose the correct option:

1. Two straight lines can intersect each other at more than one point.

2. The sides of one angle are respectively parallel to the sides of the other angle, so both angles are either equal or supplementary.

A. Both 1 and 2 are incorrect.

B. Both 1 and 2 are correct.

C. 1 is incorrect and 2 is correct!

D. 1 is correct and 2 is incorrect.

(a) D
(b) B
(c) A
(d) C

Q24. [(1.93 × 19.3 - 2.07 × 20.7) / (19.3 - 20.7)] is equal to:

A. 0.4

B. 4.00

C. 40

D. 0.04

(a) B
(b) C

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(c) A
(d) D

Q25. Some statements and its two conclusions 1 and 2 are given. You have to consider the statements to be true even if they seem to be at variance from commonly known facts.

Statement:

All mangoes are golden colored.

No golden thing is cheap.

Conclusion:

1. All mangoes are cheap.

2. Golden colored mangoes are not cheap.

Decide which of the following options given below logically follows the given statements.

A. Both conclusions 1 and 2 follow.

B. Neither conclusion 1 nor conclusion 2 follows.

C. Only conclusion 1 follows

D. Only conclusion 2 follows

(a) B
(b) C
(c) A
(d) D

Q26. Rearrange the disordered letters in their natural order and choose the odd one.

A. OLENV

B. EISTSH

C. AGZEANIM

D. TCAYRIDION

(a) D
(b) B
(c) C
(d) A

Directions

This passage is in Hindi. Read it online.

Q27. How many goals did Chennai score?

A. 1

B. 7

C. 3

D. 5

(a) C
(b) A
(c) B
(d) D

Q28. What was the score of Mumbai in the Mumbai-Chennai match?

A. 1 - 6

B. 2 - 5

C. 1 - 5

D. 1 - 4

(a) A
(b) B

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(c) D
(d) C

Q29. How many matches did the Mumbai team lose?

A. 0 or 1
B. 2
C. 0
D. 1

(a) B
(b) A
(c) C
(d) D

Q30. Of the given three numbers, the second number is thrice the first and double the third. If the average of all three numbers is 77, find the value of the second number.

A. 126
B. 145
C. 118
D. 136

(a) C
(b) D
(c) B
(d) A

Q31. Sugar is a _____ in a sugar solution.

A. Solvent
B. Solute
C. Colloid
D. Suspension

(a) B
(b) D
(c) C
(d) A

Q32. P can do a work in X days. He finished 1/6 of the entire work and then Q alone finished the rest in 15 days. If together they can finish half of the work in 45/8 days, then find the value of X?

A. 90/11
B. 30
C. 42
D. 32/8

(a) B
(b) D
(c) C
(d) A

Q33. What does Prism do?

A. Reflects light.
B. It prevents light from passing through.
C. It scatters the light passing through it.
D. It refracts light from its path.

(a) C
(b) D

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(c) B
(d) A

Q34. When is World Cancer Day celebrated?

A. 4 February
B. 5 March
C. 12 May
D. 23 August

(a) D
(b) C
(c) A
(d) B

Q35. An Assertion (A) and a Reason (R) are given below.
Assertion (A): It causes death when inhaled carbon monoxide.
Reason (R): Carbon monoxide is added to hemoglobin.
choose the right option.

A. A is correct but R is false.
B. A is false but R is correct.
C. Both A and R are correct and R is the proper interpretation of A.
D. Both A and R are correct but R is not a proper interpretation of A.

(a) A
(b) C
(c) D
(d) B

Q36. Element Hafnium of the Hf symbol is named at which of the following places.

A. Germany
B. Copenhagen
C. Sweden
D. France

(a) C
(b) D
(c) B
(d) A

Q37. Which of the following cricketers was NOT awarded honorary membership of MCC (Lords)?

A. Mahendra Singh Dhoni
B. Sourav Ganguly
C. Virender Sehwag
D. Sachin Tendulkar

(a) A
(b) D
(c) B
(d) C

Q38. Who invented dynamite?

A. Alfred Nobel
B. Philippus Paracelsus
C. Louis Pasteur
D. Sir Humphrey Davy

(a) A

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(b) D
(c) B
(d) C

Q39. One of the four words is a class to which the other three members belong. Identify the class.

A. Sapphire
B. Ruby
C. Penna
D. Ratna

(a) A
(b) B
(c) D
(d) C

Q40. When was the Supreme Court of India established?

A. 1947
B. 1950
C. 1951
D. 1952

(a) C
(b) B
(c) A
(d) D

Q41. Who formed the Deshbandhu new youth association?

A. Lakshmi Sahgal
B. N. G. Ranga
C. Kanneganti Hanumanthu
D. Tirupur Kumaran

(a) B
(b) A
(c) C
(d) D

Q42. Find the simple interest rate at which a sum of money becomes five times at simple interest in 10 years.

A. 40%
B. 35%
C. 25%
D. 50%

(a) B
(b) D
(c) A
(d) C

Q43. Which part of the body is related to purification of blood?

A. heart
B. Gall bladder
C. Kidney
D. Spline

(a) D
(b) B
(c) A

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(d) C

Q44. Which is the first airport in the world to be fully powered by solar energy?

A. Cochin International Airport

B. Chhatrapati Shivaji International Airport

C. Dubai International Airport

D. Kansai International Airport

(a) D
(b) C
(c) B
(d) A

Q45. If 3x = 4y = 12-z, find the value of 3/x + 3/y + 3/z.

A. 1

B. 6

C. 4

D. 0

(a) D
(b) B
(c) C
(d) A

Directions

The following questions are based on the information given below:

All the 3200 students of a college in a city know at least one of the three languages English, Telugu and Hindi. 2400 know English, 1700 know Telugu, 800 know Hindi, 1000 know English and Telugu, 500 speak English and Hindi, 300 speak Telugu and Hindi and only 100 know all three languages.

Q46. How many know only one of the three languages?

A. 1600

B. 900

C. 300

D. 100

(a) D
(b) C
(c) A
(d) B

Q47. How many know only Hindi?

A. 200

B. 400

C. 100

D. 800

(a) B
(b) D
(c) A
(d) C

Q48. How many do not know any of the three languages?

A. 0

B. 1

C. 10

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D. 15

(a) D
(b) C
(c) A
(d) B

Q49. If 9cosA + 12sinA = 15, find the value of cotA.

A. 3/4
B. 12/13
C. 1/3
D. 3/5

(a) A
(b) D
(c) B
(d) C

Q50. Who among the following is an American golfer?

A. Tiger woods
B. Daniel Brooks
C. Scott Henderson
D. Nick Flanagan

(a) B
(b) A
(c) C
(d) D

Q51. The HCF of two numbers is 23 and their LCM is 1035. If one of them is 207 and the other is X, find X/23.

A. 15
B. 7
C. 5
D. 9

(a) C
(b) D
(c) B
(d) A

Q52. If 'Delicious' is related to 'Taste', similarly 'Melodious' is related to _____.

A. Speak
B. Highness
C. Voice
D. Tongue

(a) C
(b) A
(c) D
(d) B

Q53. The difference between age of Sunita and Sheela is 12 years. If 9 years ago, elder's age was 4 times of younger's age, then what are their present age?

A. 11 and 23
B. 15 and 27
C. 13 and 25
D. 23 and 35

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(a) A
(b) B
(c) C
(d) D

Q54. The three joggers run from place X to place Y in a ratio of 10 : 3 : 20. The ratio of time of arrival of these joggers to the destination will be

A. 20 : 3 : 10
B. 3 : 6 : 20
C. 6 : 20 : 3
D. 6 : 3 : 20

(a) A
(b) C
(c) B
(d) D

Q55. Based on the symmetry given, find the given number from the given alternatives.

1 : 1 :: 25 : __

A. 225
B. 135
C. 625
D. 26

(a) A
(b) D
(c) B
(d) C

Q56. Cristiano Ronaldo, the football player represents which country?

A. Brazil
B. Argentina
C. Portugal
D. England

(a) D
(b) A
(c) B
(d) C

Q57. An Assertion (A) and a Reason (R) are given below.

Assertion (A): Most ancient civilizations developed near rivers.

Reason (R): Man's main occupation was agriculture.

choose the right option.

A. A is correct but R is false.
B. A is false but R is correct.
C. Both A and R are correct and R is the appropriate explanation of A.
D. Both A and R are correct but R is not an appropriate explanation of A.

(a) C
(b) D
(c) B
(d) A

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Directions

Study the following information carefully and answer the questions given below it.

There are six generations in a family although there are a total of five members in the family. The names of the family members are Aditya, Bawan, Charu, Deepa and Varun.

The following comments are given about them.

Charu is the only unmarried child whose grandparents have passed away. Deepa is a widow who is the daughter of widower Varun. No member of the family is an adopted son or adopted daughter. There is only one member of the family in a generation. Each couple has only one child and there were no siblings in the first generation.

Q58. If Charu's grandfather had been alive, he would surely have been a member of which generation?

A. Third
B. Second
C. Last to second
D. Last to first

(a) A
(b) D
(c) C
(d) B

Q59. If Aditya is the father of Charu and grandson of Bawan, then how many possible combinations exist in the family?

A. 1
B. 2
C. 3
D. 4

(a) D
(b) A
(c) C
(d) B

Q60. If Aditya is the grandson of Bawan, then who is the member before the last generation?

A. Varun
B. Deepa
C. Charu
D. Aditya

(a) B
(b) A
(c) D
(d) C

Q61. Even after giving 40% discount on marked price, one jacket sold for Rs. 600 at 20% profit. If it is sold at marked price, what will be the percentage profit?

A. 50%
B. 75%
C. 100%
D. 425%

(a) B
(b) C
(c) A
(d) D

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Q62. In what ratio should 30% potassium nitrate solution be mixed with 60% potassium nitrate solution to get result as 40% potassium nitrate in the solution?

A. 2 : 1
B. 3 : 1
C. 1 : 3
D. 4 : 5

(a) A
(b) C
(c) D
(d) B

Q63. Which is the largest pyramid of Egypt?

A. Pyramid of Khafre
B. Pyramid of Menkaure
C. Pyramid of Khufu
D. Pyramid of Djedefre

(a) D
(b) B
(c) C
(d) A

Q64. Based on the given symmetry, find out the given word from the given alternatives.

Palam : Delhi :: Dum Dum : _____

A. Hyderabad
B. Chennai
C. Mumbai
D. Kolkata

(a) B
(b) D
(c) A
(d) C

Q65. Speaker of Lok Sabha Sumitra Mahajan represents which constituency?

A. Amethi
B. Varanasi
C. Indore
D. Patna

(a) B
(b) C
(c) A
(d) D

Q66. Which part of a computer is called a nerve centre?

A. Software
B. Hardware
C. Control unit
D. Programs

(a) D
(b) C
(c) B
(d) A

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Q67. Choose one of the following options that are different:

A. Auto

B. Car

C. Van

D. Taxi

(a) B
(b) D
(c) A
(d) C

Q68. In a certain code language, BEND is written as 7@4# and NIGHT is written as 4$%89. How to write DEBT in the same code language?

A. #@78

B. #@79

C. $@78

D. @$79

(a) C
(b) D
(c) B
(d) A

Q69. Density of water is _____.

(a) 500 kg/m³
(b) 1000 kg/m³
(c) 1500 kg/m³
(d) 2000 kg/m³

Q70. If + means '×', '×' means '÷', '÷' means '-' and '-' means '+', then what will be the value of the following expression?

15 + 16 × 16 ÷ 15

A. 10

B. 5

C. 1

D. 0

(a) C
(b) D
(c) B
(d) A

Q71. A completes 2/5 of a work in X days. Then he calls B and they together finish the remaining work in 6 days. If B alone takes 100/6 days, find the value of X.

A. 10 days

B. 50/3 days

C. 20 days

D. 40 days

(a) B
(b) C
(c) A
(d) D

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Q72. If 'wall' is called 'window', 'window' is called 'door', 'door' is called 'floor', 'floor' is called 'roof' and 'roof' is called 'Ventilator'. So where will someone stand?

A. Roof
B. Window
C. Wall
D. flooring

(a) D
(b) B
(c) C
(d) A

Q73. Who proposed heredity rules?

