NTPC CBT-II 2016 Official Paper (Held On: 19 Jan, 2017 Shift 3) (Previous Year Paper)

RRB NTPC • 2016 • 120 questions • 90 minutes • Answer key and solutions

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FULL TEST

Q1. Fill in the blank:

0, 2, 6, _____, 20, 30, 42

(a) 12
(b) 10
(c) 8
(d) 6

Q2. Which of the following States hosted the 35^(th) National Games in 2015?

(a) Delhi
(b) Goa
(c) Kerala
(d) Andhra Pradesh

Q3. Which of the following is true for a Car running at a constant acceleration on a uniform straight road?

(a) Acceleration of the car is zero
(b) Velocity of the car is zero
(c) Acceleration of the car is continously changing
(d) Velocity of the car is constantly changing

Q4. What does UNHCR stand for?

(a) United Nations Human Capital Research
(b) United Nations Humanity Committee for Rufugees
(c) United Nations High Commissioner for Refugees
(d) United Nations Humanity Commission for Refugees

Q5. In December 2015, who among the following was appointed as the new CEO of Food Safety and Standards Authority of India (FSSAI)?

(a) Ashish Bahuguna
(b) Anil Kumar
(c) Yudhvir Singh Malik
(d) Pawan Kumar Agarwal

Q6. Mr. Mahesh buys a toy for Rs. 25 and sells it for Rs. 30. Find the gain percentage.

(a) 20%
(b) 22%
(c) 25%
(d) 21%

Q7. Which of the following is considered to be the largest volcano on Earth (in terms of its mass and footprint)?

(a) Ojos del Salado
(b) Mount Vesuvius
(c) Tamu Massif
(d) Mauna Kea

Q8. Divide Rs. 169 in the ratio 2 : 5 : 6. The rupees in the respective ratios are given by:

(a) 26, 66 & 77
(b) 26, 65 & 78
(c) 25, 67 & 78
(d) 26, 70 & 73

Q9. If PALE is coded as 5293, EARTH is coded as 32681, how is PEARL coded in that code?

(a) 53289
(b) 53629
(c) 53269
(d) 53829

Q10. All irrational number are _____ numbers.

(a) integers
(b) imaginary
(c) whole
(d) real

Q11. A telephone bill costs Rs. 25.50 for 3 minutes 20 seconds. What is the cost, in rupees, for 5 minutes 30 seconds? (Round up to one decimal)

(a) 42.1
(b) 58.7
(c) 58.5
(d) 58.8

Q12. Find the fourth proportional to 12, 18, 20.

(a) 30
(b) 50
(c) 35
(d) 40

Q13. The value of $(3.24 \times 4)/0.2 = ?$

(a) 324/25
(b) 162/25
(c) 162/5
(d) 324/5

Q14. To determine the health of a water body, what is measured?

(a) Dissolved Oxygen
(b) Dissolved Fluorine
(c) Dissolved Methane
(d) Dissolved Calcium

Q15. Which of the following gases is also known as a 'Stranger' gas?

(a) Xenon
(b) Neon
(c) Krypton
(d) Argon

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Q16. A question and two statements labeled (I), (II) are given. You have to decide which statements(s) is/are sufficient to answer the question.

What is Rashmi's rank in the class?

I. There are 25 students in the class.

II. There are 8 students who have scored less than Rashmi.

(a) Both the statements together are needed.
(b) Statement I alone is sufficient.
(c) Statement II alone is sufficient.
(d) Either I or II alone is sufficient.

Q17. A shopkeeper cheats to the extent of 15% while buying and selling fruits, by using tampered weights. His total gain, in percentage, is:

(a) 32.75
(b) 35.29
(c) 32
(d) 32.5

Q18. The volume (in cubic cm) of a right circular cylinder with radius 2 cm and height 2 m is : (take $\pi = 22/7$)

(a) 175/7
(b) 176/21
(c) 17600/7
(d) 176

Q19. Jawahar Rozgar Yojana (JRY) was started with effect from_____.

(a) April, 1, 1977
(b) April, 1, 1998
(c) April, 1, 2012
(d) April, 1, 1989

Q20. The '2016 ExoMars Trace Gas Orbiter' is the first in a series of Mars missions to be undertaken jointly by the two space agencies, European Space Agency (ESA) and _____.

(a) NASA, USA
(b) JAXA, Japan
(c) ISRO, India
(d) Roscosmos, Russia

Q21. Compute: 10584 ÷ 168 - 63

(a) 1
(b) 0
(c) 540/5
(d) 504/5

Q22. Which is the correct ascending order of the given numbers?

(a) 4/9, 0.3, 2/7
(b) 0.3, 4/9, 2/7
(c) 2/7, 0.3, 4/9
(d) 2/7, 4/9, 0.3

Q23. Pranhita is the largest tributary of Godavari river conveying the combined waters of the Penganga river, _____ river and the Wainganga river

(a) Wardha
(b) Koyna
(c) Tapti
(d) Ulhas

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Q24. There are total 200 students in a school, of which 2/5 th are boys. Find the number of girls in the school.

(a) 100
(b) 60
(c) 120
(d) 80

Q25. The Meenakshi Temple is located in -

(a) Tamil Nadu
(b) Rajasthan
(c) Maharashtra
(d) Punjab

Q26. If sin x = 4/5, then sec x + tan x = ?

(a) 37/20
(b) 31/12
(c) 3
(d) 1/3

Q27. Which of the following sports is Korada Ramana related to?

(a) Football
(b) Swimming
(c) Weightlifting
(d) Archery

Directions

Study the following information and answer the question given below it:

In a certain town, there are 5000 people. Out of them, 1200 do not subscribe for any newspaper, 2700 subscribe to 'The Indian Express' and 1800 subscribe to 'The Hindu'.

Q28. How many subscribe to both the newspapers?

(a) 3800
(b) 1000
(c) 700
(d) 500

Q29. How many subscribe to 'The Indian Express' only?

(a) 1100
(b) 2000
(c) 2500
(d) 1800

Q30. Complete the Analogy :

When : Where : : Time : _____.

(a) Day
(b) Watch
(c) Place
(d) Money

Q31. Find the next term of the series.

MOQ, SUW, YAC, ?

(a) GEI
(b) EIG
(c) DBF
(d) EGI

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Q32. Mohiniyattam is a classical dance form of _____.

(a) Maharashtra
(b) Tamil Nadu
(c) Rajasthan
(d) Kerala

Q33. Mr. Sriram invested Rs. 14,000 in FD. How much will he get on maturity, if he invested it at 20% per annum compound interest for 6 months, compounded quarterly?

(a) Rs. 15,437
(b) Rs. 15,434
(c) Rs. 15,436
(d) Rs. 15,435

Q34. Kyoto Climate Change Conference took place in _____.

(a) December 1994
(b) December 1997
(c) December 2000
(d) December 2004

Q35. The mean of a set of data {8, 0, 3, 3, 1, 7, 4, 1, 4, 4} is:

(a) 3
(b) 3.5
(c) 3.75
(d) 3.25

Q36. The order of the layer of the atmosphere from the earth's surface (moving away from the surface) is:

(a) Troposphere - Stratosphere - Mesosphere - Thermosphere
(b) Mesosphere - Stratosphere - Troposphere - Thermosphere
(c) Stratosphere - Troposphere - Mesosphere - Thermosphere
(d) Mesosphere - Troposphere - Stratosphere - Thermosphere

Q37. Which of the following is the first mammal species to be wiped out by human-induced climate change?

(a) Ursus maritimus
(b) Panthera tigris
(c) Bramble Cay melomys
(d) Panthera uncia

Q38. By rearranging TUROOND, what do you get?

(a) Name of a river
(b) Name of an animal
(c) Name of a flower
(d) Name of a train

Q39. Given below is a statement followed by some conclusions. Decide which of the given conclusions logically follow(s) from the given statements.

Statement:

The best evidence of India's glorious past is the growing popularity of Ayurvedic medicines in the West.

Conclusions:

I. Ayurvedic medicines are not popular in India.

II. Allopathic medicines are more popular in India.

(a) Neither I nor II follow
(b) Only conclusion II follows
(c) Either I or II follows
(d) Only conclusion I follows

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Q40. The Andaman and Nicobar are separated by the _____, which is 150 km wide.

(a) Kardiva Channel
(b) Ten Degree Channel
(c) Nine Degree Channel
(d) Mozambique Channel

Q41. In March 2016, which of the following biosphere reserve was included in UNESCO's World Network of Biosphere Reserves?

(a) Agasthyamala Bioshpere Reserve
(b) Nilgiri Biosphere Reserve
(c) Nanda Devi Biosphere Reserve
(d) Simlipal Biosphere Reserve

Q42. 18 men built a ship model in 7 days. How many days will it take for 15 men to make that model?

(a) 8.7 days
(b) 8.5 days
(c) 8.4 days
(d) 43/5 days

Q43. What will be the next number in the following series?

1, 2, 9, 28, 65, _____

(a) 81
(b) 126
(c) 256
(d) 125

Directions

Read the following information carefully and answer the questions given below it:

(i) Govind is shorter than Ashish but taller than Kamal.

(ii) Naren is shorter than Kamal.

(iii) Jeyanth is taller than Naren.

(iv) Ashish is taller than Jeyanth.

Q44. Who among them is the shortest?

(a) Ashish
(b) Govind
(c) Kamal
(d) Naren

Q45. Which can be definitely deduced from the data?

(a) Kamal is shorter than Govind.
(b) Jeyanth is the 2^(nd)tallest among the five.
(c) Kamal and Jeyanth are of same height.
(d) Govind and Jeyanth are of same height

Q46. Who among them is the tallest?

(a) Govind
(b) Jeyanth
(c) Naren
(d) Ashish

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Q47. Below are given statements followed by some conclusions. You have to take the given statements to be true even if they seem to be at variance with the commonly known facts and then decide which of the given conclusions logically follow(s) from the given statements.

Statement:

All caps are books. All books are pens.

Conclusions:

I. Some caps are not pens.

II. Some pens are caps.

(a) Only conclusion II follows
(b) Only conclusion I follows
(c) Neither I nor II follows
(d) Either I nor II follows

Q48. Given below is a statements followed by some conclusions. Decide which of the given conclusions logically follow(s) from the given statements.

Statements:

Industrial Revolution, which started in Europe first, has brought about the modern age.

Conclusions:

I. Disparity between rich and poor results in a revolution.

II. Revolution overhauls society.

(a) Wither I or II follows
(b) Neither I nor II follow
(c) Only conclusion II follows
(d) Only conclusion I follows

Q49. Almatti Dam is a hydroelectric project on the _____ river.

(a) Krishna
(b) Yamuna
(c) Kaveri
(d) Godavari

Q50. If A denotes ÷, B denotes ×, C denotes + and D denotes -, then

18 B 12 A 4 C 5 D 6

(a) 56
(b) 63
(c) 36
(d) 53

Q51. A DVD is an example of-

(a) Solid-state storage device
(b) Output device
(c) Hard disk
(d) Optical disk

Q52. If the product of two numbers is 3360 and their LCM is 96, find their HCF.

(a) 35
(b) 33
(c) 34
(d) 29

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Q53. What is the highest denomination note ever printed by the RBI?

(a) Rs. 1,00,000
(b) Rs. 10,000
(c) Rs. 5,000
(d) Rs. 1,000

Q54. To avoid train accidents in the future, Minister of Railways, Suresh Prabhu launched which of the following?

(a) Mission 'Zero Accident'
(b) Mission 'Rail Efficiency'
(c) Mission 'Unmanned Crossings'
(d) Mission 'Rail Safety'

Q55. Which of the following was India's first Lunar Mission?

(a) Aditya
(b) AVATAR
(c) Chandrayaan-1
(d) AstroSat

Directions

Following is a record of the performance of a football team for the seven tournaments played in a year.

Tournament	Matches Won	Matches Lost	Total matches Played
First	5	3	8
Second	4	4	8
Third	5	2	7
Fourth	6	3	9
Fifth	4	2	6
Sixth	3	3	6
Seventh	2	4	6

Q56. Which tournament was the worst for the team?

(a) Seventh
(b) Second
(c) Sixth
(d) Fifth

Q57. How many matches did the team win during the year?

(a) 50
(b) 21
(c) 29
(d) 25

Q58. Which tournament was the best for the team?

(a) Third
(b) First
(c) Ffith
(d) Fourth

Q59. What percent of the matches did the team win overall?

(a) 58%
(b) 80%
(c) 75%

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(d) 52%

Q60. If > denotes +, < denotes -, + denotes ÷, # denotes ×, - denotes =, × denotes > and = denotes <, choose the correct statement from the following:

(a) 9 + 9 > 9 = 9
(b) 9 < 7 + 7 = 6
(c) 7 # 7 > 77 + 7 = 7 # 7 > 1
(d) 7 > 7 < 7 + 7 = 14

Q61. In which of the following states is the 'Losoong Festival' annually held?