A. Thomas Robert Malthus
B. John Maynard keynes
C. Gregor Mendel
D. Donald Baer

(a) A
(b) D
(c) C
(d) B

Q74. Name the 'Celluloid Man' of the Indian film industry, who has died recently?

A. David Bowie
B. P. K. Nair
C. Ravindra Jain
D. Saroop Parinda

(a) B
(b) C
(c) A
(d) D

Q75. In which of the following devices, a gyroscope is used?

A. Computer keyboard
B. Computer mouse
C. Telephone
D. Television

(a) D
(b) C
(c) B
(d) A

Q76. Which of these numbers is divisible by 11?

A. 45336787
B. 44469542
C. 49231754
D. 56433257

(a) D
(b) A
(c) C
(d) B

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Q77. Which king of Bengal was defeated by Bakhtiyar Khilji in the 13th century?

A. Mahipal

B. Lakshmanasen

C. Shashank

D. Grihavarman

(a) C
(b) A
(c) B
(d) D

Q78. If the ratio of the angles of a triangle is 2 : 3 : 7, find the ratio of the sum of the largest angle and the smallest angle to the smallest angle.

A. 8 : 1

B. 2 : 3

C. 9 : 2

D. 3 : 5

(a) C
(b) B
(c) D
(d) A

Q79. If Mayank doubles the selling price of an item, the profit becomes 4 times. Find the original profit percent (before increasing the selling price)

A. 50%

B. 100%

C. 125%

D. 25%

(a) A
(b) B
(c) C
(d) D

Q80. Which of the following organisms belongs to the Mollusca family?

A. Cockroaches

B. Snail

C. Earthworm

D. Starfish

(a) B
(b) D
(c) C
(d) A

Q81. Choose the correct factor of $f(x) = 2x^2 - 5x + 2$

A. x - 2

B. x - 3

C. x - 4

D. x - 5

(a) B
(b) A
(c) D
(d) C

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Q82. Which states were ruled by the earlier Chera dynasty?

A. Tamil Nadu and Kerala
B. Bengal and Orissa
C. Arunachal Pradesh and Sikkim
D. Maharashtra and Gujarat

(a) B
(b) C
(c) A
(d) D

Q83. Who is the author of the book 'Making India awesome'?

A. Arundhati Roy
B. Kailash Satyarthi
C. Sachin Garg
D. Chetan Bhagat

(a) D
(b) A
(c) B
(d) C

Q84. Who is the author of the book 'Straight Drive'?

A. Kapil Dev
B. Sunil Gavaskar
C. Prakash Padukone
D. Vishwanathan Anand

(a) B
(b) C
(c) D
(d) A

Q85. Where is Netrani island located?

A. Kerala
B. Andaman and Nicobar
C. Karnataka
D. Goa

(a) C
(b) B
(c) A
(d) D

Q86. Who was the first Chinese woman to visit space?

A. Wang Yaping
B. Yi So-yeon
C. Liu Yang
D. Yelena Serova

(a) B
(b) C
(c) A
(d) D

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Q87. Calculate the principal if a sum of money becomes Rs.1200 in 4 years and Rs.1500 in 7 years at simple interest.

A. Rs.800

B. Rs.600

C. Rs.900

D. Rs.200

(a) C
(b) D
(c) A
(d) B

Q88. An Assertion (A) and a Reason (R) are given below.

Assertion (A): A person with O blood group is considered a universal recipient.

Reason (R): O type of blood has no antigens.

Choose the right option.

A. A is correct but R is wrong.

B. A is wrong but R is correct.

C. Both A and R are correct and R is the correct explanation of A.

D. Both A and R are correct but R is not an appropriate explanation of A.

(a) B
(b) A
(c) D
(d) C

Q89. A bus covers some distance at a certain speed. If a person covers one-third of that distance in triple time, then the ratio of the speed of the person to the speed of the bus is:

A. 1 : 3

B. 3 : 1

C. 1 : 9

D. 9 : 1

(a) B
(b) D
(c) A
(d) C

Q90. The Chennakesva temple was built during which of the following empires?

A. Hoysal

B. Yadavas

C. Cholas

D. Pala

(a) B
(b) D
(c) C
(d) A

Q91. Deficiency of which vitamin causes scurvy disease?

(a) Vitamin A
(b) Vitamin B6
(c) Vitamin K
(d) Vitamin C

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Q92. What is dry ice?

A. Dried Ice

B. Frozen snow in the desert

C. Solid form of carbon dioxide

D. Solid form of hydrogen peroxide

(a) D
(b) C
(c) A
(d) B

Q93. Based on the given symmetry, find the matching pair from the given alternatives.

27 : 9

A. 125 : 5

B. 135 : 15

C. 64 : 8

D. 729 : 81

(a) A
(b) D
(c) B
(d) C

Q94. If 'L' means '×', 'M' means '+', 'N' means '-', 'P' means '÷' then what will be the value of 44 M 64 N 60 P 15 L 4?

A. 13

B. 82

C. 72

D. 92

(a) C
(b) A
(c) D
(d) B

Q95. If A + B = 2C and C + D = 2A then

A. A + C = 2D

B. A + C = B + D

C. A + C = 2B

D. A + D = B + C

(a) D
(b) B
(c) A
(d) C

Q96. Which of the following is used to melt ice?

A. Salt

B. Hydrogen

C. Caustic Soda

D. citric acid

(a) C
(b) A
(c) D
(d) B

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Q97. What does MIPS stands for in computer terminology?

A. Marginal Input Storage

B. Million Instruction per Second

C. Micro Information Processing Storage

D. Memory Image Processing State

(a) C
(b) A
(c) B
(d) D

Q98. In a certain code language, CHAIR is written as $?1÷8 and HIDE is written as ?÷35. How would DEAR be written in that code language?

A. 3851

B. 5318

C. 3518

D. 5381

(a) C
(b) B
(c) D
(d) A

Q99. The length of the shadow of a pillar is reduced to 24 m, when the angle of elevation of the Sun increases from 30° to 60°, the length of the pillar is:

A. 10√3

B. 8√3

C. 16√3

D. 12√3

(a) B
(b) A
(c) C
(d) D

Q100. The ratio of girls and boys among 504 students of a school is 11 : 13. If 12 more girls are given admission, the new ratio will be:

A. 3 : 51

B. 9 : 8

C. 81 : 91

D. 51 : 31

(a) D
(b) A
(c) C
(d) B

ANSWER KEY

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

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51	a	52	a	53	c	54	b	55	d	56	d	57	b	58	c	59	a	60	c
61	b	62	a	63	c	64	b	65	b	66	b	67	c	68	c	69	b	70	b
71	c	72	d	73	c	74	a	75	c	76	c	77	c	78	a	79	a	80	a
81	b	82	c	83	a	84	a	85	a	86	b	87	c	88	a	89	d	90	d
91	d	92	b	93	b	94	c	95	b	96	b	97	c	98	a	99	d	100	c

SOLUTIONS

Q1. Answer: (a) A

The logic follows here is:

As Insect belongs to the Moth class,

Similarly,

Mouse belongs to the Rodent class.

Hence, the correct answer is "Option 1".

Additional Information

• Moths are a paraphyletic group of insects that includes all members of the order Lepidoptera that are not butterflies, with moths making up the vast majority of the order.

• Rodents are mammals of the order Rodentia, which are characterized by a single pair of continuously growing incisors in each of the upper and lower jaws. Well-known rodents include mice, rats, squirrels, prairie dogs, porcupines, beavers, guinea pigs, hamsters, and gerbils.

• The term mole is especially and most properly used for "true moles" of the family Talpidae in the order Eulipotyphla.

• The cat is a domestic species of small carnivorous mammals. It is the only domesticated species in the family Felidae and is often referred to as the domestic cat to distinguish it from the wild members of the family.

Q2. Answer: (d) A

The logic follows here is:

Step 1,

Rearranging the unordered letters in their natural order to form a meaningful word.

A. UNPE

Unordered letter	U	N	P	E
Natural order	P	U	N	E

B. ILOLSGNH

Unordered letter	I	L	O	L	S	G	N	H
Natural order	S	H	I	L	L	O	N	G

C. OHALPB

Unordered letter	O	H	A	L	P	B
Natural order	B	H	O	P	A	L

D. ENANCIH

Unordered letter	E	N	A	N	C	I	H
Natural order	C	H	E	N	N	A	I

Step 2,

Chennai, Shillong, and Bhopal are the capital of different states of India whereas Pune is a city of Maharashtra.

Hence, the correct answer is "PUNE".

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Q3. Answer: (a) B

The correct answer is B.

• Sound is measured in Decibel.
• SI unit of Force is Newton.
• Sone is the unit of loudness.
• One sone is arbitrarily set equal to the loudness of a 1,000-hertz.
• Phons is also a unit of loudness.
• 0 phons at 1000 Hertz equals 0 decibels.
• The loudness of a sound depends upon the amplitude of vibration.
• The Pitch of the sound is determined by its frequency.

Additional Information

Some important decibel values are:

Type	Value
Soft music, whisper	30 dB
Average home noise	40 dB
Normal talking	60 dB
Vacuum cleaner, Normal music	75 dB
Heavy traffic, noisy restaurant	80-89 dB (sound above 85 dB is harmful to human beings.
Stock car racing	130 dB
Gunshot, siren	100 feet - 140 dB
Aeroplane at 100 feet	185 dB approx

Q4. Answer: (b) A

Given:

The mean of a distribution is 10 and the standard deviation is 5.

Formula used:

Coefficient of variance = (Standard deviation/Mean) × 100

Calculation:

According to the question,

Standard deviation = 5 and Mean = 10

Coefficient of variance = (Standard deviation/Mean)× 100

=> (5/10)× 100

=> 50%

Therefore The value of variance coefficient is 50%.

Q5. Answer: (a) C

Given:

The mean of 15 observations is 14.

Three more observations are included and the new mean becomes 13.

Formula used:

Mean = sum of observation/ number of observation

Calculation:

Mean of a 15 observation = 14

Sum of 15 observation = 15 × 14

=> 210

According to the question,

Three more observation is included, then Mean is 13

Let the new mean observation be x, y and z

=> (15 × 14) + x + y + z = (15 + 3)× 13

=> 210 + x + y + z = 234

=> x + y + z = 234 – 210

=> x + y + z = 24

Mean = sum of observation/ number of observation

=> (x + y + z)/3

=> 24/3

=> 8.

Therefore The mean of three new observations is 8.

According to the question,

Let the sum of three observation be 3y

=> (15 × 14) + 3y = (15 + 3)× 13

=> 210 + 3y = 234

=> 3y = 234 – 210

=> 3y = 24

Mean of three observation

=> y = 24/3

=> y = 8

Therefore The mean of three new observations is 8.

Q6. Answer: (c) A

The correct answer is A.

• The World Wide Web is an information system where documents and other web resources are identified by Uniform Resource Locators.

• It is interlinked by hypertext and is accessible over the Internet.

• English scientist Sir Timothy Berners-Lee invented the World Wide Web in 1989.

• He wrote the first web browser in 1990 while employed at CERN near Geneva, Switzerland.

• The browser was released outside CERN to other research institutions starting in January 1991, and then to the general public in August 1991.

Additional Information

Some important expands related to the web are:

1. URL - Uniform Resource Locator.
2. LAN - Local Area Network.
3. WAN - Wide Area Network.
4. HTTP - Hypertext Transfer Protocol.
5. SMTP - Simple Mail Transfer Protocol.
6. HTML - Hypertext Markup Language.

Q7. Answer: (a) A

The correct answer is A.

• Concave mirrors are used - shaving mirrors, Head mirrors, Ophthalmoscope, Headlights of car, Solar furnaces, etc

• Convex mirrors are used - Inside buildings, Vehicle mirrors, Magnifying glass, Security purposes, Street light reflectors, etc.

Key Points

• Convex mirrors are used for cars because they give an upright image and provide a wider field of view as they are curved outwards.

• A convex mirror is also known as a diverging mirror as this mirror diverges light when they strike its reflecting surface.

• The image formed by a convex mirror is always virtual, erect, and diminished.

• Image Formation by a convex mirror

• The image formed by the concave mirror is always Real and inverted.

Additional Information

The image formed by Convex mirror:

Position of Object	Position of image	Nature of Image	Size of image

At infinity	At focus	Virtual and erect	Highly Diminished
Between Infinity and the Pole	Between Pole and Focus	Virtual and erect	Diminished

Q8. Answer: (c) C

Decoding the given information,

P	Q	R	S
Means			
•	•	×	÷

Given equation → 10 Q 5 R 27 S 9 P 10

After replacing the signs from left to right and using the BODMAS rule,

10 - 5 × 27 ÷ 9 + 10 = ?

10 - 5 × 3 + 10 = ?

10 - 15 + 10 = ?

20 - 15 = ?

? = 5

Hence, the correct answer is "Option 3".

Q9. Answer: (b) C

Given

Ritesh bought an old bike, the bike price increases by 50% after passing through three owners

The first and second owners get 10% and 30% respectively

Formula used

Profit% = (Profit / Cost Price) × 100

Calculation

Let initially CP of bike be Rs.x

=> After passing by there Price becomes x + x × 50 / 100

=> Price becomes 1.5x

=> Second person got the bike on x + x × 10 / 100

=> Price for Second person = 1.1x

=> Price for third person = 1.1x + 1.1x × 30 / 100

=> Price for third person = 1.43x

=> Profit earned by third person = 1.50x - 1.43x = 0.07x

=> Profit% = (0.07x / 1.43x) × 100

=> Profit% = 700 / 143 = 4 .9%

Therefore Profit earned by third person is 4.9%

Alternate Method

Let Price of bike be Rs100

After overall profit price of 50 bike becomes Rs.150

CP of bike for first person is 100 × 110 / 100 = Rs.110

First person sell it to second person on Rs.110

Second person gain 30% = 110 × 130 / 100

CP of bike for third person Rs.143

Profit gain by third person is 150 - 143 = Rs.7

Profit% = (7 / 143) × 100 = 4.9%

Therefore Third person got 4.9% profit%

Q10. Answer: (a) C

The logic follows here is:

Similarly,

Hence, the correct answer is "BIYDWV".

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Q11. Answer: (d) B

Given:

Suman invests 5 times that of Sakshi

Sakshi invests 3/5 of Mayank's investment.

Total profit was Rs.23,000

Concept used:

Ratio of investment by all three is equal to the profit ratio distributed by them

Calculation:

Investment ratio of Suman and Sakshi is 5 : 1

Investment ratio of Sakshi and Mayank = 3 : 5

=> Suman : Sakshi = 5 : 1

=> Sakshi : Mayank = 3 : 5

Equating Sakshi's ratio in both the cases,

=> Suman : Sakshi = 5_(×3) : 1_(×3) = 15 : 3

=> Sakshi : Mayank = 3_(×1) : 5_(×1) = 3 : 5

=> Suman : Sakshi : Mayank = 15 : 3 : 5

The ratio of profit distribution will be same as ratio of investment.

=> Profit ratio = 15 : 3 : 5

According to the question,

=> 15 + 3 + 5 = 23,000

=> 23 = 23,000

=> 1 = 1,000

Sakshi's share = 3 = 3 × 1000 = Rs.3,000

Therefore Sakshi's income is Rs. 3,000.

Q12. Answer: (a) C

Given

The ratio of two supplementary angles is 13 : 5

Concept used

Sum of two angles which are Supplementary angle is 180°

Calculation

Let first angle be 13x then second angle be 5x

=> 13x + 5x = 180°

=> 18x = 180°

=> x = 10°

=> First angle is 13 × 10 = 130°

=> Second angle is 5 × 10 = 50°

Therefore Difference between angles is 130° - 50° = 80°

Q13. Answer: (c) D

The correct answer is D.

• A coal-coloured stone from Mars is known as Black Beauty.

• Mars is also known as the Red planet.

• Mars has maximum iron oxide in its rocks.

• Mars has a maximum number of craters.

• Mars has two satellites named - Fobes, Demos.

• Mars is the inner planet that is solid in the state.

Additional Information

• The zone in which life is searched by scientists between Earth and Mars is known as the Goldilock zone.

• Demos is the smallest satellite of the Solar System

• Ganymede is the largest satellite of the Solar System.

• Ganymede is the satellite of Jupiter.

• Jupiter has a total of 76 satellites.

Q14. Answer: (b) B

The correct answer is B.

• The state of Goa was only established as recently as 1987.
• On 18 December 1961, Indian troops crossed the border into Goa and liberated it.
• Before 1961, goa was the state of Portuguese.
• The Portuguese invaded Goa in 1510, defeating the Bijapur Sultanate.
• The Portuguese rule lasted for about 450 years.
• The Portuguese heavily influenced Goan culture, cuisine, and architecture.
• In 1961, the Indian Army invaded and annexed Goa after a 36-hour battle.
• The region was incorporated as a union territory of Goa, Daman, and Diu. In 1987, Goa was granted statehood.

Additional Information

• Chief Minister of Goa- Pramod Sawant
• Governor of Goa - Shri P.S. Sreedharan Pillai
• Literacy rate of Goa- 88.70 %
• Sex Ratio of Goa - 973
• National Parks of Goa - Netravali Wildlife Sanctuary, Cotigao Wildlife Sanctuary, Bondla Wildlife Sanctuary, etc.

Q15. Answer: (d) A

The correct answer is A.

• Lonar Lake, also known as Lonar crater, is a notified National Geo-heritage Monument.
• It is located at Lonar in Buldhana district, Maharashtra, India.
• Lonar Lake was created by a meteorite collision impact during the Pleistocene Epoch.
• It is one of the four known, hyper-velocity, impact craters in basaltic rock anywhere on Earth.
• The other three basaltic impact structures are in southern Brazil.
• Lonar Lake has a mean diameter of 1.2 kilometres and is about 137 meters (449 ft) below the crater rim.

Additional Information

• Chief Minister of Maharashtra - Eknath Shinde (As of August 2024)
• Governor of Maharashtra - C. P. Radhakrishnan (As of August 2024)
• Literacy rate of Maharashtra - 82.34 %
• Sex Ratio of Maharashtra - 929
• National Parks of Maharashtra - Sanjay Gandhi National Park, Chandoli National Park, Nawegaon National Park, etc.

Q16. Answer: (d) A

Given

The standard deviation of a population is 8

Formula used

Standard deviation = √(variance)

Calculation

Here standard deviation is 8

Variance is equal to (standard deviation)^2

=> Variance = $(8)^2$

Therefore Variance is 64

Q17. Answer: (b) A

Given:

(x2 - 4x + 1) = 0

Concept Used:

if $a + 1/a = x$, then $a^3 + 1/a^3 = x^3 - 3x$

$a + 1/a = x$, then $a^2 + 1/a^2 = x^2 - 2$

Calculation:

x2 + 1 = 4x

dividing the number by x

$x + 1/x = 4$

By Using the concept

$x^3 + 1/x^3 = 4^3 - 3 \times 4 = 52$ ----(i)

$x^2 + 1/x^2 = 4^2 - 2 = 14$ ----(ii)

Divinding (i) by (ii)

$(x^3 + 1/(x^3))/(x^2 + 1/(x^2)) = 52/14 \Rightarrow 26/7$

Therefore The value of $(x^3 + 1/(x^3))/(x^2 + 1/(x^2))$ is 26/7

Q18. Answer: (a) B

The correct answer is B.

• Satya Nadella replaced Steve Ballmer in 2014.

• Steve Ballmer was the second CEO in the history of Microsoft.

• Satya Nadella was the third CEO in the 39 years of history of Microsoft.

• Before becoming CEO, Nadella was the executive vice president of Microsoft's cloud and enterprise group.

• The tenure of Steve Ballmer as CEO was 14 years from 2000 to 2014.

• Steve Ballmer is currently the 10th richest person on the earth.

Additional Information

• Nadella worked at Sun Microsystems as a member of its technology staff before joining Microsoft in 1992.

• In 2018, Nadella was a Time 100 honoree.

• In 2019, Nadella was named Financial Times Person of the Year.

• In 2020, Nadella was recognized as Global Indian Business Icon at CNBC-TV18's India Business Leader Awards in Mumbai.

Q19. Answer: (d) C

Given:

Product = { (8)10 × (9)7 × 78 }

Concept:

The prime number are numbers that have only 2 factors:1 and themselves.

Prime factors

Calculation:

$8 = 2 \times 2 \times 2 = 2^3$ ----(i)

$9 = 3 \times 3$ ----(ii)

$7 = 7^1$ ----(iii)

Substituting (i) (ii) (iii) in the equation

{ (8)10 × (9)7 × 78 } = 2^((3 × 10)) × 3^((2 × 7)) × 7^8 = 2^(30) × 3^(14) × 7^8

2, 3, 7 are the prime numbers

Powers represent the number of prime numbers

equating and adding the powers of all prime number

30 + 14 + 8 = 52

Therefore The total prime factors in the product of { (8)10 × (9)7 × 78 } is 52

Q20. Answer: (c) C

Given:

Ratio of three numbers = 2 : 3 : 6

HCF = 45

Calculation:

let the number be 2x, 3x, 6x

HCF is the common factor for all numbers

adding all the number = 2x + 3x + 6x = 11x

Because both the x and HCF is common in all the number

Substituting the value of HCF in x

Sum of the three numbesr = 11 × 45 = 495

Therefore The sum of the three number is 495

Q21. Answer: (c) A

The correct answer is A.

• Jaipur is known as the 'Pink City'.

• Jaipur is the capital and the largest city of Rajasthan.

• According to the census 2011 - Jaipur is the 10^(th) most populous city in the country.

• Jaipur is known as the Pink City, due to the dominant colour scheme of its buildings.

• Jaipur was founded in 1727 by the Rajput ruler Jai Singh II, the ruler of Amer.

• The city is also home to the UNESCO World Heritage Sites Amber Fort and Jantar Mantar.

• On 6 July 2019, UNESCO World Heritage Committee inscribed Jaipur as the "Pink City of India" among its World Heritage Sites.

Additional Information

• Chief Minister of Rajasthan - Ashok Gehlot

• Governor of Rajasthan - Kalraj Mishra

• Literacy rate of Rajasthan - 66.11 %

• The sex ratio of Rajasthan - 928

Q22. Answer: (b) C

The correct answer is C.

• Bangladesh freedom war or liberation war was fought in 1971.

• Previously, Bangladesh is known as East Pakistan.

• The war began after the Pakistani military junta based in West Pakistan launched Operation Searchlight against the people of East Pakistan on the night of 25 March 1971.

• The war ended on 16 December 1971 after West Pakistan surrendered.

• India joined the war on 3 December 1971, after Pakistan launched preemptive air strikes on North India.

Additional Information

• Prime Minister of Bangladesh - Mohammad Younus

• Capital of Bangladesh - Dhaka

• Currency - Bangladeshi Taka

• SAARC was founded on 8 December 1985.

• The headquarters of SAARC is in Kathmandu, Nepal.

Q23. Answer: (d) C

Calculation:

For first condition,

Two straight lines can cross each other at one point only.

so the given statement 1 is false.

For second condition,

The sides of one angle are respectively parallel to the sides of the other angle,

If corresponding sides are parallel then their corresponding angles are equal

when Two parallel sides coincide then the sum of the angle will be a straight line (180°)

the above statement is true

Therefore 1 is incorrect and 2 is correct

Q24. Answer: (a) B

Given:

[(1.93 × 19.3 – 2.07 × 20.7)/(19.3 – 20.7)]

Calculation:

[1.93 × 19.3 – 2.07 × 20.7/19.3 – 20.7] = (3.7249 – 4.2849)/(– 1.4)

=> (– 5.6)/(– 1.4) = 4

Therefore [(1.93 × 19.3 – 2.07 × 20.7)/(19.3 – 20.7)] is equal to 4

Alternate Method

Formula Used:

$(a^2 – b^2) = (a + b)(a – b)$

Calculation:

[(1.93 × 19.3 – 2.07 × 20.7)/(19.3 – 20.7)]

Multiply and divide by 10 in the above equation,

=> (19.3 × 19.3 – 20.7 × 20.7)/(19.3 – 20.7)× 10

=> (19.3² - 20.7²)/(19.3 - 20.7)× 10

Applying formula (a2 – b2) = (a + b)(a – b)

=> (19.3 + 20.7)(19.3 - 20.7)/(19.3 - 20.7)× 10

=> 40/10

=> 4

Therefore The value is 4.