(a) Nagaland
(b) Uttar Pradesh
(c) Sikkim
(d) Uttarakhand

Q62. Complete the Analogy :

Speaker : Listener :: Film : _____

(a) Viewer
(b) Critic
(c) Actor
(d) Broadcaster

Q63. As envisaged in the Constitution of India, the Vice-President of India is elected by:

(a) The President of India
(b) The elected members of both Houses of the Parliament
(c) The members of Rajya Sabha
(d) The Prime Minister of India

Q64. Mrs. Vijaya takes a total of 9 hours 50 minutes in walking a distance and running back to same place where she started. She could walk both ways in 12 hrs 20 minutes. The time taken by her to run both ways is:

(a) 7 hours 45 min
(b) 7 hours 35 min
(c) 7 hours 15 min
(d) 7 hours 20 min

Q65. If Diamond is called Gold, Gold is called Silver, Silver is called Emerald and Emerald is called Ruby, which is the hardest substance?

(a) Ruby
(b) Gold
(c) Silver
(d) Emerald

Q66. Anwesha Scheme which aims at providing quality education to SC and ST students was launched by the _____ government.

(a) Uttar Pradesh
(b) Odisha
(c) Maharashtra
(d) Bihar

Q67. Two buses start from a house at an interval of 5 minutes and move with a speed of 10 km/hr in the same direction. With how much speed (km/hr.) should a woman coming from the opposite direction towards the house travel, to meet the buses at an interval of 3 minutes?

(a) 6.5
(b) 6
(c) 6 1/3
(d) 6 2/3

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Q68. Find the similarity among the following dance forms.

Kathak, Kathakali, Bharathanatyam, Madhubani

(a) There is no similarity at all
(b) All these originated in North India
(c) All are practiced by female artists only
(d) All are South Indian dance forms

Q69. The House of the People (Lok Sabha) consists of not more than _____ members chosen by direct election only from territorial constituencies in the States.

(a) 550
(b) 518
(c) 530
(d) 525

Q70. The cash difference between the selling price of an article at a profit of 4% and 8% is Rs. 3. The ratio of two selling prices is:

(a) 25 : 27
(b) 26 : 27
(c) 26 : 31
(d) 26 : 29

Q71. Arrange the given English words in alphabetical order and choose the one that comes first.

(a) Quarry
(b) Quarter
(c) Quarrel
(d) Qualify

Q72. As per the Railway Budget 2016, SMART coaches were proposed for more comfortable journeys. What does SMART stand for?

(a) Scientifically Modified Automatic Refreshing Travel
(b) Scientifically Modified Aesthetic Refreshing Travel
(c) Specially Modified Automatic Refreshing Travel
(d) Specially Modified Aesthetic Refreshing Travel

Q73. Find the odd one out:

(a) Tailor
(b) Carpenter
(c) Goldsmith
(d) Teacher

Q74. Which of the following countries passed its first Anti-Terrorism law in December 2015?

(a) Australia
(b) Syria
(c) India
(d) China

Q75. Ms. Revathi borrowed Rs. 600 at 6% per annum simple interest. What (in rupees) will she pay to clear her debt after 4 years?

(a) 700
(b) 150
(c) 744
(d) 144

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Q76. A _____ is a piece of software code that can be applied after the software program has been installed, to correct an issue with that program.

(a) Tutorial
(b) FAQ
(c) Patch
(d) Version

Q77. If + means ×, ÷ means +, - means ÷, × means -, then ((36× 4)-8× 4)/(4+8× 16÷ 1)=

(a) 8
(b) 0
(c) 1
(d) 4

Q78. Why was the Simon Commission of 1927 boycotted?

(a) to protest the arrest of Mahatma Gandhi
(b) as Indians were excluded from the Commission
(c) to protest the inclusion of Sir John Simon in the Commission
(d) to protest against the Jallianwala bagh massacre

Q79. Who among the following players was conferred the '2015 ICC Emerging Player of the Year' Award?

(a) Joe Root
(b) Josh Hazlewood
(c) Steve Smith
(d) Mohammed Shami

Q80. Mr. Prasad travelled equal distances at speeds of 2 km/hr., 4 km/hr., and 6 km/hr., and took a total of 55 minutes to complete. Find the total distance he travelled, in km.

(a) 2
(b) 1
(c) 4
(d) 3

Q81. Justice A P Shah Committee was setup to work on the dispute regarding Oil and Gas blocks in KG Basin between ONGC and _____.

(a) Reliance Industries Ltd
(b) Essar Oil
(c) Hindustan Oil Exploration Company Ltd
(d) Bharat Petroleum Corporation Ltd

Q82. Saha Institute of Nuclear Physics is located in -

(a) Tamil Nadu
(b) Delhi
(c) Maharashtra
(d) West Bengal

Q83. Right to Education became a fundamental right in -

(a) April 2010
(b) April 2004
(c) April 2008
(d) April 2012

Q84. Which of the following is NOT a Fundamental Duty as per the Constitution of India?

(a) to safeguard public property and to abjure violence
(b) to value and preserve the rich heritage of our composite culture
(c) to cherish and follow the noble ideals which inspired our national struggle for freedom

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(d) to vote in public election

Q85. In 2014, the Reserve Bank of India (RBI) adopted the new _____ as the key measure of inflation.

(a) IPI (Import Price Index)
(b) CPI (Consumer Price, Index, rural and urban, combined)
(c) WPI (Wholesale Price Index)
(d) PPI (Producer Price Index)

Q86. Find the next term of the series:

3F, 6G, 11I, 18L, _____

(a) 25N
(b) 27N
(c) 25P
(d) 27P

Q87. Simplify: $(3y)^2 + x^2 - (2y)^2$

(a) $x^2 - 5y^2$
(b) $x^2 + y^2$
(c) $x^2 - y^2$
(d) $x^2 + 5y^2$

Q88. In January 2016, _____ took charge as the India's ambassador to Thailand.

(a) Bhagwant Singh Bishnoi
(b) Anil Wadhwa
(c) Pinak Ranjan Chakravarty
(d) Harsh Vardhan Shringla

Q89. A woman invests Rs. 4000 at the start of each year at 5% compound interest per annum. How much will her investment be at the end of the 2nd year?

(a) Rs. 8601
(b) Rs. 8615
(c) Rs. 8600
(d) Rs. 8610

Q90. According to data from NASA's Cassini mission, a 'global ocean' lies beneath the icy crust of Saturn's moons named _____.

(a) Tethys
(b) Mimas
(c) Rhea
(d) Enceladus

Q91. Below are given statements followed by some conclusions. You have to take the given statements to be true even if they seem to be at variance with the commonly known facts and then decide which of the given conclusions logically follow(s) from the given statements.

Statement:

Some ducks are birds.

Some birds are cows.

Conclusions:

I : Some ducks are cows.

II : Some cows are ducks.

(a) Only conclusion II follows
(b) Either I or II follows
(c) Only conclusion I follows
(d) Neither I nor II follows

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Q92. Mr. Arun borrowed Rs. 6500 at 4% per annum compound interest. The compound interest compounded annually for 2 years is:

(a) Rs. 530.4
(b) Rs. 7300.4
(c) Rs. 503.4
(d) Rs. 7030.4

Q93. Which one of the following has the largest population in a food chain?

(a) Secondary Consumers
(b) Primary Consumers
(c) Decomposers
(d) Producers

Q94. If G = 7, EXCEL = 49, then ACCEPT = _____

(a) 343
(b) 49
(c) 48
(d) 58

Q95. Elephants, Bears and Rhinos are examples of -

(a) Birds
(b) Mammals
(c) Amphibians
(d) Reptiles

Q96. INSAT-2E was launched from

(a) India
(b) French Guiana
(c) Peru
(d) Mayotte

Q97. Mr. Rajesh is twice as good a worker as Mr. Vishal and together they finish a piece of work in 28 days. In how many days will Vishal alone finish the work?

(a) 56
(b) 112
(c) 84
(d) 80

Q98. What is 15% of 75?

(a) 11.5
(b) 11.75
(c) 11
(d) 11.25

Q99. The Organisation for the Prohibition of Chemical Weapons (OPCW) is headquartered in _____.

(a) Netherlands
(b) Switzerland
(c) Sweden
(d) Denmark

Q100. In 1930, the first phase of the Civil Disobedience Movement, viz. the Salt Satyagraha, began with Mahatma Gandhi's marathon march from _____

(a) Sabarmati
(b) Dandi
(c) Bombay

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(d) Delhi

Q101. Dinesh is brother of Rakesh. Renu is sister of Ajith. Rakesh is son of Renu. How is Dinesh related to Renu?

(a) Brother
(b) Son
(c) Uncle
(d) Father

Q102. A water tank has two holes. The 1^(st) hole alone empties the tank in 8 minutes and 2^(nd) hole alone empties the tank in 12 minutes. If water leaks out at a constant rate, how many minutes will it take, if both the holes together empty the tank?

(a) 4/5
(b) 4 4/5
(c) 43/5
(d) 42/5

Q103. Mr. Manju sold a bus for Rs. 17,000 at a loss of 15%. At what price should the bus be sold to get a profit of 15%?

(a) Rs. 23,000
(b) Rs. 23,500
(c) Rs. 24,000
(d) Rs. 24,500

Q104. In a class test, a student scored 21 marks out of 25 marks. The student's marks in percentage terms is:

(a) 85
(b) 83
(c) 84
(d) 86

Q105. The Geneva II Conference was a United Nations-backed International peace conference on the future of _____

(a) Iran
(b) Pakistan
(c) Iraq
(d) Syria

Q106. How many gigabytes make a terabyte?

(a) 128
(b) 16
(c) 256
(d) 1024

Q107. In the Railway Budget 2016, which of the following was NOT mentioned as the pillars of strategy for Indian Railways?

(a) Nav Arjun
(b) Nav Manak
(c) Nav Nirman
(d) Nav Sanrachna

Q108. Find the HCF of 1048 and 1441

(a) 11
(b) 311
(c) 131
(d) 113

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Q109. Complete the Analogy:

_____ : Foot :: Hand : Wrist

(a) Length
(b) Leg
(c) Ankle
(d) Shoe

Q110. The number of sides of a regular polygon whose exterior angles are each 10° is:

(a) 36
(b) 63
(c) 46
(d) 38

Q111. Two numbers are in ratio 1 : 2 and their HCF is 16. Their LCM is:

(a) 16
(b) 23
(c) 32
(d) 60

Q112. In December 2015, who among the following was appointed as the new Chief Operating Officer (COO) of Apple Inc.?

(a) Johny Srouji
(b) Tim Cook
(c) Philip Schiller
(d) Jeff Williams

Q113. Arun is the father of Chitra and Dinesh is the son of Bavana.

Manish is Arun's brother. If Chitra is Dinesh's sister, how is Bavana related to Manish?

(a) daughter
(b) sister
(c) mother-in-law
(d) sister-in-law

Q114. The median of the data 3, 3, 5, 7, 8, 8, 9, 11, 12, 12 is

(a) 9
(b) 7
(c) 8
(d) 12

Q115. The surface area (in sq. cm) of a sphere with radius 2 cm is: (Take π = 22/7)

(a) 352/7
(b) 350/21
(c) 352/21
(d) 350/7

Q116. A question and two statements labeled (I), (II) are given. You have to decide which statement(s) is / are sufficient to answer the question.

In a code 'lee pin tee' means 'Always keep smiling'. What is the code for smiling?

I. In the same code, 'tee lut lee' means 'Always keep left'

II. In the same code. 'dee pin' means 'Rose smiling'

(a) Both the statements together are needed.
(b) Statement I alone is sufficient
(c) Statement II alone is sufficient.
(d) Either I or II alone is sufficient

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Q117. For a Computer, BIT stands for -

(a) Binary Digit
(b) Built-in Integer
(c) Binary Task
(d) Binary Integer Transfer

Q118. Correct expression of 2.5656...=? (the bar indicates repeating decimal)

(a) 2 560/90
(b) 2 56/99
(c) 2 56/1000
(d) 2 56/100

Q119. Pointing to an old man, Malini said, "His son is my son's maternal uncle". How is the old man related to Malini?

(a) Father
(b) Nephew
(c) Grandfather
(d) Brother

Q120. In which of the following case can Total Internal Reflection (when the angle of incidence is greater than the critical angle) take place?