Q25. Answer: (d) D

The logic follows here is:

Conclusions:

1. All mangoes are cheap → As from the statement we can conclude that no golden thing is cheap, so the positive conclusion will be incorrect.

2. Golden-colored mangoes are not cheap → Clearly, from the statement we can conclude that conclusion must be universal negative and should not contain the middle term. So, it follows that 'No mango is cheap'.

Since all mangoes are golden in color, we may substitute 'mangoes' with 'golden-colored mangoes'.

Hence, the correct answer is "Only conclusion 2 follows".

Additional Information

• If there are two or more sentences that are used to frame a statement, then, the sentences must be interrelated, and mutual contradiction should be there.

• Do not look for truthful notions. The information provided in the statement is the only requirement for a student to answer the question. No assumptions must be made.

• Read the statement carefully and look for keywords that are common between the statement and the conclusions

• If there is more than one conclusion that is applicable to the statement, students must ensure that the conclusions they opt for have some relation with each other.

Q26. Answer: (b) B

The logic follows here is:

Step 1,

Rearranging the unordered letters in their natural order and forming a meaningful word.

A. OLENV

Disordered letters	**O**	**L**	**E**	**N**	**V**
Natural order	N	O	V	E	L

B. EISTSH

Disordered letters	**E**	**I**	**S**	**T**	**S**	**H**
Natural order	T	H	E	S	I	S

C. AGZEANIM

Disordered letters	**A**	**G**	**Z**	**E**	**A**	**N**	**I**	**M**
Natural order	M	A	G	A	Z	I	N	E

D. TCAYRIDION

Disordered letters	**T**	**C**	**A**	**Y**	**R**	**I**	**D**	**I**	**O**	**N**
Natural order	D	I	C	T	I	O	N	A	R	Y

Except for the Thesis which is written by students all the other is general printed material that is sold in the market.

Hence, the correct answer is "THESIS".

Q27. Answer: (c) B

Table:

State	Played match	Win	Draw	Lose	Score goals	Against goals
Delhi	2	•	1	1	2	4
Mumbai	2	1	•	1	3	7
Chennai	2	1	1	•	7	1

Score,

Delhi vs Mumbai = 2 – 2

Delhi vs Chennai = 0 – 2

Mumbai vs Chennai = 5 -1

Explanation:

we know that one of Dehli's matches is drawn and Dehli scores only 2 goals. If we consider the score of the drawn match is 2 - 2. It suitable for the table.

It's clear to say that Mumbai has one match draw & they score 2 goals in that match and Mumbai's total number of goals is 3, It means Mumbai score is 2nd match only 1 goal in their second matches.

so 7 - 2 = 5 goals have been scored against them by Chennai. so, Mumbai has lost one match.

Therefore Chennai is scored a total goal is 7

Q28. Answer: (d) C

Table:

State	Played match	Win	Draw	Lose	Score goals	Against goal
Delhi	2	•	1	1	2	4
Mumbai	2	1	•	1	3	7
Chennai	2	1	1	•	7	1

Score,

Delhi vs Mumbai = 2 – 2

Delhi vs Chennai = 0 – 2

Mumbai vs Chennai = 5 -1

Explanation:

we know that one of Dehli's matches is drawn and Dehli scores only 2 goals. If we consider the score of the drawn match is 2 - 2. It suitable for the table.

It's clear to say that Mumbai has one match draw & they score 2 goals in that match and Mumbai's total number of goals is 3, It means Mumbai score is 2nd match only 1 goal in their second matches.

so 7 - 2 = 5 goals have been scored against them by Chennai. so, Mumbai has lost one match.

Therefore Score of Mumbai in Mumbai- Chennai match is 1 - 5

Q29. Answer: (d) D

Table:

State	Played match	Win	Draw	Lose	Score goals	Against goals
Delhi	2	•	1	1	2	4
Mumbai	2	1	•	1	3	7
Chennai	2	1	1	•	7	1

Score,

Delhi vs Mumbai = 2 – 2

Delhi vs Chennai = 0 – 2

Mumbai vs Chennai = 5 -1

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Explanation:

we know that one of Dehli's matches is drawn and Dehli scores only 2 goals. If we consider the score of the drawn match is 2 - 2. It suitable for the table.

It's clear to say that Mumbai has one match draw & they score 2 goals in that match and Mumbai's total number of goals is 3, It means Mumbai score is 2nd match only 1 goal in their second matches.

so 7 - 2 = 5 goals have been scored against them by Chennai. so, Mumbai has lost one match.

Therefore Mumbai lose 1 match against Chennai

Q30. Answer: (d) A

Given:

The second number is thrice the first and double the third

The average of all three numbers is 77

Formula used:

Mean = Sum of observation/number of observation

Calculation:

Average of the 3 numbers = 77

Sum of the 3 numbers = 77 x 3 = 231

Let 6x be the second number

Third number = 3x

First number = 2x

Sum of the numbers is 231,

=> 2x + 6x + 3x = 231

=> 11x = 231

=> x = 231/11

=> x = 21

Second number = 6x = 6 × 21 = 126

Therefore The value of the second number is 126.

Alternate Method

If A, B and C are three number

A = (3)B = (3/2)C

=> 2A = 6B = 3C

=> 2K + 6K + 3K = 77 × 3

=> 11K = 77 × 3

=> K = 21

Second number = 6K = 21 × 6 = 126

Therefore The value of the second number is 126.

Q31. Answer: (a) B

The correct answer is B.

• Sugar is a solute in a sugar solution.

• Water is a solvent in a sugar solution.

Key Points

• Solute - The minor component in a solution, dissolved in the solvent.

• Solvent - A liquid or major component in a solution that can dissolve another substance.

• Colloid - A mixture in which one substance of microscopically dispersed insoluble or soluble particles is suspended throughout another substance.

• Suspension - A suspension is a heterogeneous mixture in which the solute particles do not dissolve, but get suspended throughout the bulk of the solvent, left floating around freely in the medium.

Additional Information

• A homogeneous mixture is a mixture in which the composition is uniform throughout the mixture

• A heterogeneous mixture is a mixture in which the composition is not uniform throughout the mixture.

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Q32. Answer: (a) B

Given:

P finished (1/6) part of the work in X days.

Q alone finished the remaining work in 15 days

They can finish half work together in 45/8 days

Concept used:

If A does 1 unit of work in n day

Then 1 day work done by A will be 1/n units

1/(A's work) + 1/(B's work) = 1/(total work together)

Calculation:

Time to complete the whole wok by P alone = X days

P complete (1/6) work

Remaining work = 1 – (1/6) = 5/6

Q complete (5/6) work in 15 day

Q complete work = 15/(5/6)

Q complete work = 18 days

(P + Q)'s half work complete in 45/8 days

(P + Q)'s complete work [(45/8) × 2] = 45/4 days

So,

(1/P's work) + (1/Q's work) = [1/(P + Q)'s work}

=> (1/X) + (1/18) = 1/(45/4)

=> 1/X = (4/45) – (1/18)

=> 1/X = (8 – 5)/90

=> 1/X = 3/90

=> 1/X = 1/30

=> X = 30

Therefore The value of X is 30.

Formula Used:

Total work = Efficiency × Days required to complete the work

M1.D1.T1.E1/W1.C1 = M2.D2.T2.E2/W2.C2

M is the number of working men

D is the total number of days

T is total hours of working days

E is the efficiency of working men

W is total work

C is the consumption of working men

Calculation:

(P + Q) completed 1/2 work in 45/8 days

Total work will get complete in = 45/8 × 2 = 45/4 days

P completes 1/6 work in X days.

Remaining work = 1 - 1/6 = 5/6 completed by Q in 15 days.

Now by using the formula,

=> (Q × 15)/5/6 = {(P + Q) × 45/4}/1

=> 4 × (18 × Q) = 45(P + Q)

=> 72 Q = 45(P + Q)

=> 8Q = 5(P + Q)

=> 3Q = 5P

Efficiency of P is 3 units/day

Efficiency of Q is 5 units/day

(P + Q) completed work in 45/4 days

=> Total work = 45/4 × (3 + 5) = 45/4 × 8 = 90 units

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Days required to complete 90 units of work by P is,

=> Days = 90/3 = 30 days

Therefore Time required to complete the work by P is 30 days.

Q33. Answer: (b) D

The correct answer is D.

• An optical prism is a transparent optical element with flat, polished surfaces that refract light.

• At least one surface must be angled—elements with two parallel surfaces are not prisms.

• Prisms can be made from any material that is transparent to the wavelengths for which they are designed.

• A dispersive prism can be used to break white light up into its constituent spectral colours (the colours of the rainbow).

• Prisms can be used to reflect light or to split light into components with different polarizations.

• Light changes speed as it moves from one medium to another, this speed change causes the light to be refracted and to enter the new medium at a different angle.

• The degree of bending of the light's path depends on Snell's law.

• VIBGYOR is the pattern followed by colour combination.

Additional Information

• Violet colour has a minimum wavelength.

• Red colour has a maximum wavelength.

• Violet colour has a maximum frequency.

• Snell's law defines a relationship between the path taken by a ray of light in crossing the boundary or surface of separation between two contacting substances and the refractive index of each.

Q34. Answer: (c) A

The correct answer is A.

• Every year on 4 February, World Cancer Day is celebrated.

• The theme of 2021 World Cancer Day is I Am and I Will.

• It is celebrated to raise awareness of cancer and to encourage its prevention, detection, and treatment.

• World Cancer Day is led by the Union for International Cancer Control (UICC) to support the goals of the World Cancer Declaration, written in 2008.

• The primary goal of World Cancer Day is to significantly reduce illness and death caused by cancer.

Additional Information

Some important days of February are -

1. World Wetland day - 2 February.

2. World Cancer Day - 4 February.

3. International Mother language Day - 21 February.

4. World NGO Day- 27 February.

5. National Science Day - 28 February.

6. Rare Disease Day - 28/29 February.

Q35. Answer: (b) C

The logic follows here is:

The Assertion is correct because Carbon monoxide when inhaled it combines with hemoglobin of the blood to form Carboxyhemoglobin which inhibits the transport of oxygen in the body.

Carbon monoxide has a much stronger binding to hemoglobin than Oxygen, so the given Reason is the correct explanation to the Assertion.

Hence, the correct answer is "Option 2".

Q36. Answer: (c) B

The correct answer is B.

• Hafnium is a chemical element with the symbol Hf and atomic number 72.

• Hafnium is named after Hafnia, the Latin name for Copenhagen, where it was discovered.

• A lustrous, silvery grey, tetravalent transition metal, hafnium chemically resembles zirconium and is found in many zirconium minerals.

• Its existence was predicted by Dmitri Mendeleev in 1869, though it was not identified until 1923, by Coster and Hevesy, making it

the last stable element to be discovered.

• Hafnium is used in filaments and electrodes.

• Hafnium's large neutron capture cross-section makes it a good material for neutron absorption in control rods in nuclear power plants.

Additional Information

• Hafnium comes in group 4 of the periodic table.

• Group 4 elements have a high melting point.

• Hafnium belongs to period 6.

• Hafnium belongs to the d-block.

• Electron configuration of Hafnium is - [Xe] 4f^(14) 5d² 6s².

• The melting point of Hafnium is 2506 K.

Q37. Answer: (a) A

The correct answer is A.

Key Points

• Former India captain Sourav Ganguly has been awarded honorary life membership to the Marylebone Cricket Club (MCC) in 2015.

• Sourav Ganguly made his debut in 1996.

• Sachin Tendulkar, Virender Sehwag also been awarded honorary life membership to the MCC in 2010, 2016 respectively.

• Sachin Tendulkar scores his 100^(th) international century in a one-day Asia Cup game against Bangladesh in Mirpur.

• In 2019, Tendulkar was inducted into the ICC Cricket Hall of Fame.

Additional Information

• Sachin Tendulkar was a Member of Parliament from 27 April 2012 to 26 April 2018.

• Sourav Ganguly is the 39th President of BCCI.

Q38. Answer: (a) A

The correct answer is A.

• Alfred Nobel was born in Stockholm on 21 October 1833.

• Immanuel Nobel was an engineer and inventor who built bridges and buildings in Stockholm.

• In connection with his construction work, Immanuel Nobel also experimented with different techniques for blasting rocks.

• Alfred Nobel held 355 different patents, dynamite being the most famous.

• Having read a premature obituary that condemned him for profiting from the sales of arms, he bequeathed his fortune to the Nobel Prize institution.

• The synthetic element nobelium was named after him in the second half of the 20th century.

Additional Information

• Philippus Paracelsus credited as the "father of toxicology".

• Louis Pasteur is regarded as one of the three main founders of bacteriology, together with Ferdinand Cohn and Robert Koch, and has been called a "father of bacteriology".

• Louis Pasteur is also regarded as the "father of microbiology".

Q39. Answer: (c) D

The logic follows here is:

Sapphire, Ruby, and Penna are precious gems stones whereas Ratna is the other name of Jewel.

Rarity is another characteristic that lends value to a gemstone.

Ruby crystal is generally made of aluminum oxide (Al2O3).

Sapphire is a precious gemstone, a variety of the mineral corundum, consisting of aluminum oxide with trace amounts of elements such as iron, titanium, chromium, vanadium, or magnesium.

Hence, The correct answer is "Option 3".

Additional Information

• A variety of the corundum family, Ruby is famous for its deep red hue and vibrant glow.

• Penna is known for its intense green shade and a clear depth of color that very few gems possess.

• Pure sapphires are actually white, but in the presence of titanium and iron traces, they acquire a velvety blue color.

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Q40. Answer: (b) B

The correct answer is B.

• Supreme Court was established on 28 January 1950.

• Supreme Court is the Guardian and the guarantee of the constitution is mentioned in Article 124.

• Supreme Court is the Interpreter of the Constitution.

• Supreme Court is the Custodian of the Constitution.

• According to the Supreme Court, Article 32 is the heart and soul of the Constitution.

• Before 1950, Supreme Court was known as the Federal Court of India.

• The Federal Court of India was established on 1 October 1937.

• The tag line of the Supreme Court is Yato Dharmastato Jayah.

Additional Information

• A person can appeal in the High Court under Article 226.

• The current Chief Justice of India is Justice Bhushan Ramkrishna Gavai.

• The Chief Justice of India is appointed by the President.

• The Supreme court consists of a maximum of 34 judges and it has extensive powers in the form of original, appellate, and advisory jurisdictions.

• It is regarded as the most powerful public institution in India.

• It safeguards the fundamental rights of citizens and settles disputes between various government authorities as well as the central government vs state governments or state governments versus another state government in the country.

Q41. Answer: (d) D

The correct answer is D.

• Tiruppur Kumaran (04th October 1904 11 January 1932) was an Indian revolutionary who participated in the Indian independence movement.

• Kumaran was born in Chennimalai in Madras Presidency, British India (current Erode district in Tamil Nadu).

• He founded Desa Bandhu Youth Association and led protests against the British.

• A commemorative stamp was issued by India post in October 2004 on his 100th birth anniversary.

• A statue has been erected in Tirupur in his honor which is often used as a focal point for public demonstrations.

Additional Information

Some other organizations/associations formed during the Independence struggle are -

1. Swaraj Party - Motilal Nehru

2. Hindustan Socialist Republican Association - Chandra Shekhar Azad.

3. Forward Block - Subhash Chandra Bose.

4. Ajad Hind Fauj - Subhash Chandra Bose.

Q42. Answer: (c) A

Given:

Time period = 10 years

Formula used:

S.I = (P × t × r)/100

P = principal

t = Time period

r = Rate of interest

Calculation:

Let P be Rs. x

According to the question,

According to the question money becomes 5x

So, interest = 5x – x = 4x

4x = (x × 10 × r)/100

=> 400x = 10xr

=> 40 = r

=> Rate of interest = 40%

Therefore Required rate of interest is 40%

Q43. Answer: (d) C

The correct answer is C.

• The kidney is responsible for the purification of blood.

• The kidneys are two bean-shaped organs, each about the size of a fist.

• Kidneys are located just below the rib cage, one on each side of your spine.

• Healthy kidneys filter about a half cup of blood every minute.

• The kidney also removes waste material, extra fluid and removes it from the body in form of Urine.

• kidneys also remove acid that is produced by the cells of the body and maintain a healthy balance of water, salts, and minerals—such as sodium, calcium, phosphorus, and potassium—in the blood.

• The kidney also helps in developing hormones that control blood pressure, make red blood cells, keeps bones stronger.

Additional Information

• The heart is responsible to provide oxygenated blood to every part of the body.

• Gall Blader stores the Urine and transfers the Urine to Ureters through two thin pipes.

• The gallbladder also stores bile produced by the liver.

• Bile juice is acidic in nature which is used to digest food.

Q44. Answer: (d) A

The correct answer is A.

• Cochin International Airport, India's first airport built under a public-private-partnership (PPP) model.

• It has scripted another chapter in aviation history by becoming the first airport in the world that operates completely on solar power.

• In the next 25 years, this project would have avoided

300,000 tons of CO2, which is equivalent to planting 3

million trees.

• In November 2015, the CIAL board of directors decided to double the airport’s solar capacity to accommodate the needs of the new international terminal.

• The airport has a 12-megawatt solar plant that has more than 46,000 solar panels.

Additional Information

• India has a total of 34 operational Airports.

• Kushok Bakula Rimpochee Airport is India's Highest Airport in Leh.

• The Biggest\Busiest Airport in India is Indira Gandhi International Airport.

• World's highest Airport - Dachoying Yading (4400m) in Tibet.

Q45. Answer: (a) D

Given:

3x = 4y = 12-z

Concept used:

If a^x= b

Then, a = b^(1/x),

a^x × a^y = a^(x+y)

Calculation:

Let the value 3x = 4y = 12-z = k

3x = k, 4y = k, and 12-z = k

=> 3 = k^(1/x), 4 = k^(1/y), and 12 = k^(-1/z)

We know that, 3 × 4 = 12

=> k1/x × k1/y = k–1/z

=> k^((1/x+1/y)) = k–1/z

=> 1/x + 1/y = –1/z

=> 1/x + 1/y + 1/z = 0

Now multiplying both sides by 3, we get,

=> 3(1/x + 1/y + 1/z) = 3(0)

=> 3/x + 3/y + 3/z = 0

Therefore The value of 3/x + 3/y + 3/z is 0.

Q46. Answer: (c) A

Given:

2400 know English, 1700 know Telugu, 800 know Hindi, 1000 know English and Telugu, 500 speak English and Hindi, 300 speak Telugu and Hindi and only 100 know all three languages.

Calculation:

100 know all three languages

1000 students know English and Hindi

=> Students know only English and Hindi is (1000 - 100) = 900

500 students know English and Hindi

=> Students know only English and Hindi is (500 - 100) = 400

300 students know Telugu and Hindi

=> Students know only Telugu and Hindi is (300 - 100) = 200

Students know only one language is 3200 - (900 + 400 + 200 + 100)

=> 1600

Therefore 1600 students know only one of the three languages.

Q47. Answer: (d) C

Given:

Total student = 3200

Numbers of student know English, n(E) = 2400

Numbers of student know Telugu, n(T) = 1700

Numbers of student know Hindi, n(H) = 800

Numbers of student know both English and Telugu, n(E ∩ T) = 1000

Numbers of student know both English and Hindi, n(H ∩ E) = 500

Numbers of student know both Hindi and Telugu, n(H ∩ T) = 300

Numbers of student know all three languages, n(E ∩ H ∩ T) = 100

Formula used:

n(A U B U C) = n(A) + n(B) + n(C) − n(A ∩ B) − n(B ∩ C) − n(A ∩ C) + n(A ∩ B ∩ C)

Where,

(A U B) → Total A and B

(A) → Total A

(B) → Total B

(C) → Total C

(A ∩ B) → Total common part of A and B

(A ∩ C) → Total common part of A and C

(C ∩ B) → Total common part of C and B

(A ∩ B ∩ C) → Total common part of A, B and C.

Calculation:

Number of student Know only Hindi = n(H) − n(H ∩ E − n(H ∩ T) + n(A ∩ B ∩ C)

=> The required student = 800 − 500 − 300 + 100 = 100

Therefore Number of student Know only Hindi is 100.

Q48. Answer: (c) A

Given:

Total student = 3200

Numbers of student know English, n(E) = 2400

Numbers of student know Telugu, n(T) = 1700

Numbers of student know Hindi, n(H) = 800

Numbers of student know both English and Telugu, n(E ∩ T) = 1000

Numbers of student know both English and Hindi, n(H ∩ E) = 500

Numbers of student know both Hindi and Telugu, n(H ∩ T) = 300

Numbers of student know all three languages, n(E ∩ H ∩ T) = 100
Formula used:
n(A U B U C) = n(A) + n(B) + n(C) − n(A ∩ B) − n(B ∩ C) − n(A ∩ C) + n(A ∩ B ∩ C)
Where,
(A U B) → Total A and B
(A) → Total A
(B) → Total B
(C) → Total C
(A ∩ B) → Total common part of A and B
(A ∩ C) → Total common part of A and C
(C ∩ B) → Total common part of C and B
(A ∩ B ∩ C) → Total common part of A, B and C.
Calculation:
Numbers of student know all three language = n(E) + n(T) + n(H) − n(E ∩ T) − n(H ∩ E) − n(H ∩ T) + n(E ∩ T ∩ H)
=> n(E U T U H) = 2400 + 1700 + 800 − 1000 − 500 − 300 + 100
=> 3200
Number of student do not know any of the three languages = 3200 − 3200 = 0
Therefore Number of student do not know any of the three languages is 0.

Q49. Answer: (a) A

Given:
9cosA + 12sinA = 15
Formula used:
$(a + b)^2 = a^2 + b^2 + 2ab$
CosecA = 1/SinA
$Cot^2A = (Cosec^2A – 1)$
Calculation:
9cosA+12sinA=15
Divide 3 on both the sides,
3cos A + 12 sin A = 5
Divide SinA on both the sides,
3cosA/sinA + 4sinA/sinA = 5/sinA
=> 3cotA + 4 = 5 cosec A
Squaring on both the sides
$(3cotA + 4)^2 = (5cosecA)^2$
$=> 9cot^2A + 16 + 24cotA = 25cosec^2 A$
$=> 9cot^2A + 16 + 24cotA = 25(cot^2A + 1)$
$=> 9cot^2A + 16 + 24cotA = 25cot^2A + 25$
$=> 16cot^2A – 24cotA + 9 = 0$
$=> (4cot A – 3)^2 = 0$
=> 4cotA – 3 = 0
=> 4cotA – 3 = 0
=> cotA = 3/4
Therefore The final value of cotA is 3/4.

Q50. Answer: (b) A

The correct answer is A.
• The original name of Tiger Woods is Eldrick Tont Woods.
• He was born on 30 December 1975 in Cypress, California.
• Woods grew up in Orange County, California.
• Woods is widely regarded as one of the greatest golfers of all time and one of the most famous athletes of all time.
• He will be inducted into the World Golf Hall of Fame in 2021.

• He has won 82 PGA Tour.
• He has won 41 European Tour.
• He has won 3 Japan Golf Tour.
• He has won 2 Asian Tour.

Additional Information

• Golf is the National Game of Scotland.
• The National Game of India is Hockey.
• The National Game of Bangladesh is Kabaddi.
• The National Game of Pakistan is Hockey.
• The National Game of USA is Baseball.

Q51. Answer: (a) C

Given:

HCF of two numbers is 23.

Their LCM is 1035.

One of them is 207.

Formula used:

HCF × LCM = Product of two numbers

Calculation:

HCF × LCM = Product of two numbers

=> 23 × 1035 = 207 × X

=> X = (23 × 1035)/207

=> X = 115

So, X/23 = 115/23 = 5

Therefore The value of X/23 is 5.

Q52. Answer: (a) C

The logic follows here is:

Delicious is a characteristic detected in form of Taste or it represents a good taste.

Similarly,

Melodious is a characteristic detected in the form of voice through hearing or Melody describes the pleasant voice.

Hence, the correct answer is "Option 1".

Q53. Answer: (c) C

Given:

The difference between the ages of Sunita and Sheela is 12 years

9 years ago, elder's age was 4 times younger's age

Calculation:

Let the present age of Sunita and Sheela be 'a' and '(12 + a)'.