When light travels from -

(a) Glass to Diamond
(b) Diamond to Air
(c) Air to Water
(d) Air to Glass

ANSWER KEY

1	a	2	c	3	d	4	c	5	d	6	a	7	c	8	b	9	c	10	d
11	a	12	a	13	d	14	a	15	a	16	a	17	b	18	c	19	d	20	d
21	b	22	c	23	a	24	c	25	a	26	c	27	c	28	c	29	b	30	c
31	d	32	d	33	d	34	b	35	b	36	a	37	c	38	d	39	a	40	b
41	a	42	c	43	b	44	d	45	a	46	d	47	a	48	c	49	a	50	d
51	d	52	a	53	b	54	a	55	c	56	a	57	c	58	a	59	a	60	d
61	c	62	a	63	b	64	d	65	b	66	b	67	d	68	a	69	c	70	b
71	d	72	d	73	d	74	d	75	c	76	c	77	b	78	b	79	b	80	d
81	a	82	d	83	a	84	d	85	b	86	d	87	d	88	d	89	d	90	d
91	d	92	a	93	c	94	c	95	b	96	b	97	c	98	d	99	a	100	a
101	b	102	b	103	a	104	c	105	d	106	d	107	c	108	c	109	b	110	a
111	c	112	d	113	d	114	c	115	a	116	d	117	a	118	b	119	a	120	b

SOLUTIONS

Q1. Answer: (a) 12

The logic followed here is addition of consecutive even number starting from 2 in the series. Below is the representation-:

Hence, correct answer is 12.

Q2. Answer: (c) Kerala

The correct answer is Kerala.

• The 35th National Games of India were held in Kerala from 31 January 2015 to 14 February 2015 in seven districts.

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• Kerala hosted this Game the second time.

• The opening ceremony was held at Greenfield Stadium on 31 January 2015.

• The opening ceremony was opened by the former Union Minister for Urban Development, Shri Venkaiah Naidu.

• Former cricketer Sachin Tendulkar was chosen as the Goodwill Ambassador for the Games.

Important Points

• The National Games of India include a number of disciplines in which sportsmen from various states of India compete against each other.

• The first Modern National Olympic Games were held in New Delhi in 1985.

• The Games were hosted by Kerala (1987), Pune (1994), Bangalore (1997), Manipur (1999), Ludhiana (2001), Hyderabad (2002), Guwahati (2007), Ranchi (2011), and Kerala (2015).

Additional Information

• The 2020 Indian National Games(36th edition) were to be held in Goa, India, from 20 October to 4 November 2020.

• It was revealed in May 2020 that the games would be postponed due to the global pandemic of COVID-19 and that new dates have yet to be set.

Q3. Answer: (d) Velocity of the car is constantly changing

The correct answer is Velocity of the car is constantly changing.

Key Points

• We all know that the car is speeding up as we bring our foot down on the accelerator.

• The rate of change in the velocity of a particle with respect to time is called its acceleration.

• If the velocity of the particle varies at a constant rate, this rate is called constant acceleration.

• As we use meters and seconds as our basic units, we calculate acceleration in meters per second per second.

• It will be abbreviated as m/s^2.

• For example, if the velocity of a particle moving in a straight line varies uniformly (at a constant rate of change) from 2 m/s to 5 m/s over a second, then its constant acceleration is 3 m/s^2.

Q4. Answer: (c) United Nations High Commissioner for Refugees

The correct answer is the United Nations High Commissioner for Refugees(UNHCR).

Key Points

• The United Nations High Commissioner for Refugees (UNHCR) is a United Nations agency mandated to support and protect refugees, displaced populations, and stateless people and to assist in their voluntary repatriation, local integration, or relocation to a third country.

• UNHCR was set up in 1950 to resolve the refugee crisis that occurred as a result of World War II.

• The 1951 Refugee Convention defined the scope and legal basis of the Agency's work, which initially centered on the war-torn Europeans.

• In recognition of its service, the UNHCR was awarded two Nobel Peace Prizes in 1954 and 1981 and the Prince of Asturias Awards for International Cooperation in 1991.

• It is a member of the United Nations Development Community, a coalition of sustainable development organizations.

Important Points

• Formation: 14 December 1950

• Type of Programme: United Nations Programme Legal

• Headquarters: Geneva, Switzerland

• Current High Commissioner for Refugees: Filippo Grandi

• First High Commissioner: Gerrit Jan van Heuven Goedhart

Q5. Answer: (d) Pawan Kumar Agarwal

The correct answer is Pawan Kumar Agarwal.

Key Points

• In December 2015, Pawan Kumar Agarwal was appointed as the new CEO of the Food Safety and Standards Authority of India (FSSAI).

• Pawan Agarwal is a 1985-batch IAS officer for the West Bengal cadre, granted a three-month extension beyond 15 May 2018, an order issued by the personnel ministry.

• The Food Safety and Standards Authority of India (FSSAI) is an autonomous body set up under the Ministry of Health and Family Welfare of the Government of India.

• The FSSAI was developed pursuant to the Food Safety and Standards Act 2006, which is a consolidated law on food safety and

regulation in India.

• It is responsible for the security and promotion of public health through the control and supervision of food safety.

• The Former Union Minister Anbumani Ramadoss created the FSSAI on 5 August 2011 under the Food Safety and Standards Act 2006, which was operational in 2006.

• The FSSAI was founded in 2008.

• Its headquarters is located in New Delhi

Additional Information

• Sudhansh Pant is the current chairperson for FSSAI

• The current Chief Executive Officer (CEO) of the Food Safety and Standards Authority of India (FSSAI) is G. Kamala Vardhana Rao.(2024)

Q6. Answer: (a) 20%

Given:

CP of toy = Rs. 25

SP of toy = Rs. 30

Formula used:

Profit percentage = [(SP - CP)/CP] × 100%

Calculations:

Profit percentage = [(30 - 25)/25] × 100%

=> Profit percentage = [5/25] × 100%

=> Therefore Profit percentage = 20%

Q7. Answer: (c) Tamu Massif

The correct answer is Tamu Massif.

• Tamu Massif is an extinct underwater shield volcano in the northwest Pacific Ocean, characterised by a hybrid of a mid-ocean ridge and a shield volcano.

• Tamu Massif the largest known volcano on Earth.

• Tamu Massif is situated about 1,600 km east of Japan in the Shatsky Rise.

• The volcano, which forms the entire Shatsky Rise, occupies an area of approximately 553,000 square kilometers.

• Its peak is 1,980 m below the surface of the ocean, and its base is about 6.4 km long. The volcano is 4.460 meters (14.620 ft) tall.

Important Points

• Ojos del Salado:

• It is an active stratovolcano in the Andes on the border between Argentina and Chile and the highest active volcano in the world at 6,893 m (22,615 ft).

• Mount Vesuvius:

• It is a somma-stratovolcano situated on the Gulf of Naples in Campania, Italy.

• Mauna Kea:

• It is a dormant volcano on the island of Hawaii.

Q8. Answer: (b) 26, 65 & 78

Given:

Total amount = Rs. 169

Ratio = 2 : 5 : 6

Calculation:

Let Rs. 169 is divided in the amounts 2x, 5x, 6x respectively.

2x + 5x + 6x = 169

=> 13x = 169

=> x = 13

Therefore rupees in the respective ratios are given by 2x = 26, 5x = 65, 6x = 78

Q9. Answer: (c) 53269

The pattern here is as below-:

Similarly,

Hence, PEARL is coded as 53269.

Q10. Answer: (d) real

The correct answer is real.

Key Points

• Irrational numbers are real numbers that cannot be represented as simple fractions.

• It cannot be expressed in the form of a ratio, such as p/q, where p and q are integers, q(0).

• It's a contradiction of rational numbers. Irrational numbers are generally expressed in the form of R\Q, where the backslash symbol denotes 'set minus'.

• It can also be represented as R-Q, which shows the difference between the set of actual numbers and the set of rational numbers. Calculations based on these numbers are a little difficult. For example, √5, √11, √21, etc, are irrational.

• If these numbers are used in arithmetic operations, we need to test the values under root first. These values may also be recurring occasionally.

• An irrational number is a real number that cannot be represented as a ratio of integers, e.g. √2, it is an irrational number.

Q11. Answer: (a) 42.1

Given:

Telephone bill for 3 minutes 20 seconds = Rs. 25.50

Calculations:

3 minutes = 3 × 60 = 180 seconds

=> 3 minutes 20 seconds = 180 + 20 = 200 seconds

similarly,

=> 5 minutes = 5 × 60 = 300 seconds

=> 5 minutes 30 seconds = 300 + 30 = 330 seconds

200 seconds → Rs. 25.50

1 second → Rs. 25.50/200

=> 330 seconds → Rs. 330 × 25.50/200

=> 330 seconds → Rs. 42.075 ≈ Rs. 42.1

Q12. Answer: (a) 30

Concept used:

If given a : b : : c : x

then x is called the fourth proportion.

It can be calculated as,

a/b = c/x

=> x = bc/a

Calculations:

12 : 18 : : 20 : x

then,

x = (18 × 20)/12

=> x = 30

Therefore Fourth proportion = 30

Additional information:

First proportion - If x : a : : a : b, then x is called first proportion.

Mid Proportion - If a : x : : x : b, then x is called mid proportion.

Third Proportion - If a : b : : b : x, then x is called third proportion.

Q13. Answer: (d) 324/5

Calculations:

(3.24 × 4)/0.2 = ?

=> 12.96/0.2 = ?

=> 12.96/0.2 × 100/100 = ?

=> 1296/20 = ?

=> 324/5 = ?

Therefore ? = 324/5

Q14. Answer: (a) Dissolved Oxygen

The Correct Answer is Dissolved Oxygen.

• Dissolved oxygen (DO) is an indicator of the quantity of free oxygen molecules in water.

• The concentration of DO is an important indicator of the health of the aquatic environment, as oxygen is essential for almost all forms of life.

• Oxygen is essential for respiration and chemical reactions. Dissolved oxygen in water comes from two primary sources: atmospheric and photosynthesis.

• The concentration of DO is influenced by a variety of factors, including water temperature (cold water retains more oxygen than warm water), salinity (freshwater holds more oxygen than saltwater), and atmospheric pressure (the amount of DO consumed in water decreases as the altitude increases).

• The parameter is capable of calculating dissolved oxygen in water within a range of 0 – 500% or 0 – 50 mg/l.

Q15. Answer: (a) Xenon

The Correct Answer is Xenon.

Key Points

• Xenon(Xe) is a component of zero-valence elements called noble or inert gases.

• It is inert to most normal chemical reactions (e.g. combustion) since the outer valence shell contains eight electrons.

• This results in a stable, minimum energy configuration in which the outer electrons are tightly bound.

• The first published report confirming xenon anaesthesia was published in 1946 by the American medical researcher John H. Lawrence.

• Xenon has been undiscovered for a very long time, although it is present in traces in the atmosphere. It is still a subject of interest due to its reactivity with many elements in a specialised and regulated environment, hence the name "Stranger Gas."

Important Points

• Neon is a chemical element with the Ne symbol and atomic number 10. It is a noble gas. Neon is a colourless, odourless, inert monatomic gas under normal conditions, with an air density of around two-thirds.

• Krypton is a chemical element with the Kr symbol and atomic number 36. It is a colourless, odourless, tasteless noble gas that exists in trace quantities in the atmosphere and is mostly used in fluorescent lamps with other rare gases.

• Argon is a chemical element with a symbol of Ar and an atomic number 18. It is a periodic table in group 18 and is a noble gas. Argon is the third most abundant gas in the Earth's atmosphere, at 0.934 per cent (9340 ppmv).

Q16. Answer: (a) Both the statements together are needed.

We have to find rank of Rashmi in the class.

Statement 1-: There are 25 students in the class.

This statement is only saying about total students in the class, but this alone statement is not enough to find Rasmi's rank in the class.

Statement 2-: There are 8 students who have scored les than Rashmi.

This statement is saying that 8 students have scored less than Rashmi, means if we know total number of students then we can find Rashmi's rank, but this alone statement is not enough to find Rasmi's rank in the class.

So by combining statement 1 and 2 we can find Rashmi's rank.

Total students - students who scored less than Rashmi

= 25 - 8

= 17

Hence, Both the statements together are needed.

Q17. Answer: (b) 35.29

Given:

Buying cheat = 15%

Selling cheat = 15%

Calculation:

Let 1 gm = 1 rs, total quantity is 100 gm

At the time of buying, he gains 15% by wrong weight

=> 100 × (100 + 15)/100

=> 115 gm = S.P

He sells at 15% by wrong weight

It means he sells 15% less fruit.

=> 100 × (100 - 15)/100

=> 85 gm = C.P

Profit% = (115 - 85)× 100/85

=> 3000/85

=> 35.29%

Therefore His total gain, in percentage, is 35.29%.

Q18. Answer: (c) 17600/7

Given:

Radius of cylinder = 2 cm

Height of cylinder = 2 m = 200 cm

Formula used:

Volume of cylinder (V) = $\pi \times r^2 \times h$

where,

r = radius of cylinder

h = height of cylinder

Calculations:

=> V = π × r2 × h

=> V = 22/7 × 22 × 200

=> V = 17600/7 cm^3

Don't forget to change the units. For example, in this question change the height from m to cm because the final answer is asked in cm^3.

Q19. Answer: (d) April, 1, 1989

The correct answer is April 1, 1989.