9 years ago,

Age of Sunita = a – 9

Age of Sheela = 12 + a – 9 = 3 + a

According to the question,

=> (3 + a) = 4(a – 9)

=> 3 + a = 4a – 36

=> 3a = 39

=> a = 13

Sheela's age = 12 + 13 = 25 years

Therefore The present age of Sunita and Sheela are 13 years and 25 years respectively.

Q54. Answer: (b) C

Given:

Ratio of speed of three joggers is 10 : 3 : 20

Formula used:

Time taken = Distance/Speed

Calculation:

Let the distance between X and Y be ‘D’

And, Speed of 3 joggers be 10s, 3s and 20s

=> Time taken by 1^(st) jogger = D/10s

=> Time taken by 2^(nd) jogger = D/3s

=> Time taken by 3^(rd) jogger = D/20s

Ratio of time = D/10s : D/3s : D/20s

=> Ratio of time taken = 6 : 20 : 3

Therefore The ratio of time of arrival of these joggers to the destination will be 6 : 20 : 3

Q55. Answer: (d) C

The logic follows here is:

The second number is the square of the first number.

Thus the relation will be $x : x^2$.

$1 = 1^2$

1 = 1

Similarly,

$25 = 25^2$

25 = 625

Hence, the correct answer is "Option 4".

Q56. Answer: (d) C

The correct answer is C.

• The full name of Christiano Ronaldo is Cristiano Ronaldo dos Santos Aveiro.

• Ronaldo is a Portuguese professional footballer who plays as a forward for Serie A club Juventus and captains the Portugal national team.

• Ronaldo has won five Ballon d'Or awards.

• At present he plays for Manchester United.

• Ronaldo has won four European Golden Shoes.

• He has won 31 major trophies in his career, including seven league titles, five UEFA Champions Leagues, one UEFA European Championship, and one UEFA Nations League title.

• Ronaldo holds the records for the most goals (134) and assists (41) in the history of the UEFA Champions League.

• He is one of the few recorded players to have made over 1,000 professional career appearances.

Additional Information

• Ballon d'Or awards 2019 won by Lionel Messi.

• Lionel Messi has won 6 Ballon d'Or awards.

• Real Madrid won the La Liga title 2020.

• La Liga is the biggest Football Championship.

Q57. Answer: (b) D

The logic follows here is:

The Assertion is correct because most of the ancient civilization was developed near the rivers as land over there was fertile and water was easily available but the Reason is not the correct explanation of the Assertion.

Hence, the correct answer is "Option 2".

Additional Information

Important sites	Situated on the bank of the river
Harrapa	Ravi
Mohenjodaro	Indus
Kalibangan	Ghaggar-Hakra River

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Lothal	Bhogava
Banawali	over dried-up ancient river Saraswati

Rigvedic name	River
Ashikani	Chenab
Vitasta	Jhelum
Parushni	Ravi
Vipas	Beas

Q58. Answer: (c) C

The logic follows here is:

The family chart is as follows:

There are six generations in a family although there are a total of five members in the family. The names of the family members are Aditya, Bawan, Charu, Deepa, and Varun.

1. Charu is the only unmarried child whose grandparents have passed away.

2. Deepa is a widow who is the daughter of widower Varun.

3. There is only one member of the family in a generation. Each couple has only one child and there were no siblings in the first generation.

As the generation of Aditya and Bawan is not clear, they can be either a 3rd generation or 5th generation forming two cases as shown below.

According to the question if Charu's grandfather is alive.

Drawing the family tree as per the above information:

Thus If Charu's grandfather had been alive, he would surely have been a member of the Last to the second generation.

Hence, the correct answer is "Option 3".

Q59. Answer: (a) D

The logic follows here is:

The family chart is as follows:

There are six generations in a family although there are a total of five members in the family. The names of the family members are Aditya, Bawan, Charu, Deepa, and Varun.

1. Charu is the only unmarried child whose grandparents have passed away.

2. Deepa is a widow who is the daughter of widower Varun.

3. There is only one member of the family in a generation. Each couple has only one child and there were no siblings in the first generation.

As it is given If Aditya is the father of Charu and grandson of Bawan, thus generation is clear.

Drawing the family tree as per the above information:

There are possible 4 combinations that exist in the family as already mentioned grandparents of Charu's have passed away.

Hence, the correct answer is "Option 1".

Q60. Answer: (c) D

Family chart,

1. There are six generations in a family although there are a total

of five members in the family.

2. The family members are Aditya, Bawan, Charu, Deepa, and Varun.

Drawing the family tree as per the given information :

From the family tree,

Aditya is the grandson of Bawan, then Aditya is the member

before the last generation.

Hence, the correct answer is "Aditya".

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Q61. Answer: (b) C

Given:

Discount = 40%

Selling price of jacket = Rs. 600

Profit % = 20

Formula used:

Discount = Marked Price – Selling Price

Discount % = Discount/Marked price × 100

Profit = Selling price – Cost price

Profit % = Profit/Cost price × 100

Calculation:

20% = (600 – CP)/CP × 100

=> CP = 5(600 – CP)

=> CP = 3000 – 5 × CP

=> 6 × CP = 3000

=> CP = 500

40% = (MP – 600)MP × 100

=> MP = 5/2 × MP – 1500

=> 3/2 × MP = 1500

=> MP = 1500 × 2/3 = 1000

If it is sold t marked price,

Profit = 1000 – 500 = Rs. 500

Profit % = 500/500 × 100 = 100%

Therefore The percentage profit will be 100%

Alternate Method

Sold for Rs. 600 at 20% profit

20% = 20/100 = 1/5

=> CP = 5, SP = (1 + 5) = 6, and Profit = 1

According to the question,

=> 6 = 600

=> 1 = 600/6 = 100

Profit = 1 = Rs. 100, CP = 5 = 5 × 100 = Rs. 500

He gave a 40% discount and still sold for Rs. 600

40% = 40/100 = 2/5

=> MP = 5, SP = 5 – 2 = 3, and D = 2

According to the question,

=> 3 = 600

=> 1 = 600/3 = 200

MP = 5 × 200 = Rs. 1,000

Profit% when he sold at MP,

=> Profit% = (MP – CP)/CP × 100

=> Profit% = (1,000 – 500)/500 × 100

=> Profit% = 500/500 × 100

=> Profit% = 100%

Q62. Answer: (a) A

Given:

30% potassium nitrate solution is mixed with 60% potassium nitrate to get 40% potassium nitrate solution.

Formula used:

x/y = (P2 – P0)/(P0 – P1)

where, x/y is the ratio, in which two quantities should be mixed

P1, P2 and P0 are the percentage of lower concentration, higher concentration and mean concentration solutions respectively

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Calculation:

According to the question,

x/y = (60 – 40)/(40 – 30)

=> x/y = 20/10 = 2/1

Therefore Ratio should be 2 : 1.

Alternate method:

=> Required ratio = 20/10 = 2 : 1

Therefore Ratio should be 2 : 1.

Q63. Answer: (c) C

The correct answer is C.

• Khufu was the first pharaoh to build a pyramid at Giza.

• It is now believed the pyramids were built using conscripted labour rather than slaves.

• The Great Pyramid of Giza (also known as the Pyramid of Khufu or the Pyramid of Cheops) is the oldest and largest of the three pyramids in the Giza pyramid complex bordering present-day Giza in Greater Cairo, Egypt.

• It is the oldest of the Seven Wonders of the Ancient World, and the only one to remain largely intact.

• The Tura limestone used for the casing was quarried across the river.

• The largest granite stones in the pyramid, found in the "King's" chamber, weigh 25 to 80 tonnes and were transported from Aswan.

Additional Information

• The seven wonders of the world are:

1. Great Wall of China China.
2. Petra Ma'an, Jordan.
3. Colosseum Rome, Italy.
4. Chichen Itza Yucatán, Mexico.
5. Machu Picchu Cuzco Region, Peru.
6. Taj Mahal Agra, Uttar Pradesh, India.
7. Christ the Redeemer Rio de Janeiro, Brazil.

• Taj Mahal is the Sixth Wonder of the World.

• In 2007, the New7Wonders Foundation was formed with Headquarters is in Lisbon.

• The capital of Egypt is Cairo.

• The currency of Egypt is the Egyptian pound.

Q64. Answer: (b) D

The correct answer is D.

The logic follows here is:-

• As 'Palam' is an airport in Delhi.

• 'Palam' airport is used by Defence.

Similarly,

• 'Dum Dum' is an airport in Kolkata.

• Hence, the correct answer is "Kolkata".

Additional Information

City	Airport
Hyderabad	Begumpet Airport, Rajeev Gandhi International Airport.
Chennai	Chennai International
Mumbai	Chhatrapati Shivaji Maharaj International

• There are a total of 34 International Airports in India.

• The Highest Airport in India is Kushok Bakula Rimpochee Airport, Leh.

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Q65. Answer: (b) C

The correct answer is C.

• Speaker of Lok Sabha Sumitra Mahajan represents Indore, Madhya Pradesh.

• Sumitra Mahajan was preceded by Prakash Chandra Sethi.

• She was the speaker of Lok Sabha from 2014 to 2019.

• She represented the Indore constituency of Madhya Pradesh from 1989 to 2019 as a longest-serving Woman Member of Parliament.

• She also served as a Union Minister of State from 1999 to 2004, holding the portfolios for Human Resource Development, Communications and Information Technology, and Petroleum and Natural Gas.

• She also held the position of Chairperson of the Standing Committee on Social Justice and Empowerment (2004-2009) and Standing Committee on Rural Development (2009-2014).

• She was the eldest and seniormost among woman Members of Parliament in the 16th Lok Sabha.

Additional Information

• The present speaker of Lok Sabha is Om Birla.

• The maximum strength of Lok Sabha is 552 members.

• 20 members are from Union Territories, 530 members represent states while two members of the Anglo-Indian Community to be nominated by the Hon'ble President.

• Article 93 of the Constitution of India introduces the speaker of Lok Sabha.

Q66. Answer: (b) C

The correct answer is C.

• The Control Unit of the computer is called the nerve centre of the computer.

• The brain of the computer is called the CPU.

• CPU stands for Central Processing Unit.

• The central processing unit is known as the heart of the computer and the memory unit is known as the brains of the computer.

• It’s because the memory stores all the data and retrieves it anytime, anywhere.

Additional Information

• The computer was invented by Charles Babbage.

• Charles Babbage is known as the Father of the Computer.

• Ada Lovelace is known as the Mother of the Computer.

• First Personal Computer was invented in 1974 by MITS.

• Tata Institute of Fundamental Research Automatic Calculator(TIFRAC) was the first computer in India.

Q67. Answer: (c) A

The correct answer is A.

The logic follows here is :

• All the vehicles given in the options consist of FOUR wheels, except one that is, Auto which consists of THREE wheels.

Hence, Auto is the odd one from the given options.

Q68. Answer: (c) B

According to the given information :

BEND → 7@4#

Letter	Code
B	7
E	@
N	4
D	#

NIGHT → 4$%89

Letter	Code
N	4

I	$
G	%
H	8
T	9

Similarly, the code for "DEBT" is,

Letter	Code
D	#
E	@
B	7
T	9

Hence, the correct answer is "#@79".

Q69. Answer: (b) 1000 kg/m³

The correct answer is 1000 kg/m3

Concept:

The relative density/specific gravity of a substance is defined as the ratio of the density, mass or weight of the substance to the density, mass or weight of water at 4° C

Relative density = (Density of substance)/(Density of water at 4° C) ≈ (Mass of substance)/(Mass of water at 4° C) ≈ (Weight of substance)/(Weight of water at 4° C)

Here relative density is unitless and the density of water at 4° C is 1.0×10^3 kg/m³ or 1 g/cm³

Whereas density, ρ = Mass/Volume

Explanation:

From the given explanation we can see that relative density or specific gravity is defined as the density of material with respect to the density of water at 4° C

Whereas the specific density of water is 1000 kg/m³, and hence option 2 is correct among all.

Important point:

Also, the specific gravity of the same other materials is

Material	Specific gravity
Balsa wood	0.2
Oak-wood	0.75
Ethanol	0.78
Olive oil	0.91
Water	1
Ironwood	1.5
Graphite	1.9–2.3
Table salt	2.17
Aluminum	2.7
Cement	3.15
Iron	7.87
Copper	8.96
Lead	11.35
Mercury	13.56
Depleted uranium	19.1

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Gold	19.3
Osmium	22.59

Q70. Answer: (b) D

Symbol	Interchanged meaning
•	×
×	÷
÷	•
•	•

Given expression:
15 + 16 × 16 ÷ 15
After interchanging symbols,
15 × 16 ÷ 16 - 15
= 15 × 1 - 15
= 15 - 15
= 0
Hence, the correct answer is "0".

Q71. Answer: (c) A

Given:
A completes 2/5 of work in X days
A and B together completes the remaining work in 6 days
B alone completes the work in 100/6 days
Formula Used:
Work = Efficiency × Time
Calculation:
Let the efficiency of A and B be a, b respectively
Work = b × 100/6
=> 100b/6
A completes 2/5 of work
Remaining work = 1 – 2/5
Remaining work = 3/5
A and B together completes remaining work in 6 days
6(a + b) = 3/5 × 100b/6
=> 6a + 6b = 10b
=> 4b = 6a
=> b/a = 3/2 ----(i)
A completes 2/5 of work in X days
=> 2/5 × 100b/6 = X × a
=> X = 20b/3a
Putting value of b/a from equation (i)
=> X = 20/3 × 3/2
=> X = 10
Therefore The value of X is 10 days
Formula Used:.
M1.D1.T1.E1/W1.C1 = M2.D2.T2.E2/W2.C2
M is the number of working men
D is the total number of days
T is total hours of working days

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E is the efficiency of working men
W is total work
C is the consumption of working men
Calculation:
A completes 2/5 of a work in X days
=> Remaining work = (1 – 2/5) = 3/5 units
(A + B) completes 3/5 units of work in 6 days.
B alone takes 100/6 days to complete whole work
By using the formula,
=> {(A + B) × 6}/3/5 = (B × 100/6)/1
=> 10(A + B) = 50/3(B)
=> 30(A + B) = 50(B)
=> 3A + 3B = 5B
=> 3A = 2B
Efficiency of A is 2 units/day
Efficiency of B is 3 units/day
According to the question,
B alone takes 100/6 days to complete whole work
Total work = 3 × 100/6 = 50 units
(A + B) worked for 6 days to finish the work
(A + B) × 6 days
=> Work done in 6 days = (2 + 3) × 6 = 5 × 6 = 30
Remaining work = 50 - 30 = 20 units
20 units of work done by A in X days
=> X = 20/2 = 10 days
Therefore The value of X is 10 days.

Q72. Answer: (d) A

According to the given information

Word	Code
Wall	Window
Window	Door
Door	Floor
Floor	Roof
Roof	Ventilator

We know that the person will stand on the floor.
But in the statement, 'floor' is called 'roof'.
Hence, the correct answer is "Roof".

Q73. Answer: (c) C

The correct answer is C.
• Gregor Mendel proposed the law of heredity through his work on pea plants and discovered the fundamental laws of inheritance.
• Mendel tracked the segregation of parental genes and their appearance in the offspring as dominant or recessive traits.
• Gregor Mendel is also known as the Father of Genetics.
• Mendel coined the terms "recessive" and "dominant" in reference to certain traits.
• Thomas Robert Malthus is best known for his theory that population growth.
• John Maynard Keynes was an economist who advocated for increased government expenditures and lower taxes to stimulate demand.
Additional Information
• James Watson is known as the father of DNA.

• Aristotle is known as the father of Biology.
• Theophrastus is known as the father of Botany.
• Antoine Lavoisier is known as the father of Chemistry.
• Galileo Galilei is known as the father of physics.

Q74. Answer: (a) B

The correct answer is B.
• P.K. Nair won the epithet 'celluloid man' in 2012.
• Nair was the founder and director of the National Film Archive of India (NFAI) in 1964.
• He was regarded as the Henri Langlois of India because of his lifelong dedication to the preservation of films in India.
• Nair was awarded the Satyajit Ray Memorial Award in 2008.
• The documentary 'celluloid man' won two National Awards at the 60th National Film Awards, including Best Biographical Film and Best Editing.
Additional Information
• David Bowie was an English singer-songwriter and actor.
• Ravindra Jain was an Indian music composer, lyricist, and playback singer.
• Saroop Singh Sran (famous as Saroop Parinda or Chachi Atro) was a Punjabi Comedian & Actor.

Q75. Answer: (c) B

The correct answer is B.
• A gyroscope is a device used for measuring or maintaining orientation and angular velocity.
• A computer mouse has a gyroscope as it needs to maintain the orientation of the cursor on the screen.
• Gyroscopes are also used in compasses and automatic pilots on ships and aircraft.
• Gyroscope invented by Léon Foucault in 1852.
• Gyroscope is also used in Mobile Phones nowadays.
Additional Information
• Input Devices - Mouse, Keyboard, Scanner, etc.
• Output Devices - Printer, Monitor, Plotter, etc.
• The trackball in the computer mouse needs the gyroscope.

Q76. Answer: (c) C

Concept Used:
A number is divisible by 11 when the difference of the sum of the event place to the odd terms is 0, or a multiple of 11
Calculation:
Now check one by one from options
=> The only number that satisfies is 49231754
Now take the sum of even terms and the odd terms of the number
=> The sum of the numbers at even places = (9 + 3 + 7 + 4) = 23
=> The sum of the numbers at odd places. = (4 + 2 + 1 + 5) = 12
Now the difference between the above two is
=> The difference = 23 – 12 = 11
Therefore 49231754 is divisible by 11

Q77. Answer: (c) B

The correct answer is B.
• Lakshman Sen was the ruler from the Khilji of the Bengal region on the Indian subcontinent.
• His rule lasted for 28 years; and extended to much of the eastern regions of the Indian subcontinent, notably the Bengal and Bihar regions.
• His reign ended with the invasion of Muhammad bin Bakhtiyar Khilji.
• After Bakhtiyar Khilji's invasion, Muslim Rule in Bengal was started.
• Bakhtiyar also launched a Tibet campaign, in which he died in 1206.
• Bakhtiyar Khilji was succeeded by Muhammad Shiran Khalji.
Additional Information

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Founders of Some famous dynasties:

Dynasty	Founder
Slave Dynasty	Qutub-din-Aibak
Khilji Dynasty	Jalaluddin Khilji
Tughlaq Dynasty	Giyasuddin Tughlaq
Sayyid Dynasty	Khizra Khan
Lodi Dynasty	Bahlol Lodi

Q78. Answer: (a) C

Given:

The ratio of the angles of a triangle is 2:3:7.

Concept used:

As the sum of all the angles of a triangle is 180°

Calculation:

Let the angles of the triangle is 2x, 3x, 7x

=> The sum 2x + 3x + 7x = 180°

=> 12x = 180°, x = 15°

The largest angle and the smallest angle is

=> 7 × 15° = 105°, and 2 × 15° = 30°

The sum of the largest and the smallest is

=> 105° + 30° = 135°

The ratio of the sum of the largest and smallest to the smallest angle is

=> 135°/30° = 9:2

Therefore The ratio is 9:2

Q79. Answer: (a) A

Given:

Mayank doubles the selling price of an item then profit becomes 4 times.

Formula Used:

Profit percentage = {(Selling price – Cost price)/Cost price}×100

Calculation:

Let the initial cost price and selling price be CP, SP.

Let initial profit be P.

As 1^(st) time Profit P = (SP – CP) ----(1)

When selling price be doubled 2SP

Then profit in 2^(nd) case P = (2SP – CP) ----(2)

As given profit in 2^(nd) case is 4 times of 1^(st)

=> (2SP – CP) = 4(SP – CP)

=> 2SP – CP = 4SP – 4CP

=> 3CP = 2SP

=> SP/CP = 3x/2x

Profit percentage = {(Selling price – Cost price)/Cost price}×100

=> The profit % = (3x – 2x)/2x = (x/2x)×100 = 50%

Therefore The initial profit % is 50%

Q80. Answer: (a) B

The correct answer is B.

• Mollusca is the second-largest phylum of invertebrate animals after the Arthropoda.

• The members of the Mollusca family are known as molluscs.

• Around 85,000 extant species of molluscs are recognized.

• Molluscs are the largest marine phylum, comprising about 23% of all the named marine organisms.

• Numerous molluscs also live in freshwater and terrestrial habitats.

• The most universal features of the body structure of molluscs are a mantle with a significant cavity used for breathing and excretion, and the organization of the nervous system. Many have a calcareous shell.

• Carl Linnaeus is the father of the Animal kingdom.

Additional Information

• In Linnaeus' time, a Two Kingdom system of classification with Plantae and Animalia kingdoms was developed that included all plants and animals respectively.

• This system did not distinguish between the eukaryotes and prokaryotes, unicellular and multicellular organisms and photosynthetic (green algae) and non-photosynthetic (fungi) organisms.

• R.H. Whittaker proposed a Five Kingdom Classification in 1969.

• The kingdoms defined by him were Monera, Protista, Fungi, Plantae and Animalia.

• The main criteria for classification used by him include cell structure, thallus organisation, mode of nutrition, reproduction and phylogenetic relationships.

Q81. Answer: (b) A

Given:

$f(x) = 2x^2 – 5x + 2$

Calculation:

f(x) = 2x2 – 5x + 2

=> $f(x) = 2x^2 – 4x – x + 2$

=> f(x) = 2x(x – 2) – 1(x – 2)

=> f(x) = (2x – 1)(x – 2)

Therefore One factor is (x – 2)

Q82. Answer: (c) A

The correct answer is A.

• The Chera dynasty was one of the principal lineages in the early history of the present-day states of Kerala and Tamil Nadu in southern India.

• Together with the Cholas of Uraiyur and the Pandyas of Madurai, the early Cheras was known as one of the three major powers.

• The Chera country was geographically well placed to profit from maritime trade via the extensive Indian Ocean networks.

• The Chera's were known to have had their original centre at Karur in interior Tamil Nadu and harbours at Muchiri and Thondi on the Indian Ocean coast (Kerala).

• The term Chera stands for the ruling lineage and the country associated with them.

• The founder of the Chera dynasty was Uthiyan Cheral Athan.

Additional Information

Founders of some important Ancient Dynasties of India:

Dynasty	Founder
Haryanka	Bimbisara
Sisunaga Dynasty	Sisunaga
Nanda Dynasty	Mahapadma Nanda
Maurya Dynasty	Chandragupta Maurya

Q83. Answer: (a) D

The correct answer is D.

• The book Making India Awesome showers light on India's most obstinate snags—unemployment, violence, poverty, discrimination against women, religious fundamentalism, illiteracy, and communal violence.

• Chetan Bhagat was included in Time magazine's list of the World's 100 Most Influential People in 2010.

• This is the first time Chetan Bhagat, renowned for writing non-fiction books based on the lives of Indian youth.

• Starting with a note on his journey, the book is strategically divided into four parts i.e., Our Society, Politics, Our Youth, and Two stories.

• Bhagat's novels have sold over seven million copies and in 2008, The New York Times quoted Bhagat as "the biggest selling

English language novelist in India's history.

Additional Information

Some famous books of other authors:

Author	Books
Arundhati Roy	• The God of Small Things - My Seditious Heart - The end of Imagination
Kailash Satyarthi	• Every Child Matters - Because word Matters - The Light of the Same Sun
Sachin Garg	• The Backbenchers - When Opposites Meet - It's First Love! Like The Last One

Q84. Answer: (a) B

The correct answer is B.

• In this book, Gavaskar talks about the great players of the yesteryears and his heroes that include M.L. Jaisimha and Don Bradman.

• Gavaskar set world records during his career for the most Test runs and most Test centuries scored by any batsman.

• He held the record of 34 Test centuries for almost two decades before it was broken by Sachin Tendulkar in December 2005.

• He was the first person to score centuries in both innings of a Test match three times.

• He was the first Test batsman to score 10,000 Test runs in a career and now stands at number 12 on the group of 13 players with 10,000-plus Test runs.