• Under the Wage Employment Programmes, the National Rural Employment Programme (NREP) and Rural Landless Employment Guarantee Programme (RLEGP) were started in Sixth and Seventh Plans.

• The NREP and RLEGP were merged in April 1989 under the Jawahar Rozgar Yojana (JRY).

• The JRY was meant to generate meaningful employment opportunities for the unemployed and underemployed in rural areas through the creation of economic infrastructure and community and social assets.

Additional Information

• The JRY was revamped from 1st April 1999 and came to be known as Jawahar Gram Samriddhi Yojana (JGSY).

• It now became a programme for the creation of rural economic infrastructure with employment generation as the secondary objective.

Q20. Answer: (d) Roscosmos, Russia

The correct answer is Roscosmos, Russia.

• ExoMars Trace Gas Orbiter 2016 is the first in a sequence of Mars missions to be conducted jointly by the two space agencies, ESA and Roscosmos.

• The main purpose of this mission is to obtain a deeper understanding of methane and other greenhouse gases, which are present in limited quantities (less than 1% of the atmosphere), but which may still be indicative of potential biological or geological activity.

• The Trace Gas Orbiter carries a scientific payload capable of resolving this scientific problem, namely the identification and characterization of trace gases in the Martian atmosphere.

• From its approximately 400-km-altitude science orbit, the instruments onboard the Trace Gas Orbiter is deployed to detect a wide variety of atmospheric trace gases (such as methane, water vapour, nitrogen oxides, acetylene) with increased precision of three orders of magnitude compared to previous measurements.

Important Points

• The Trace Gas Orbiter will track seasonal changes in the composition and temperature of the atmosphere in order to build and refine accurate atmospheric models.

• The Trace Gas Orbiter transported the Entry, Descent and Landing Demonstrator Module (EDM), known as Schiaparelli, on a journey from Earth to Mars and as it approached the planet, deployed it to enter the Martian atmosphere on its way to land on the surface of the planet.

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Q21. Answer: (b) 0

10584 ÷ 168 - 63

= 63 - 63

= 0

Hence, the correct answer is 0.

Q22. Answer: (c) 2/7, 0.3, 4/9

The Correct Answer is 2/7, 0.3, 4/9.

• As per Option 1) 4/9 = 0.445 ; 0.3 ; 2/7= 0.285

• Option (1) is the wrong answer because the largest number comes first.

• As per Option 2) 0.3 ; 4/9 = 0.445 ; 2/7= 0.285

• Option (2) is the wrong answer because the largest number comes second.

• As per Option 4) 2/7= 0.285; 4/9 = 0.445; 0.3

• Option (4) is the wrong answer because the largest number comes second.

• As per Option 3) 2/7= 0.285; 0.3, 4/9 = 0.445

• Option (3) is the correct answer because the largest number comes last. Hence this is correct ascending order.

Q23. Answer: (a) Wardha

The correct answer is Wardha.

• The Pranhita River is the largest tributary of the Godavari River, occupying 34% of its drainage basin, which carries the combined waters of the Penganga River, the Wardha River, and the Wainganga River.

• The river flows through the entire Vidarbha region in Maharashtra, as well as the southern slopes of the Satpura range.

• The Pranhita sub-basin is the seventh-largest in India, 109,078 km2 in size, rendering it larger than the individual basins of major rivers such as the Narmada River and the Kaveri River.

Important Points

• The Koyna River:

• It is a tributary of the Krishna River, which originates in Mahableshwar, Satara district, Maharashtra. It rises near Mahabaleshwar(the famous western Ghats hill station).

• The Tapti River:

• It is a river in central India between the rivers Godavari and Narmada, which flows westward until it flows into the Arabian Sea.

• The Ulhas River:

• It is a west-flowing river in western India, in Maharashtra, which drains an area of 4,637 km².

Q24. Answer: (c) 120

Given:

There are total 200 students in a school, of which 2/5 th are boys.

Formula Used:

total students = no. of boys + no. of girls

Calculation:

Let the number of girls in the school be 'x'

=> 200 = 200 × 2/5 + x

=> x = 200 - 80

=> x = 120

Therefore Required number of girls in the school = 120

Q25. Answer: (a) Tamil Nadu

The correct answer is Tamil Nadu.

Key Points

• Meenakshi Temple is an ancient Hindu temple which is located in the temple town of Madurai, Tamil Nadu.

• It is situated on the southern bank of the Vaigai River.

• It is devoted to Thirukamottam Udaya aaludaiya nachiyar Meenakshi (the form of Parvati) and to her consort, Sundareshwar, the form of Shiva.

• The temple is in the centre of the ancient temple town of Madurai mentioned in the Tamil Sangam literature, with the temple goddess mentioned in the texts of the 6th century CE.

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• This temple belongs to the Paadal Petra Sthalam.

• The Paadal Petra sthalam are 275 temples that worshipps Lord Shiva in the verses of Tamil Saiva Nayanars of the 6th-9th century CE.

Q26. Answer: (c) 3

Given:

sinx = 4/5

Formula Used:

$\sin^2x + \cos^2x = 1$

secx = 1/cosx

tanx = sinx/cosx

Calculation:

We know that, sin2x + cos2x = 1

=> $\cos^2x = 1 - (4/5)^2$ (Because sinx = 4/5)

=> cosx = √9/25

=> cosx = 3/5

Now,

secx + tanx = (1/cosx + sinx/cosx)

=> (1 + sinx)/cosx

=> (1 + 4/5)/3/5

=> 9/3

=> 3

Therefore secx + tanx = 3

Q27. Answer: (c) Weightlifting

The correct answer is Weightlifting.

Key Points

• Korada Ramana is related to Weightlifting.

• In December 2015, Sanjita Chanu and Korada Ramana won gold medals in the 48 kg women's and kg men's divisions on the first day of the Senior National Weightlifting Championship at the SAI (Sports Authority of India) Centre.

• Apart from him, Sanjita Chanu also won gold in the women's 48 kg championship.

Q28. Answer: (c) 700

We can draw Venn diagram as below-:

In a town of 5000 people, 1200 do not subscribe any newspaper.

So people who subscribe any newspaper are = (5000-1200) = 3800

The Indian Express subscribers = 2700

The Hindu Subscribers = 1800

So, People who subscribe both newspaper are = (2700 + 1800 - 3800) = (4500 - 3800) = 700

Hence, correct answer is 700.

Q29. Answer: (b) 2000

We can draw Venn diagram as below-:

In a town of 5000 people, 1200 do not subscribe any newspaper.

So people who subscribe any newspaper are = (5000-1200) = 3800

The Indian Express subscribers = 2700

The Hindu Subscribers = 1800

People who subscribe both newspapers are = (2700 + 1800 - 3800) = 4500 - 3800 = 700

So, people who subscribe The Indian express only are = (2700 - 700) = 2000

Hence, correct answer is 2000.

Q30. Answer: (c) Place

When represents time.

Similarly,

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Where represent place.

Hence, correct answer is "Place".

Q31. Answer: (d) EGI

The followed here is,

Hence, correct answer is EGI.

Q32. Answer: (d) Kerala

The correct answer is Kerala.

Key Points

• Mohiniyattam is one of India's famous classical dances, developed and still popular in the state of Kerala.

• Kathakali is the other classical dance form in Kerala.

• Mohiniyattam dance derives its name from Mohini, the historical enchanting embodiment of the Hindu god Vishnu, who helps the good to prevail over evil by nurturing its feminine energies.

• Mohiniyattam is a classical Indian dance that by implication, traces its repertoire to the basic text of Natya Shastra.

• The text of the Natya Shastra is credited to the ancient scholar Bharata Muni.

Important Points

States	Dance Forms
Maharashtra	Dhangari Gaja, Koli Dance, Lavani Dance
Tamil Nadu	Bharatanatyam, Parai Attam
Rajasthan	Ghoomar, Kathputli, Kalbelia

Q33. Answer: (d) Rs. 15,435

Given:

Principle = Rs. 14,000, Rate = 20% and Time Period = 6 months

Formula Used:

$A = P(1 + r/100)^n$; where A = Amount, P = Principle and n = time periods (in years)

Calculation:

The amount is compounded quarterly.

Hence r = 20/4 = 5% and n = 6/3 = 2 Because In 6 months the principle will get compounded two times.

According to condition-

$A = 14000(1 + 5/100)^2$

$\Rightarrow A = 14000 \times 105^2/100^2$

$\Rightarrow A$ = Rs. 15435

Therefore Required amount he will get on maturity is Rs. 15435

Q34. Answer: (b) December 1997

The correct answer is December 1997.

• The Conference of the Parties (COP-3) was held in Kyoto, Japan, in December 1997.

• Following extensive discussions, the Kyoto Protocol laid out the obligation to minimize greenhouse gas emissions for Annex I nations, along with the so-called Kyoto mechanisms such as emissions trading, the Clean Energy System, and the Joint Implementation.

• The United States would be expected to decrease its cumulative pollution by an average of 7% below 1990 levels; however, Congress did not ratify the treaty until Clinton signed it.

• In 2001, the Bush administration expressly opposed the protocol.

Important Points

• The United Nations Climate Change Conferences are held regularly in the context of the United Nations Framework Convention on Climate Change (UNFCCC).

• They act as a formal assembly of the Parties to the UNFCCC (Conference of Parties, COP) to examine success in combating climate change and, starting in the mid-1990s, to discuss the Kyoto Protocol to define legally binding agreements for developing countries to minimise their greenhouse gas emissions.

• The first UN Conference on Climate Change was held in Berlin in 1995.

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Q35. Answer: (b) 3.5

Given:

Given set of Data = 8, 0, 3, 3, 1, 7, 4, 1, 4, 4

Formula Used:

Mean = Sum of observations/Total number of observations

Calculation:

Mean = (8 + 0 + 3 + 3 + 1 + 7 + 4 + 1 + 4 + 4)/10

=> Mean = 35/10

=> Mean = 3.5

Therefore Required value of mean = 3.5

Q36. Answer: (a) Troposphere - Stratosphere - Mesosphere - Thermosphere

The correct answer is Troposphere - Stratosphere - Mesosphere - Thermosphere.

Key Points

• The Earth's atmosphere has a series of layers, each with its own unique characteristics.

• Going away from the ground level, these levels are called the troposphere, the stratosphere, the mesosphere, the thermosphere, and the exosphere.

• The exosphere eventually slips away into the realm of interplanetary space.

Important Points

• The troposphere:

• It is the lowest layer of our atmosphere.

• Starting at ground level, it stretches up to around 10 km above sea level.

• The stratosphere:

• It stretches from the tip of the troposphere to about 50 km above the earth.

• The notorious coating of ozone is contained inside the stratosphere.

• The mesosphere

• It reaches up to a height of around 85 km above our earth.

• A very unusual layer of air above the mesosphere is called the thermosphere.

• High-energy X-rays and UV radiation from the Sun are absorbed in the thermosphere, raising the temperature to hundreds or even thousands of degrees.

• The exosphere:

• It is the top layer of the Earth's atmosphere.

• It begins at an altitude of about 500 km and goes up to about 10,000 km.

• The ionosphere:

• It is the ionised component of the Earth's upper atmosphere, at an altitude of about 48 km to 965 km an area that covers the thermosphere and portions of the mesosphere and the exosphere.

Q37. Answer: (c) Bramble Cay melomys

The correct answer is Bramble Cay melomys.

• Bramble Cay melomys is a recently extinct rodent genus of the Muridae family and the Murinae subfamily.

• It was an extinct species of the isolated Bramble Cay, a vegetated coral cay situated at the northern tip of the Great Barrier Reef in Australia.

• Described as having been last seen in 2009 and confirmed extinct by researchers from the Queensland Government and the University of Queensland in 2016, the International Union for the Conservation of Nature (IUCN) officially declared extinct in May 2015, and the Australian Government in February 2019.

• Its extinction was identified as the first mammal species to be extinct due to anthropogenic climate change.

Important Points

• The polar bear (Ursus maritimus) is a hyper carnivorous bear whose natural range is primarily within the Arctic Circle, encompassing the Arctic Ocean, its neighbouring seas, and the surrounding landmasses.

• The tiger (Panthera tigris) is the largest existing cat animal and a member of the Panthera family.

• The snow leopard (Panthera uncia) is a big cat endemic to the Central and South Asian mountain ranges. It is classified as Vulnerable on the IUCN Red List since the global population is estimated to be fewer than 10,000 mature individuals and is projected to decrease by around 10% by 2040.

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Q38. Answer: (d) Name of a train

The correct answer is Name of a train.

Important Points

• Duronto express is a long-distance non-stop source type for Indian Railways services.

• "Duronto" in Bengali means "Great", the coaches of this train have a distinctive yellow-green engraving, which features a bi-meaning signature, which is a field full of flowers with a river rushing over it the second meaning is that the boy is running on the plains, which implies the meaning of Duronto.

• Duronto Express services connect India's major state capitals and many meters.

• The Government of the Ministry of Railways of India (India) has been seeking to implement high-speed rail in India.

• In 2007, the Ministry picked a 500-kilometre stretch between Delhi and Amritsar for a pre-feasibility report.

• At present, the top speed of the Shatabdi, Rajdhani, and Duronto trains is 130-150 km per hour.

Q39. Answer: (a) Neither I nor II follow

Statement-: The best evidence of India's glorious past is the growing popularity of Ayurvedic medicines in the west, which means that Ayurvedic medicines were very popular in the western country and it was the reason for India's growing popularity in the west.

Conclusion 1: This does not follows. In the statement it is not said that Ayurvedic medicines are not popular in India. It is only said that Ayurvedic medicines were reason for India's growing popularity in the west.

Conclusion 2: This does not follows, because in the statement it is all about Ayurvedic medicines and its popularity, but there is no mention of allopathic medicine.

Hence, neither conclusion 1 nor conclusion 2 follows.

Q40. Answer: (b) Ten Degree Channel

The correct answer is Ten Degree Channel.

• The Andaman and Nicobars are separated by the Ten Degree Channel, which is 150 km apart.

• The Andaman and Nicobar Islands are situated strategically to the east of the Indian mainland.

• These are a majestic island in the Bay of Bengal.

• When a hill extends from Myanmar to Indonesia, these picturesque undulating islands, around 572 islands, are riddled with thick rainforests, moist and evergreen trees, and countless varieties of tropical flora and fauna.

• The Andaman and Nicobar Islands have been declared two of the world's 218 endangered bird areas.

• Port Blair is the capital of the 350 islands of Andaman and Nicobar.

Important Points

• The Kardiva Channel is a wide channel that stretches from the southwest to the northeast and passes through the Maldive atoll chain.

• The Nine Degree Channel is an Indian Ocean channel between the Kalpeni and Suheli Par Laccadives and the Maliku Atoll.

• The Mozambique Channel is an Indian Ocean arm situated between the countries of South-East Africa, Madagascar, and Mozambique.

Q41. Answer: (a) Agasthyamala Bioshpere Reserve

The correct answer is Agasthyamala Biosphere Reserve.

Key Points

• The Agasthyamalai Biosphere Reserve was formed in 2001 in Tamil Nadu.

• It occupies 3,500.36 km2.

• It became part of the World Biosphere Reserve Network in 2016.

• It is also part of the UNESCO World Biosphere Reserve List in March 2016.

• Agastyamalai is also the birthplace of the Kanikaran, one of the oldest living ancient tribes in the world.

Important Points

• The Nilgiri Biosphere Reserve:

• It is an International Biosphere Reserve in the Nilgiri Hills and the Western Ghats in South India.

• The Nilgiri sub-cluster is part of the Western Ghats that was declared a UNESCO World Heritage Site in 2012.

• The Nanda Devi Biosphere Reserve (Nanda Devi National Park):

• It was established in 1982.

• The National Park was designated a World Heritage Site by UNESCO in 1988.

• Similipal National Park:

• It is a national park and tiger reserve situated in the district of Mayurbhanj in the state of Odisha.

• This protected area has been part of the UNESCO World Biosphere Reserve Network since 2009.

Q42. Answer: (c) 8.4 days

Given:
Total number of Men = 18
Time taken = 7 days
Formula Used:
Total work = Number of workers × Time
Calculation:
Total work = 18 × 7 = 126 unit
Let number of days taken by 15 men to make the same model be x
According to question-
=> 15 × x = 126
=> x = 126/15
=> x = 8.4 days
Therefore Number of days taken by 15 men to make the same model is 8.4 days

Q43. Answer: (b) 126

The Pattern followed here is-:
$0^3 + 1 = 1$
$1^3 + 1 = 2$
$2^3 + 1 = 9$
$3^3 + 1 = 28$
$4^3 + 1 = 65$
Similarly,
$5^3 + 1 = 126$
Hence, correct answer is 126.

Q44. Answer: (d) Naren

(i) Govind is shorter than Ashish but taller than Kamal → Asish > Govind > Kamal
(ii) Naren is shorter than Kamal → Kamal > Naren (Asish > Govind > Kamal > Naren)
(iii) Jeyanth is taller than Naren → Jeyant >Naren
(iv) Ashish is taller than Jeyanth → Asis > Jayanth
combining the above statements there can be two possibilities
Asish > Govind > Kamal > Jayent > Naren
Asish > Jayent > Govind > Kamal > Naren
In both cases Naren is the shortest
Hence, Naren is the correct answer.

Q45. Answer: (a) Kamal is shorter than Govind.

(i) Govind is shorter than Ashish but taller than Kamal → Asish > Govind > Kamal
(ii) Naren is shorter than Kamal → Kamal > Naren (Asish > Govind > Kamal > Naren)
(iii) Jeyanth is taller than Naren → Jeyant >Naren
(iv) Ashish is taller than Jeyanth → Asis > Jayanth
combining the above statements there can be two possibilities
Asish > Govind > Kamal > Jayent > Naren
Asish > Jayent > Govind > Kamal > Naren
In both cases Kamal is shorther than Govind
So, Kamal is shorter than Govind is the correct answer.

Q46. Answer: (d) Ashish

(i) Govind is shorter than Ashish but taller than Kamal → Asish > Govind > Kamal
(ii) Naren is shorter than Kamal → Kamal > Naren (Asish > Govind > Kamal > Naren)
(iii) Jeyanth is taller than Naren → Jeyant >Naren

(iv) Ashish is taller than Jeyanth → Asis > Jayanth

combining the above statements there can be two possibilities

Asish > Govind > Kamal > Jayent > Naren

Asish > Jayent > Govind > Kamal > Naren

Ashish is the tallest

Hence, Ashish is the correct answer.

Q47. Answer: (a) Only conclusion II follows

The least possible diagram from the statement is as follows :-

Conclusions:

I. Some caps are not pens → False (It can be a possibility but not a definite statement).

II. Some pens are caps → True (as all the caps are books and all the books are pens, so, some pens are definitely caps).

Q48. Answer: (c) Only conclusion II follows

Statements:

Industrial Revolution, which started in Europe first, has brought about the modern age → It means that Industrial revolution can change any society.

Conclusions :I. Disparity between rich and poor results in a revolution → It means difference between rich and poor brings revolution which is not related to given statement.

II. Revolution overhauls society → It means revolution can bring changes to any society, which is following the given statement.

Hence, only conclusion II follows.

Q49. Answer: (a) Krishna

The correct answer is Krishna.

Key Points

• The Almatti Dam (Lal Bahadur Shastri Dam) is a hydroelectric project on the Krishna River in Bijapur, Karnataka completed in July 2005.

• The target for the annual electrical output of the dam is 560 GWh.

• The Almatti Dam is the main reservoir for the Upper Krishna Irrigation Project; the 290 MW power station is situated on the right side of the Almatti Dam.

Important Points

Rivers	Dams on river
Yamuna	Lakhwar Dam, Vyasi Dam
Kaveri	Krishna Raja Sagara Dam, Kallanai, Mettur
Godavari	Nizam Sagar, sriram Sagar, Balimela Reservior

Q50. Answer: (d) 53

letter	Symbols
A	÷
B	×
C	•
D	•

If we apply Bodmas rule to the given equation :-

18 B 12 A 4 C 5 D 6

= 18 × 12 ÷ 4 + 5 - 6

= 54 - 1

= 53

Hence 53 is the correct answer.

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Q51. Answer: (d) Optical disk

The correct answer is Optical disk.

• DVD is a digital optical disc data storage format that was invented and developed in 1995 and published in late 1996.

• The medium can store any kind of digital data and has been commonly used for software and other computer files as well as video programmes that have been viewed on DVD players.

• DVDs provide a higher storage capacity than compact discs of the same dimensions.

• DVDs are used in DVD-Video consumer digital video format and in DVD-Audio consumer digital audio format as well as in DVD discs written in special AVCHD format to hold high definition content.

Important Points

Storage Devices	Examples
Solid-state storage device	Memory Card
Output device	Visual Display Units (VDU), Monitor, Printer, etc
Hard disk	Hard Disk Drives of 1TB, 2TB

Q52. Answer: (a) 35

Given:

Product of two numbers = 3360

LCM = 96

Formula Used:

Product of two numbers = LCM of those numbers × HCF of those numbers

Calculation:

Let the HCF be x

According to the condition-

=> 3360 = x × 96

=> x = 3360/96

=> x = 35

Therefore The required value of HCF is 35

Q53. Answer: (b) Rs. 10,000

The correct answer is Rs. 10,000.

Key Points

• The highest denomination currency note ever printed by the Reserve Bank of India was a note of 10,000 during the British Raj in 1938.

• Although the note was demonised in 1946, a new edition of the note was introduced in 1954.

• However, 10,000 notes along with 1,000 notes and 5,000 notes were demonised by the then PM Morarji Desai in 1978.

• The Indian 2000-rupee banknote is the Indian rupee denomination.

• It was issued by the Reserve Bank of India (RBI) on 8 November 2016 after the demonetization of 500 and 1000 notes and has been in circulation since 10 November 2016.

• It is part of the Mahatma Gandhi New Banknote Series with a completely new design.

Q54. Answer: (a) Mission 'Zero Accident'

The correct answer is Mission 'Zero Accident'.

Key Points

• Mission Zero Accident was one of the missions announced in the 2016-17 Railway Budget.

• It consists of the following two sub-missions:

• Elimination of Unmanned Level Crossings (UMLC): In January 2019, all unmanned Broad Gauge crossings were withdrawn.

• Train Collision Avoidance System (TCAS): The Train Collision Avoidance System is an Indigenous Automatic Train Protection (ATP) system developed in cooperation with Indian manufacturers. The scheme is being implemented by the South Central Railway.

• Railway training institutes are allocated funds on an annual basis for the construction of infrastructure, the development of training modules/training materials, the implementation of training programs, etc.

• In Budget 2017-18, an exclusive fund called "Rashtriya Rail Sanraksha Kosh" (RRSK) was formed over a period of five years

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with a corpus of lakh crore providing a major boost to safety-related work on the Indian Railways to improve the safety of tracks, rolling stock and the spread of other safety technologies and staff training.

Q55. Answer: (c) Chandrayaan-1

The correct answer is Chandrayaan-1.

• Chandrayaan-1 was the first Indian Lunar Mission.

• It was launched by the Indian Space Research Organization in October 2008 and run until August 2009.

• The mission consisted of a lunar orbiter and an impactor.

• India launched a spacecraft using a PSLV-XL rocket on 22 October 2008 at 00:52 UTC from the Satish Dhawan Space Centre, Sriharikota, Andhra Pradesh.

• The mission was a huge boost to India's space programme as India researched and developed its own technology to explore the Moon.

• The spacecraft was introduced into the lunar orbit on 8 November 2008.

• Chandrayaan-2 was the second Lunar mission of India.

Important Points

• AstroSat:

• It is the first Indian astronomy mission to study celestial sources simultaneously in X-ray, optical and UV spectral bands.

• The Aditya-1 Mission

• It was conceived as a 400 kg class satellite carrying a single payload, the Visible Emission Line Coronagraph (VELC) and was designed to be launched in an 800 km low earth orbit.

• AVATAR(Aerobic Vehicle for Transatmospheric Hypersonic Aerospace TrAnspoRtation):

• It is a design analysis for a single-stage robotic reusable spaceplane capable of horizontal take-off and landing by the Indian Defense Research and Development Organization.

Q56. Answer: (a) Seventh

Concept Used:

Tournament performance is said to be bad for a team when it loses more matches than winning i.e when Loss/Win ratio is greatest.

Calculation:

Loss/Win Ratio in 1st match = 3/5

Loss/Win Ratio in 2nd match = 4/4

Loss/Win Ratio in 3rd match = 2/5

Loss/Win Ratio in 4th match = 3/6

Loss/Win Ratio in 5th match = 2/4

Loss/Win Ratio in 6th match = 3/3

Loss/Win Ratio in 7th match = 4/2

Clearly,the Loss/Profit ratio in 7th match is greatest.