Additional Information

Books written by other Sportsperson are:

Authors	Books
Kapil Dev	• Cricket - My Style - By God's Decree
Prakash Padukone	• Touch Play - The Prakash Padukon story
Vishwanathan Anand	• My Best Game of Chess - My Career

Q85. Answer: (a) C

The correct answer is C.

• It is a heart Shaped Island which is also known as Pigeon Island.

• This Island is famous for Jai Bajrangbali Temple.

• It is off the coast of Karnataka situated approximately 10 nautical miles (19 km) from the temple town of Murudeshwara in Bhatkal Taluka.

• The island can be seen from the main coast over 15 km away, including from various beaches in Bhatkal city as well as from Murudeshwar Beach.

• Netrani is a coral island that has a coral reef with many varieties of coral, butterflyfish, triggerfish, parrotfish, eels and shrimps can be seen here.

• This island comes under the Administration of Karnataka's Bhatkat district.

Additional Information

• Chief Minister of Karnataka - Basavaraj Somappa Bommai

• Governor of Karnataka - Thaawar Chand Gehlot

• Lt Governor of Lakshadweep - Praful Khoda Patel

• Lakshadweep has a total of 36 islands.

• National Parks in Karnataka - Bhadra Wildlife century, Nagarhole National Park, etc.

Q86. Answer: (b) C

The correct answer is C.

• On 16 June 2012, Major Liu Yang was the first Chinese woman launched into space aboard the Shenzhou 9 with two male counterparts to the Chinese space station Tiangong-1.

• The second Chinese woman in space was Wang Yaping in Shenzhou 10.

• In 2012, China became the third nation to send women into space with its own space program, after the Soviet Union/Russia and

the United States, 49 years after the first female cosmonaut, Valentina Tereshkova.

Additional Information

• First Woman to go into space was Valentina Tereshkova.

• Cosmonaut Gennady Padalka holds the world record for the b at 878 days over the course of five missions.

• Sunita Williams returned to earth after 127 days in space with a new record under her belt - the most spacewalking time by a female at 50 hours and 40 minutes over seven career excursions.

• Buzz Aldrin was the second person after Neil Armstrong to put his step on the moon.

Q87. Answer: (c) A

Given:

Money becomes Rs. 1200 in 4 years

Money becomes Rs. 1500 in 7 years

Calculation:

According to question

Difference between the money of 7 years and 4 years = 1500 - 1200

=> Rs. 300

So, Interest of 3 years = Rs. 300

Now interest of one year = 300/3 = Rs. 100

=> Interest of 4 years = 4 × 100

=> Rs. 400

Principal amount = 1200 - 400

=> Rs. 800

Therefore The Principal amount is Rs. 800

Q88. Answer: (a) B

Assertion (A): A person with O blood group is considered a universal recipient → False

Blood group O can be given to any person having any blood type as it does not contain antigens for A and B for agglutination to occur with either of the antibodies in the other blood types. Hence, O group is otherwise called a universal donor.

Reason (R): O type of blood has no antigens → True.

The O group does not have antigens to react with the antibodies available in the recipient O group; O group recipients can get only O group blood.

Hence, the correct answer is "A is wrong but R is correct."

Additional Information

• A person who can accept a blood transfusion from any blood type is called a universal recipient. Universal recipients have type AB blood and can receive a blood transfusion from a person with any blood type. The immune system of a person with AB blood will accept blood from all possible donors, whether they have O, A, B, or AB blood.

Q89. Answer: (d) C

Given:

The time required to cover one-third of distance in triple time

Formula used:

Speed = Distance/Time

Calculation:

Let the distance, D covered by the bus in time, T with speed, S

=> Speed of bus, S1 = D/T ----(1)

According to question

Speed of person, S2 = (D/3)/(3T)

=> S2 = D/9T ----(2)

Divide equation (2) by (1)

=> S2/S1 =(D/9T)/(D/T)

=> S2/S1 = 1/9

=> S2 : S1= 1 : 9

Therefore The ratio of the speed of the person to the speed of the bus is 1 : 9

Q90. Answer: (d) A

The correct answer is A.

• Chennakesva Temple was commissioned by King Vishnuvardhana in 1117 CE.

• King Vishnuvardhana was the emperor of the Hoysala Empire.

• The Hoysala Empire was a Kannadiga power originating from the Indian subcontinent that ruled most of what is now Karnataka, India between the 10th and the 14th centuries.

• The capital of the Hoysalas was initially located at Belur but was later moved to Halebidu.

• The Hoysala rulers were originally from Malenadu, an elevated region in the Western Ghats.

Additional Information

Some famous Temples build by:

Temple	King
Vrihadeshwara Temple	Rajaraja I
Koranganatha Temple	Parantaka I
Kampahreshwar Temple	Kullotung III
Airateshwar Temple	Rajaraja II
Gangaikonda Cholapuram	Rajendra I

Q91. Answer: (d) Vitamin C

The correct answer is Vitamin C

Vitamins	Chemical Name	Deficiency Disease
Vitamin A	Retinol	Night Blindness
Vitamin B1	Thiamine	Beriberi
Vitamin C	Ascorbic Acid	Scurvy
Vitamin D	Calciferol	Rickets and osteomalacia
Vitamin K	Phylloquinone	Non-clotting of Blood
Vitamin B2	Riboflavin	Cracking of Skin

Additional Information

• Vitamins were first discovered by FG Hopkins.

• The term Vitamin was coined by C Funk.

• There are two types of Vitamins:

1. Fat-Soluble- Vitamin A, D, E, and K.

2. Water-Soluble - Vitamin B and C.

• Natural sources of Vitamin D are - Sunlight, fish, eggs, and mushrooms.

Q92. Answer: (b) C

The correct answer is C.

• Dry ice is the solid form of carbon dioxide.

• It is used primarily as a cooling agent but is also used in fog machines at theatres for dramatic effects.

• Its advantages include lower temperature than that of water ice and not leaving any residue.

• It is useful for preserving frozen foods where mechanical cooling is unavailable.

• Dry ice sublimates at 194.7 K at Earth atmospheric pressure.

• The outgassing from it can cause hypercapnia.

• Dry ice is colourless, non-flammable, with a sour zesty odour, and can lower the pH of a solution when dissolved in water, forming carbonic acid.

Additional Information

• Sublimation is the process in which solid-state directly converts into a gaseous state.

• Dry ice was first observed in 1835 by French inventor Adrien-Jean-Pierre Thilorier.

• The most common use of dry ice is to preserve food using non-cyclic refrigeration.

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• Dry ice is critical in the deployment of COVID-19 vaccines, which require storage at ultra-cold temperatures along their supply line.

Q93. Answer: (b) D

The logic follows here is:-

Cube of 1st number : Square of 2nd number.

Given,

$27 : 9 \rightarrow (3)^3 : (3)^2$

Similarly,

$729 : 81 \rightarrow (9)^3 : (9)^2$

Hence, the correct answer is "729 : 81".

Logic:- 2nd number × (2nd number / Root of 2nd number) = 1st number

For,

$27 : 9 \rightarrow 9 \times (9 / 3) \rightarrow 9 \times 3 = 27$

Similarly,

$729 : 81 \rightarrow 81 \times (81 / 9) \rightarrow 81 \times 9 = 729$.

Q94. Answer: (c) D

According to the given information :

Letter	Meaning
L	×
M	•
N	•
P	÷

Given expression,

44 M 64 N 60 P 15 L 4

After changing symbols,

$44 + 64 - 60 \div 15 \times 4$

$44 + 64 - 4 \times 4$

$44 + 64 - 16$

$108 - 16$

92

Hence, the correct answer is "92".

Q95. Answer: (b) B

Given,

$A + B = 2C \rightarrow$ (i)

$C + D = 2A \rightarrow$ (ii)

Let,

A = 1, B = 3, C = 2, and D = 0

Values of A, B, and C is putting equation (i),

$A + B = 2C \rightarrow$ (i)

$1 + 3 = 2 \times 2$

$4 = 4$

This condition is satisfied.

Again values of A, B, C and D is putting equation (ii),

$C + D = 2A \rightarrow$ (ii)

$2 + 0 = 2 \times 1$

$2 = 2$

This condition is also satisfied.

Now, the value of A, B, C, and D are putting in options one by one:

A. A + C = 2D → 1 + 2 = 2 × 0 → 3 ≠ 0

B. A + C = B + D → 1 + 2 = 3 + 0 → 3 = 3

C. A + C = 2B → 1 + 2 = 2 × 3 → 3 ≠ 6

D. A + D = B + C → 1 + 0 = 3 + 2 → 1 ≠ 5

So, only 'B' is satisfied with this condition.

Hence, the correct answer is "B".

Q96. Answer: (b) A

The correct answer is A.

• Salt is a great ice melter because it causes “freezing point depression.”

• This means that salt helps in lowering the freezing point and, consequently, the melting point of water.

• The specific gravity of salt is 2.165.

• Caustic Sode is also known as Sodium Hydroxide (NaOH) and is highly alkaline in nature.

Additional Information

Chemical Name	Common Name	Uses/Source
Formic Acid	Methanoic acid	This acid is in an ant's bite.
Ethanoic acid	Acetic acid/ Vinegar	The main ingredient is vinegar.
Acetylsalicylic acid	Aspirin	The active ingredient in aspirin.
--	Citric Acid	It is found in lemon juice.

Q97. Answer: (c) B

The correct answer is B.

• MIPS stands for Million Instruction Per Second.

• It is a method of measuring the raw speed of a computer's processor.

• Since the MIPS measurement doesn't take into account other factors such as the computer's I/O speed or processor architecture, it isn't always a fair way to measure the performance of a computer.

• To calculate MIPS, divide the number of cycles per second (CPU) by the number of cycles per instruction (CPI) and then divide by 1 million to find the MIPS.

• They're frequently the processors used in things like routers and other small computing appliances like that.

Additional Information

Some important Acronyms used in Information Technology:

1. API - Application Program Interface.
2. APU - Accelerated Processing Unit.
3. BIOS - Basic Input/Output System.
4. CDMA - Code Division Multiple Access.
5. CSS - Cascading Style Sheet.
6. DVD - Digital Versatile Disk.
7. FIFO- First In First Out.
8. LIFO - Last In First Out.
9. GPS- Global Positioning System.
10. UPS - Universal Power Supply.
11. URL - Uniform Resource Locator.
12. HTML - Hypertext Markup Language.
13. HTTP - Hypertext Transfer Protocol.
14. JPEG - Joint Photographic Experts Group.

Q98. Answer: (a) C

According to the given information :

CHAIR → $?1÷8

Letter	Code

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C	$
H	•
A	1
I	÷
R	8

HIDE → ?÷35

Letter	Code
H	•
I	÷
D	3
E	5

Similarly, the code for "DEAR" is,

Letter	Code
D	3
E	5
A	1
R	8

Hence, the correct answer is "3518".

Q99. Answer: (d) D

Given:

The length of the shadow of a pillar is reduced to 24 m

The angle of elevation of the Sun increases from 30° to 60°

Formula used:

Tanθ = Perpendicular/Base

Calculation:

Let the height of pillar (AD) be h meter

And let the length of the shadow(BD) of be x meter

According to the question,

In Δ ACB,

tanθ = p/b

tan30° = h/(x + 24)

=> 1/√3 = h/(x + 24)

=> h = (x + 24)/√3 ----(1)

Again,

n Δ ABD,

tanθ = p/b

tan60° = h/x

=> √3 = h/x

=> h = x√3 ----(2)

From equation (1) and equation (2):

=> (x + 24)/√3 = x√3

=> (x + 24) = 3x

=> (3x – x) = 24

=> 2x = 24

=> x = 12

Put the value of x = 12 in equation (2),

=> h = x√3

=> h = 12× √3 = 12√3

Therefore The height of pillar is 12√3 meter.

Q100. Answer: (c) C

Given:

Total boys and girls = 504

Ratio of boys and girls = 13 : 11

Calculation:

Let boys be 13x

And girls be 11x

According to the question:

11x + 13x = 504

=> 24x = 504

=> x = 504/24 = 21

Girls = 11x = 11 × 21 = 231

Boys = 13x = 13 × 21 = 273

Again,

12 more girls are admitted = 12 + 231 = 243

New ratio = 273 : 243

=> Boys : Girls = 91 : 81

Therefore The ratio of Girls and Boys are 81 : 91.

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