Therefore Hence seventh tournament was the worst for the team

Q57. Answer: (c) 29

Calculation:

=> Total matches won by team = 5 + 4 + 5 + 6 + 4 + 3 + 2

So total matches won by the team are 29

Q58. Answer: (a) Third

Concept Used:

success ratio = matches won/total matches played

Calculation:

=> For 1st tournament success ratio = 5/8 = 0.625

=> For 2nd = 4/8 = 0.5

=> For 3rd = 5/7 = 0.71

=> For 4th = 6/9 = 0.66

=> For 5th = 4/6 = 0.66

=> For 6th = 3/6 = 0.5

=> For 7th = 2/6 = 0.33

So we can see that in 3rd tournament success ratio is best for team

Q59. Answer: (a) 58%

Calculation:

Total matches played = 50

Total matches won by team = 29

Percent of the match won by the team overall = match won/total matches played × 100

=> 29/50 × 100

=> 58%

Q60. Answer: (d) 7 > 7 < 7 + 7 = 14

Symbols	Denoted
	•
<	•
•	÷
#	×
•	=
×	
=	<

We have to check the options by given the equation:- (Using Bodmas):

Option.1) 9 + 9 > 9 = 9

=> 9 ÷ 9 + 9 < 9

=>1 + 9 < 9

=>10 < 9 (does not follow)

Option.2) 9 < 7 + 7 = 6

=> 9 - 7 ÷ 7 < 6

=> 9 - 1 < 6

=> 8 < 6 (does not follow)

Option.3) 7 # 7 > 77 + 7 = 7 # 7 > 1

=> 7 × 7 + 77 ÷ 7 < 7 × 7 + 1

=> 49 + 7 < 49 +1

=> 56 < 50 (does not follow)

Option.4) 7 > 7 < 7 + 7 = 14

=> 7 + 7 - 7 ÷ 7 < 14

=> 14 -1< 14

= 13 < 14

Hence, option 4 is the correct answer.

Q61. Answer: (c) Sikkim

The correct answer is Sikkim.

Key Points

• Losoong festival is the Sikkimese New Year of the Bhutia tribe, celebrated every year in the month of December.

• The festival has been adapted from the customs and rituals of the Tibetan New Year, Losar.

• The festival is being held at the Phodong and Rumtek Monasteries in Sikkim.

• The dance forms performed at the festival represent narratives of the life of Padmasambhava (or Guru Ugyen).

Important Points

• Here some famous festivals from different states:

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States	Festivals
Nagaland	Hornbill Festival, Sekrenyi, Tsukheneye
Uttar Pradesh	Ganga Dussehra, Lath Mar Holi, Janmashtami
Sikkim	Saga Dawa, Pang Lhabsol, International Flower Festival
Uttarakhand	Kumbh Mela, Basant Panchami, Nanda Devi Fair

Q62. Answer: (a) Viewer

The way "Speaker " is related to " Listener "

Similarly,

" Film " is related to " Viewer "

Hence, " Viewer " is the correct answer.

Q63. Answer: (b) The elected members of both Houses of the Parliament

The correct answer is The elected members of both Houses of the Parliament.

Key Points

• The Vice-President shall be chosen indirectly by an electoral college consisting of members (elected as well as nominated) of both Houses of Parliament, in accordance with the system of proportional representation by means of a single transferable vote, and the vote shall be by secret ballot.

• The election of the Vice-President is somewhat different from the election of the President, since the members of the state legislature are not part of the electoral college, although the nominated members of both houses are part of the electoral college for the vice-presidential election.

• The nomination of a candidate for election to the office of Vice-President must be signed by at least 20 electors as nominees and 20 electors as nominees.

• The Vice-President may resign by submitting his resignation to the President. The resignation shall become effective from the date on which it is approved.

Q64. Answer: (d) 7 hours 20 min

Given:

Mrs. Vijaya takes a total of 9 hours 50 minutes in walking a distance and running back to the same place where she started. She could walk both ways in 12 hrs 20 minutes.

Formula Used:

speed = distance/time

Calculation:

=> Total time taken to cover the whole distance is 9 hours 50 minute when she walk while going and run while returning

also, she would cover the whole distance in 12 hours 20 minutes, if she only walked

Let the distance be x, speed for running be 'r' and speed for walking be 'w'

=> x/w + x/r = (9 + 50/60) hours

=> x/w + x/r = 9 + (5/6) ----(1)

But it will take 12 hours 20 minutes if he walks

=> 2x/w = 12 + 20/60 (2x is total distance for both ways)

=> x/w = 6 + (1/6) ----(2)

Now put this value x/w = 6 + (1/6) in equation (1) we will get x/r = 3 hours 40 minutes or 3 + (2/3) hours

So total time taken by running only = 2x/r = 2 × [3 + (2/3)]

=> 2x/r = 7 hours 20 minutes

Alternate Method Let W be walking time and R be running time

W + R = 9 hr 50 mins

W + W = 12 hr 20 mins => 2W = 12 hr 20 mins => W = 6 hr 10 mins

So, R = 9 hr 50 mins - 6 hr 10 mins = 3 hr 40 mins

So both ways = 2R = 2 × 3 hr 40 mins = 7hr 20 mins

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Q65. Answer: (b) Gold

The hardest substance is Diamond,

And " Diamond " is coded as "Gold"

Hence," Gold " is the correct answer.

Q66. Answer: (b) Odisha

The correct answer is Odisha.

Key Points

• On 21 December 2015, the Odisha Government initiated the Anwesha scheme to provide free education for caste and scheduled students of the tribe.

• Under the programme, 5000 SC and ST children will be enrolled annually in Standard I in leading private schools in urban areas of the state.

• State Chief Minister Naveen Patnaik announced the scheme at Saragi Phul, a three-day children's festival for ST, SC children held at Bhubaneswar.

• The Government will bear all expenditure on the education of students under the scheme to be introduced in 17 districts.

• Expenditures on tuition, uniforms, books, hostel accommodation and transport would be funded by the Government.

• The Government plans to enrol in phases a total of 50,000 SC and ST students.

Q67. Answer: (d) 6 2/3

Given:

Two buses start from a house at an interval of 5 minutes and move with a speed of 10 km/hr in the same direction.

Formula Used:

distance = speed × time

Calculation:

=> So the distance between them will be the distance covered by the bus in 5 minutes or 5/60 hour

So distance covered by bus in 5 minutes = 5/60 × 10 = 5/6 km

Now woman coming from the opposite direction will cover the distance between bus in time = Distance between buses/(speed of bus + speed of women)

=> 3/60 = (5/6)/(10 + speed of women) (time = 3 minutes or 3/60 hours)

=> speed of woman = 20/3 kmph

Q68. Answer: (a) There is no similarity at all

All these originated in North India → no, Kathakali, Bharathanatyam are the dance forms of South India, while Kathak and Madubani are dance forms of North India.

All are practiced by female artists only → no, all can be practiced by male and female artists.

All are South Indian dance forms → no, Kathakali, Bharathanatyam are the dance forms of South India, while Kathak and Madubani are dance forms of North India.

Hence ,There is no similarity at all is the correct answer.

Q69. Answer: (c) 530

The correct answer is 530.

Key Points

• Lok Sabha shall be composed of members of the people elected by direct election on the basis of adult suffrage.

• The total strength of the House envisaged by the Constitution is 552, which consists of the election of up to 530 representatives to serve the States, up to 20 members to represent the Territories of the Union and not more than two members of the Anglo-Indian Community to be elected by the President of the Hon'ble if in his/her opinion, the Community is not adequately represented in the House.

• Total elective membership is divided among States in such a way that the ratio between the number of seats allocated to each State and the population of the State is to the extent possible, the same for all States.

Q70. Answer: (b) 26 : 27

Given:

The cash difference between the selling price of an article at a profit of 4% and 8% is Rs. 3.

Formula Used:

selling price = cost price + profit

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profit% = (profit/cost price × 100)

Calculation:

Let the cost price be 100x

So selling price will be when profit % is 4% = 100x + 4% of 100x = 104x

=> Similarly selling price when profit % is 8% = 100x + 8% of 100x = 108x

=> Difference between both selling price = 108x - 104x = 3

=> 4x = 3 or x = 3/4

Now the ratio for both selling price = 104x/108x = 26/27

Therefore required ratio = 26 : 27

Q71. Answer: (d) Qualify

Arranging the words in alphabetical order:

4. Qualify

3. Quarrel

1. Quarry

2. Quarter

So, Qualify comes first in alphabetical order.

Hence, the correct answer is "Qualify".

Additional Information

1. First of all, check the common letter in all.

2. Arrange them according to the alphabet they come first.

3. When common letters are arranged, then go for the rest.

Q72. Answer: (d) Specially Modified Aesthetic Refreshing Travel

The correct answer is Specially Modified Aesthetic Refreshing Travel (SMART).

Key Points

• SMART (Specially Modified Aesthetic Refreshing Travel) Coaches-design and layout of our coaches to ensure higher load capacity and new facilities including automatic doors, barcode readers, bio-vacuum toilets, water level indicators, enhanced aesthetics, vending machines, entertainment screens, accessible dustbins, ergonomic seating, LED billboards for ads, PA system.

• Railway Budget 2016:

• Theme: Overcoming Obstacles – Restructuring, Reorganize, Rejuvenate Indian Railways: 'Chalo, Milkar Kuch Naya Karen'.

• Three pillars of the strategy: Nav Manak – New norms, Nav Sanrachna – New Structures, Nav Arjan – New revenues.

• Financial results 2015-16: savings of Rs. 8,720 crore neutralising much of the revenue shortfall, estimated to be OR 90%; 2016-17:

• Targeted Operating Ratio (OR) - 92%, restrict the growth of Ordinary Working Expenses by 11.6% after building in immediate impact of 7th PC, reductions expected in diesel and electricity usage, Revenue generation targeted at Rs 1,84,820 crore.

Q73. Answer: (d) Teacher

The logic is:

Tailor : One who makes stitches cloth to make dress using cloth as raw material. (Product can be touched)

Carpenter: Makes furniture by wood and other raw materials. (Product can be touched)

Goldsmith : Makes gold ornaments and articles by using gold as raw material. (Product can be touched)

Teacher : One who teaches, gives knowledge. (Product can't be touched)

Thus, the correct answer is "Teacher".

Q74. Answer: (d) China

The correct answer is China.

Key Points

• On 27 December 2015, China passed the Anti-Terrorism Act.

• The Anti-Terrorism Act comprises 10 chapters and 97 sections, which came into force on 1 January 2016.

• Before the passage of the Anti-Terrorism Act, while anti-terrorism legislation can be found in the Criminal Code or any other emergency response legislation, there was no formal legislative framework or source of anti-terrorism action.

• The most contentious provisions of the Anti-Terrorism Act are the various new limitations on the activity of internet-based and technology-based businesses, among which Article 21 states that an internet operator or provider is required to verify the identity

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of each user and refuses to offer services to a user who refuses such verification or fails to provide a clear identity.

• Any organisation that fails to comply with this requirement may face penalties, rectification orders and its management and executives may face fines and even arrests from 5 to 15 days.

Q75. Answer: (c) 744

Given:

Ms. Revathi borrowed Rs. 600 at 6% simple interest

Formula Used:

simple interest = p × r × t/100

(where p is money borrowed, r is rate of interest and t is total time)

Calculation:

Now she has to return money after 4 years

=> So total amount she will pay will be money borrowed + interest for 4 years

Interest for four years = p × r × t / 100

So, total interest for four years will be = 600 × 6 × 4/100 = 144

So, total amount given to clear debt = 600 + 144 = Rs. 744

Q76. Answer: (c) Patch

The correct answer is Patch.

Key Points

• A patch is a series of modifications to a computer programme or its supporting data intended to update, correct, or enhance it.

• This involves addressing security flaws and other bugs, which are generally referred to as bug fixes or bug fixes.

• Patches are also written to enhance software efficiency, accessibility, or performance. Patches may be mounted either under programmed supervision or by a human programmer using an editing tool or a debugger.

• They can be used for programme files on a storage system or on computer memory. Patches can be permanent (until they are fixed again or temporary.

• Patching makes it possible to change compiled and machine language object programmes when the source code is not usable. Patch management is part of life-cycle management which is the method of utilising a strategy and a schedule of what patches should be applied to which systems at a given time.

Q77. Answer: (b) 0

sign	meaning
•	×
÷	•
•	÷
×	•

((36× 4)-8× 4)/(4+8× 16÷ 1)=

After interchanging the signs with given Operators, we get

((36- 4)÷8- 4)/(4×8-16+ 1)

= (32 ÷ 8 - 4) ÷ (32 - 16 + 1)

= (4 - 4) ÷ (33 - 16)

= 0 ÷ 17

= 0

Thus, the correct answer is "0".

Q78. Answer: (b) as Indians were excluded from the Commission

The correct answer is as Indians were excluded from the Commission.

Key Points

• The Government of India Act 1919 introduced a dyarchy structure to control the provinces of British India.

• This act provided that after 10 years, a commission would be formed to review the progress of the government scheme and to recommend new measures for reform.

• The Simon Commission was opposed mainly because it did not have any Indian representation in the assembly.

• This commission was appointed by the government of Britain in 1927.

• The purpose of the Simon Commission was to provide an account of how the Indian constitution worked.

Q79. Answer: (b) Josh Hazlewood

The correct answer is Josh Hazlewood.

Key Points

• The Australian Right-arm fast bowler Josh Hazlewood has conferred the '2015 ICC Emerging Player of the Year' Award.

• He was also the youngest to make his One Day International debut for Australia on 22 June 2010.

• Right arm fast bowler, he also played for the Australian Under-19s and was the youngest member of the Australian Under-19 World Cup.

Important Points

• Joe Root was the part of the ICC Test Team of the Year (2015).

• Steve Smith was the Cricketer of the Year and Test Player of the Year in 2015.

• Mohammed Shami was the part of the ICC ODI Team of the Year in 2015.

• AB de Villiers was the ODI Player of the Year in 2015.

• Faf du Plessis was the Twenty20 International Performance of the Year in 2015.

Q80. Answer: (d) 3

Given:

Mr. Prasad travelled equal distances at speeds of 2 km/hr., 4 km/hr., and 6 km/hr., and took a total of 55 minutes to complete.

Formula Used:

Time = distance/speed

Calculation:

Let 'd' be the distance

=> total time = d/2 + d/4 + d/6 = 55/60

=> 11d/12 = 55/60

=> d = 1 km

Total distance = 3d = 3 km

Q81. Answer: (a) Reliance Industries Ltd

The correct answer is Reliance Industries Ltd.

Key Points

• The A.P. Justice. Shah Committee, which investigated a conflict between the state-run Oil and the Natural Gas Corp. Ltd (ONGC) and Reliance Industries Ltd (RIL) indicted the latter for "unfair enrichment" in a report submitted to the government.

• The conflict concerned the movement of gas between the neighbouring fields of the NGOC and the RIL in the Krishna-Godavari (KG) basin.

• The unequal enrichment stemmed from the retention by RIL of gas gains flowing into its KG D6 field from neighbouring NGOC fields.

• Between 1 April 2009 and 31 March 2015, some 11 billion cubic metres (bcm) of gas migrated from adjacent fields to KG D6, of which 8.9 bcm was appropriated by RIL.

Q82. Answer: (d) West Bengal

The correct answer is West Bengal.

Key Points

• SINP (Saha Institute of Nuclear Physics), Research in the nuclear sciences, has its roots in the activities initiated and led by Prof. Meghnad Saha in 1940.

• The journey, which began with the design and construction of a small cyclotron and the measurement of a fission cross-section of 235U by a limited number of committed staff, has gone a long way in discovering the secrets of atoms, nucleus and molecules, using state-of-the-art techniques at present and involving various groups of people spread across the world.

• During this time, a 14.8 MeV neutron generator was also successfully installed in the Institute.

• The initial efforts in nuclear physics science, which began with the small cyclotron and the 14.8 MeV generator, were filled with the installation of the Variable Energy Cyclotron at VECC, Kolkata, West Bengal.

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Q83. Answer: (a) April 2010

The correct answer is April 2010.

Key Points

• India became one of 135 countries to make education a fundamental right for every child when the Act came into force on 1 April 2010.

• The Law on the right of children to free and compulsory education or the Law on the right to education (RTE) is an Act of the Parliament of India promulgated on 4 August 2009, which sets out the modalities of the value of free and compulsory education for children between the ages of 6 and 14 in India pursuant to Article 21A of the Indian Constitution.

• The title of the RTE Act contains the words 'free and compulsory.'

• Free education means that no child, other than a child who has been admitted by his or her parents to a school which is not funded by the appropriate Government, is liable to pay any kind of fee or payment or cost which may prohibit him or her from pursuing and completing elementary education.

• 'Compulsive education' obliges the responsible government and local authorities to provide and ensure the registration, attendance and completion of primary education for all children in the 6-14 age group.

• India has moved towards a rights-based system that imposes a legal duty on the central and state governments to enforce this fundamental right of the child as enshrined in Article 21A of the Constitution, in compliance with the provisions of the RTE Act.17.

Q84. Answer: (d) to vote in public election

The correct answer is to vote in public election.

Key Points

• Our Constitution lays down certain fundamental obligations which are basic moral obligations for people.

• One of the basic duties is to safeguard public property and to abjure abuse. While it is not enforceable, it is the obligation of every person to maintain public places in order to fulfil this moral duty. We respect and conserve the rich heritage of our society.

• It is very important to do so because India has a great history of rulers and is endowed with various arts and architectures that display the country's past glory.

• To cherish and obey the noble values that have driven our national struggle for independence.

• To safeguard and protect the sovereignty, unity and dignity of India.

• Defend the country and provide national service as asked to do so.

Q85. Answer: (b) CPI (Consumer Price, Index, rural and urban, combined)

The correct answer is CPI (Consumer Price, Index, rural and urban, combined).

Key Points

• On 1 April 2014, the Reserve Bank of India adopted the Consumer Price Index (CPI) as a primary indicator of inflation.

• It was introduced in the first bi-monthly monetary policy statement for 2014-2015.

• It was adopted on the basis of the recommendations of the report of the Urjit R Patel Committee on the revision and strengthening of the monetary policy system.

• The Reserve Bank of India (RBI) used the Wholesale Price Index (WPI) to gauge and calculate indicative inflation estimates.

• This has been done essentially because it is the only indicator of prices at the national level and the CPIs have historically discussed prices faced by particular parts of society.

• The use of the CPI as a measure of inflation is intended to help measure inflation expectations since the CPI represents the cost of living.

Q86. Answer: (d) 27P

The logic is :

Thus, the correct answer is "27P".

Q87. Answer: (d) $x^2 + 5y^2$

Given:

(3y)2 + x2 - (2y)2

Calculation:

=> $(3y)^2 + x^2 - (2y)^2$

=> $9y^2 + x^2 - 4y^2$

=> $x^2 + 5y^2$

Therefore required value = x2 + 5y2

Q88. Answer: (d) Harsh Vardhan Shringla

The correct answer is Harsh Vardhan Shringla.

Key Points

• Harsh Vardhan Shringla was the first Ambassador to the Kingdom of Thailand to serve from January 2014 to January 2016 for two years.

• During his term, a number of initiatives in the political, defence, economic and cultural fields between India and Thailand have brought the two countries closer together.

• Harsh Vardhan Shringla has been an Indian Foreign Service Officer serving as India's 33rd and acting Foreign Secretary since 29 January 2020.

• Previously, he served as Ambassador of India to the United States of America, High Commissioner to Bangladesh.

• Ambassador Shringla served as Joint Secretary (Director General) for Bangladesh, Sri Lanka, Myanmar, and the Maldives in the Ministry of External Affairs of New Delhi.

• He also led the United Nations Diplomatic and SAARC Divisions in the Ministry of Foreign Affairs.

Important Points

• Bhagwant Singh Bishnoi has been named as the next Ambassador of India to the Kingdom of Thailand.

• Anil Wadha served as Indian Ambassador to Italy, Poland, Oman, and Thailand.

• Pinak Ranjan Chakravarty, officially High Commissioner of India to Bangladesh, has been named as India's Ambassador to Thailand in 2009.

Q89. Answer: (d) Rs. 8610

Given:

A woman invests Rs. 4000 at the start of each year at 5% compound interest per annum.

Formula Used:

P + C.I = P (1 + R/100)T

Calculation:

=> Total returns on first year investment = $4000(1 + 5/100)^2$ = (4000 × 11025)/10000 = Rs. 4410

=> Total returns on second year investment = $4000(1 + 5/100)^1$ = Rs. 4200

=> Total returns = Rs. (4410 + 4200) = Rs. 8610

Q90. Answer: (d) Enceladus

The Correct Answer is Enceladus.

• The global ocean lies underneath the ice crust of Saturn's geologically active Enceladus moon, according to recent studies using data from NASA's Cassini mission.

• Researchers also observed that the extent of the moon's very minor wobble, when it orbits Saturn, can only be accounted for if the outer ice layer is not frozen solid within it, meaning that the global ocean must be present.

• The discovery contains a fine spray of water vapour, ice particles and basic organic molecules that Cassini has detected coming from cracks near the south pole of the moon, being supplied by this large pool of liquid water.

• The research is discussed in a paper released online this week in the Icarus magazine.

• Cassini scientists have studied more than seven years of Enceladus images taken by a spacecraft that has been orbitary Saturn since mid-2004.

Important Points

• Tethys is the fifth largest moon in Saturn.

• Mimas, also known as Saturn I, is a moon of Saturn discovered by William Herschel in 1789. It's named after Mimas, Gaia's son in Greek mythology.

• Rhea is the second-largest moon of Saturn and the ninth-largest moon throughout the Solar System.

Q91. Answer: (d) Neither I nor II follows

The least possible Venn diagram for the given statements is as follows:

Conclusion:

I. Some ducks are cows. --> False (It is possible but not definite)

II. Some cows are ducks. --> False (It is possible but not definite)

Thus, the correct answer is "Neither I nor II follows".

Q92. Answer: (a) Rs. 530.4

Given:

Mr. Arun borrowed Rs. 6500 at 4% per annum compound interest.

Formula Used:

C.I. = $P(1 + R/100)^2 – P$

Calculation:

C.I. = $6500(1 + 4/100)^2 - 6500$

=> $6500\{(104/100)^2 - 1)\} = 6500 \{(104^2 – 100^2)/100^2\}$

=> $6500(104 + 100)(104 – 100)/10000$

=> $65(204)(4)/100 = (260 \times 204)/100$

=> 530.4

Therefore The correct answer is Rs. 530.4.

Shortcut Trick

The effective rate for 2 yrs at 4%

=> $4 + 4 + (4 \times 4)/100$

=> 8.16%

C.I = $6500 \times 8.16\%$

C.I = 530.4

Type here...

Q93. Answer: (c) Decomposers

The correct answer is Decomposers.

Key Points

• Decomposers are the largest population of the food chain.

• These are organisms that feed on dead and decaying matter and break down complex compounds into simpler ones.

• This involves bacteria, fungi, and a variety of other microorganisms.

• Decomposers are an integral component of the food chain. They break down the carbon-free organic matter and other nutrients that are useful for their growth as well as for the development of plants.

Important Points

• The producers are at the first trophic stage of the food chain.

• It acts as a nutritional supply for consumers or a higher trophic level.

• Producers are responsible for the processing of organic compounds made from ambient or marine carbon dioxide.

• The primary consumer is an organism that feeds primary producers.

• Primary consumers are usually herbivores that feed on autotrophic plants that produce their own food by photosynthesis.

• Secondary consumers are species that absorb energy from primary consumers.

Q94. Answer: (c) 48

The logic is :

G = 7

EXCEL = 5 + 24 + 3 + 5 + 12 = 49

Similarly,

ACCEPT = 1+ 3 + 3 + 5 + 16 + 20 = 48

Thus, the correct answer is "48".

Q95. Answer: (b) Mammals

The correct answer is Mammals.

Key Points

• Elephants, Bears and Rhinos are examples of Mammals.

• Mammals are a group of vertebrate animals of the class Mammalia, characterised by the presence of mammary glands which in females, provide milk for feeding their young, brain region, fur or hair, and three middle ear bones.

• The most common orders are rats, bats and eulipotyphs (hedgehogs, moles, shrews, and others).

• The next three are the Primates (ape-like humans, chimpanzees, among others), the Artiodactyla (cetaceans and even-toed ungulates) and the Carnivora (cats, dogs, seals, and others).

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• The basic body shape is quadrupled, and most animals use their four extremities for terrestrial locomotion; but in others, the extremities are modified for life at sea, in the clouds, in forests, underwater, or on two legs. Mammals range in size from 30–40 mm (1.2–1.6 in) bumblebee bat to 30 m (98 ft) blue whale-possibly the largest mammal known to have existed.

• Maximum lifespan ranges from two years in the shrew to 211 years in the bowhead whale.

Q96. Answer: (b) French Guiana

The correct answer is French Guiana.

Key Points

• INSAT-2E is an Indian geostationary communications and weather satellite operated by the Indian National Satellite System.

• INSAT-2E was launched by Arianespace, using the Ariane 42P carrier rocket from ELA-2 to the Guiana Space Centre.

• It is located in a geostationary orbit at a range of 83° East from where it is used to provide communications services to Asia and Australia.

• It also contains two meteorological instruments, the Very High-Resolution Radiometer, and a CCD camera capable of returning photographs with a resolution of one kilometre.

• The payload communications on INSAT-2E consists of 17 G/H bands (IEEE C band) transponders.

• At launch, the satellite had a mass of 2.550 kilogrammes (5.620 lb), with an estimated service life of 12 years.

Q97. Answer: (c) 84

The Correct Answer is 84.

• Together they complete the work in 28 days

• So, in one day they complete 1/28 work.

• Since Rajesh is twice good as Vishal

• So Rajesh's work done in one day= 2x & Vishal's work done in one day= x

• So, 2x + x = 1/28;

• 3x = 1/28

• x = 1/84

• So, Vishal's work done in one day= 1/84 & Rajesh's work done in one day= 1/42

• So, Vishal alone will take 84 days to complete a piece of work.

Q98. Answer: (d) 11.25

Given:

15% of 75

Formula Used:

a% of b = ab/100

Calculation:

=> 15% of 75

=> (15/100) × 75

=> 1125/100 = 11.25

Q99. Answer: (a) Netherlands

The correct answer is Netherlands.

Key Points

• The Organisation for the Prohibition of Chemical Weapons (OPCW) is headquartered in the Netherlands.

• It is an intergovernmental organisation and implementing body for the Chemical Weapons Convention which entered into force on 29 April 1997.

• The OPCW, with its 193 Member States, is based in Hague, Netherlands, and oversees global efforts to ensure the permanent and verifiable elimination of chemical weapons.

• The organisation advocates and verifies adherence to the Chemical Weapons Convention, which forbids the use and destruction of chemical weapons. Verification consists both of the reviews of the Member States' statements and on-site inspections.

• The organisation was awarded the Nobel Peace Prize "for its systematic efforts to eliminate chemical weapons" in 2013.

Q100. Answer: (a) Sabarmati

The correct answer is Sabarmati.

Key Points

• Salt March is also known as Salt Satyagraha, Dandi March, and the Civil Disobedience Campaign.

• The Salt Satyagraha was introduced by Mahatma Gandhi against the salt tax imposed in India by the British Government.

• It was a mass campaign of civil disobedience.

• On 2 March 1930, Mahatma Gandhi told Lord Irwin of the Salt March program.

• He said that on March 12, 1930, the Salt March would begin with a few dozen people from his Sabarmati Ashram near Ahmedabad to break the Salt Law.

• During the march, he and his supporters would travel through many villages of Gujarat. On 6 April 1930, Mahatma Gandhi and his disciples broke the Salt Rule by producing salt from seawater.

• It is said that this time about 50,000 people took part in the Salt March.

Q101. Answer: (b) Son

The Correct Answer is Son.

• Renu is the sister of Ajith, then Ajith is the Maternal Uncle of Rakesh.

• Dinesh is the brother of Rakesh, then Dinesh is Son of Renu.

• Hence the correct Answer is the son.

Q102. Answer: (b) 4 4/5

Given:

A water tank has two holes. The 1st hole alone empties the tank in 8 minutes and 2nd hole alone empties the tank in 12 minutes.

Calculation:

Let 'x' be the total volume in litres and let t be the time taken by both holes

=> The first hole out flow rate = x/8 lit per min

=> The second hole outflow rate = x/12 lit per min

=> outflow = x/t = x/8 + x/12

=> 1/t = 5/24

=> t = 24/5 = 4 4over5 minutes

Alternate Method

Let total capacity be 24 units. [LCM of 8 and 12]

Efficiency of 1st hole = 24/8 = 3 units/min

Efficiency of 2nd hole = 24/12 = 2 units/min

Combined efficiency = 3 + 2 = 5 units/min

Therefore Required time = 24/5 = 4 4/5 minutes

Q103. Answer: (a) Rs. 23,000

Given:

Mr. Manju sold a bus for Rs. 17,000 at a loss of 15%.

Formula Used:

loss% = (loss/cost price × 100)

profit% = (profit/cost price × 100)

Calculation:

=> The price of Bus at 15% profit = 115% of CP

also, at 15% loss the selling price is Rs. 17,000

=> 85% of CP = 17,000

=> 115% of CP = (17,000/85) × 115 = 23,000

Therefore Required price= Rs. 23,000

Q104. Answer: (c) 84

Given:

Total marks = 25

Marks of the student = 21

Concept used:

Percentage marks = (Outcome/Total number) × 100

Calculation:

Percentage = (21/25) × 100

=> 21 × 4

=> 84%

Therefore The student's marks in percentage is 84%.

Q105. Answer: (d) Syria

The correct answer is Syria.

Key Points

• The Geneva II Conference on Syria was a UN-backed international peace conference on the future of Syria with the goal of resolving the Syrian Civil War, putting together the Syrian government and the Syrian opposition to negotiate clear measures towards a new government for Syria with full executive powers.

• The conference was held in Montreux on 22 January 2014, in Geneva (Switzerland) on 23 - 31 January 2014 and again on 10 - 15 February 2014.

• The UN peace envoy to Syria, Lakhdar Brahimi, participated in the conference in collaboration with the United States and Russia.

• According to the Syrian Observatory for Human Rights, there were at least 1,870 deaths in Syria during the nine days of the conference.

• The New peace negotiations took place in 2016 in the background of the new Geneva peace talks on Syria (2016).

Q106. Answer: (d) 1024

The correct answer is 1024 GB.

• A terabyte is a multiple unit byte for digital content.

• The prefix tera represents the fourth power of 1000, which is 10^{12} in the International System of Units (SI), and thus one terabyte is one trillion (short scale) bytes.

• The unit sign of the terabyte is TB.

• one terabyte (TB) is equal to 1,024 gigabytes (GB).

Important Points

• The gigabyte is a multiple unit byte for digital content. The Giga prefix is 10^9 in the International System of Units (SI).

• As a consequence, one gigabyte is one billion bytes.

• The gigabyte unit symbol is GB.

• The megabyte is a multiple unit byte for digital content.

• Its recommended symbol for the unit is MB.

• The unit prefix mega is a multiplier of 1000000(10^6) in the International System of Units (SI).

Q107. Answer: (c) Nav Nirman

The correct answer is Nav Nirman.

Key Points

• It was presented in 2016 by former Railway Minister Suresh Prabhu.

• Suresh Prabhu has outlined a three-pillar strategy for the development of railways.

• The first pillar “Nav Arjun” focuses on exploiting new resources of revenues so that every asset, tangible or non-tangible, gets optimally monetized.

• The second, 'Nav Manak' (New Norms) denotes a 'zero-based budgeting' approach to the financials of the ensuing year, including improvement in efficiency yardsticks and procurement practices to bring them in line with international best practices.

• The last, 'Nav Sanrachna' (New Structures) accents the need to reimagining the conventional ways of solving issues, and co-operation, collaboration, creativity and communication as a hallmark of decision-making actions.

Additional Information

• Current railway minister: Piyush Goyal.

• The first train ran in India between Bombay and Thane, a stretch of 34 Km on 16th April 1853.

• Indian Railway is the second largest in Asia and the fourth largest in the world.

• There are 18 railway zones in India. These are:

Zones	Headquarters
1.Central Railway	Mumbai
2. Eastern Railway	Kolkata
3. Northern Railway	New Delhi

4. North Eastern Railway	Gorakhpur
5. Northeast Frontier Railway	Maligaon Guwahati
6. Southern Railway	Chennai
7. South Central Railway	Secunderabad
8. South Eastern Railway	Kolkata
9. Western Railway	Mumbai Churchgate
10. East Central Railway	Hajipur
11. East Coast Railway	Bhubaneshwar
12. North Central Railway	Allahabad
13. North Western Railway	Jaipur
14. South East Central Railway	Bilaspur
15. South Western Railway	Hubli
16. West Central Railway	Jabalpur
17.Kolkata Metro Railway	Kolkata
18. South Coast Railway	Visakhapatnam

Q108. Answer: (c) 131

Given:

First number = 1048

Second number = 1441

Concept used:

The highest Common Factor (HCF) of two numbers is the largest number that divides both of them.

Calculation:

=> Factors of 1048 = 2 × 2 × 2 × 131

=> Factors of 1441 = 11 × 131

=> HCF = 131

Therefore The HCF of 1048 and 1441 is 131.

Q109. Answer: (b) Leg

The logic is:

As 'Wrist' is the part of 'Hand'.

Similarly,

'Foot' is the part of 'Leg'.

Thus, the correct answer is "Leg".

Q110. Answer: (a) 36

Given:

Exterior angle = 10°

Concept used:

Exterior angle = 360°/number of sides(n)

Calculation:

=> 10° = 360°/n

=> n = 360/10

=> n = 36

Therefore The number of sides of the polygon is 36.

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Q111. Answer: (c) 32

Given:

Ratio of two numbers = 1 : 2

H.C.F. = 16

Concept used:

If we multiply H.C.F. of any two numbers with their respective ratio, then we will get the numbers.

H.C.F. × L.C.M = First term × Second term

Calculation:

First number = 1 × 16 = 16

Second number = 2 × 16 = 32

=> 16 × L.C.M. = 16 × 32

=> L.C.M. = 32

Therefore L.C.M of the numbers is 32.

Q112. Answer: (d) Jeff Williams

The correct answer is Jeff Williams.

Key Points

• Jeff Williams was appointed as the Chief Operating Officer (COO) of Apple Inc on 18 December 2015.

• In 1998, Jeff joined Apple as head of worldwide procurement.

• In 2004, he became vice president of Operations.

• He played a key role in Apple's entry into the mobile phone market with the launch of the iPhone.

Additional Information

• CEO of Apple: Tim Cook

• Headquarters of Apple: Cupertino, California, United States

• Siri is a virtual assistant that is part of Apple Inc.'s iOS, iPad, macOS, etc.

Q113. Answer: (d) sister-in-law

Family Chart:-

Family Tree according to the statement:-

Arun is the father of Chitra.

Manish is Arun's brother.

Chitra is Dinesh's sister.

Dinesh is the son of Bavana.

Bhavna is sister-in-law of Manish.

Thus, the correct answer is "sister-in-law".

Q114. Answer: (c) 8

Given:

Data are 3, 3, 5, 7, 8, 8, 9, 11, 12 & 12

Number of terms (n) = 10

Concept used:

Median of the even terms = (sum of middle terms)/2

Calculation:

Middle terms = 8, 8

Median = (8 + 8)/2 = 8

Therefore The median of the given data is 8.

Q115. Answer: (a) 352/7

Given:

Radius of a sphere(r) = 2 cm

Concept used:

The surface area of a sphere = $4 \times \pi \times r^2$

Calculation:

=> 4 × (22/7) × 22

=> (88/7) × 4

=> 352/7 cm²

Therefore The surface area of a sphere is 352/7 cm².

Q116. Answer: (d) Either I or II alone is sufficient

On comparing 'Q' and 'I', we got to know that "smiling" is coded as "pin" and "left" is coded as "lut".

On comparing 'Q' and 'II', we got to know that "smiling" is coded as "pin" and "rose" is coded as "dee".

Hence, we can find the code for "smiling" either from statement I or II.

Thus, the correct answer is "Either I or II is sufficient".

Q117. Answer: (a) Binary Digit

The correct answer is Binary Digit.

Key Points

• Bit stands for binary digit.

• A bit is the smallest unit of information in a computer.

• It is used for storing data and has a value of true/false, or on/off.

• An individual bit has a value of either 0 or 1, which is used to store data.

• It is used to implement instructions in groups of bytes.

• A computer is classified by the number of bits and it can process at one time or by the number of bits in a memory address.

• Many systems use four, eight-bit bytes to form a 32-bit word.

Q118. Answer: (b) 2 56/99

Calculation:

x = 2.5656...

= x = 2.565656... ---- (1)

= 100x = 256.565656... ---- (2) [Eq 1 × 100]

Substracting eq (1) from (2), we get

99x = 254

= x = 254/99

= x = 2 56/99

Q119. Answer: (a) Father

Family Chart:-

Family Tree according to the statement:-

Pointing to an old man, Malini said, "His son is my son's maternal uncle".

Clearly, old man is father of Malini.

Thus, the correct answer is "Father".

Q120. Answer: (b) Diamond to Air

The correct answer is Diamond to Air.

Key Points

Total internal reflection light:

• If the angle of incidence is denser medium is greater than the critical angle (the angle of incidence in the denser medium for which the angle of reflection become 90 degrees in rarer medium), then the ray is reflected back into the same medium, this phenomenon is called total internal reflection.

• In the air, Diamond has a critical angle of 24.4°, which means that if the angle of the incident ray is more than 24° it will not be refracted but will be reflected (total internal reflection) this is why diamond has such a high refractive index of 2.3.

Important Points

• Glass has a refractive index of 1.5, water 1.3, and diamond 2.42.

• This means that light will bend more when it hits a diamond than it will when it hits a piece of glass of the same shape.

• When light passes from a less dense to a more dense substance, (for example passing from air into water), the light is refracted (or bent) towards the normal.

• The normal is a line perpendicular (forming a 90-degree angle) to the boundary between the two substances.

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• The bending occurs because light travels more slowly in a denser medium.

• when it passes from the less dense air into the denser glass or water. This slowing down of the ray of light also causes the ray of light to change direction. It is the change in the speed of the light that causes refraction.

Additional Information

• Refraction of light: When a ray of light passes from one medium to another medium to another, it bends from the path towards or away from normal.

• The phenomenon of bending of light is called the Refraction of light.

• When a ray of light travel from one medium to another medium, the wavelength and velocity change, but the frequency does not change.

• Reflection of light: The return of light into the same medium after striking a surface is called reflection.

• Interference of light: It is the phenomenon of sustained cancellation or reinforcement of two waves when they meet under certain specific conditions.

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