RRB NTPC Tier I Official Paper (Held On: 29 Mar 2016 Shift 3) (Previous Year Paper)

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

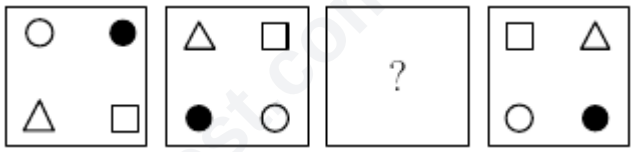
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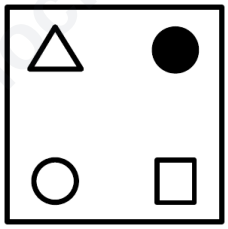
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Q1. Look carefully at the sequence of symbols to find the pattern.

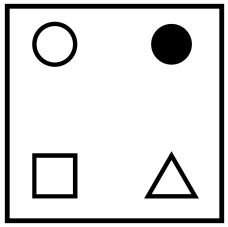


Which of the following will replace the (?) in the sequence?

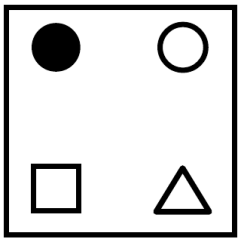
(a)



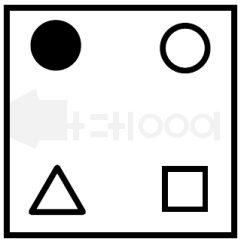
(b)



(c)



(d)



Q2. In a creation code, 592 means ‘grapes are sweet’ 374 means ‘I like oranges’ and 267 means ‘oranges are sour’. Which digit represents sour?

A. 9

B. 5

C. 6

D. Cannot be determined

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

Q3. Which of the following statements is true with respect to Glucometer?

(a) It is used to measure moisture in the atmosphere.
(b) It is a non-medical device.
(c) It is used to measure glucose in the blood.
(d) It is used to measure nitrogen level in the air.

Q4. Car B is twice as fast as car A. If car A covers 90 km in 2 hours, what is the speed of car B?

A. 90 kmph

B. 80 kmph

C. 100 kmph

D. 70 kmph

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

Q5. Which of the following gases is colorless and odorless?

A. Sulfur

B. Chlorine

C. Methane

D. Oxygen

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

Q6. The ratio of speeds of X and Y is 5 : 7. Y covers a distance of 420 km in 3 hours. What is speed of X?

A. 80 kmph

B. 90 kmph

C. 100 kmph

D. 110 kmph

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

Q7. Cricket World Cup 2015 was hosted by

A. England

B. New Zealand

C. Australia

D. New Zealand & Australia

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

Q8. The World Heritage Site Bhimbetka in MP is famous for

A. Forests
B. Mountain ranges
C. Rock shelters
D. Waterfalls

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

Q9. The standard deviation of the set {10, 11, 9, 11, 9}

A. 1/√5
B. 2/√5
C. 3/√5
D. 0

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

Q10. An assertion (A) and a reason (R) are given below.

Assertion (A): Plants convert light energy into chemical energy during the process of photosynthesis.
Reason (R): Sugar produced from photosynthesis by plants is used by human beings as a source of energy.
Choose the correct option

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

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

Q11. How many times does the number 5 occur in the range of numbers from 1 to 100?

A. 21
B. 22
C. 20
D. 19

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

Q12. A body in motion essentially acquires

A. Kinetic energy
B. Potential energy
C. Mechanical energy

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D. Heat energy

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

Q13. In a certain code, if LEMON is coded as PWOMN then SHIRT is coded as

A. ITSJH
B. GRQHF
C. HSRIG
D. TRIHS

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

Q14. If 21/2 kg of vegetable costs Rs 120, then what is the cost of 1/2 kg vegetable?

A. 60
B. 36
C. 24
D. 48

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

Q15. Select the alternative that shows a similar relationship as the given pair-

Yarn : Fabric
A. Root : Tree
B. Heart : Body
C. Metal : Sword
D. Ink : Pen

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

Q16. In which year, was the Nobel Peace Prize jointly given to Kailash Satyarthi and Malala Yousafzai?

A. 2012
B. 2013
C. 2014
D. 2015

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

Q17. What is the name of the spacecraft to be launched in 2019-20 by ISRO to study the sun?

A. Surya
B. Aditya
C. Ravi
D. Bhaskar

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

Q18. Who was the first woman president of Indian National congress in pre-Independent India?

A. Vijayalakshmi Pandit
B. Sarojini Naidu
C. Annie Besant
D. Madam Cama

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

Q19. Right To Information (RTI) Act came into effect in the year

A. 2004
B. 2005
C. 2006
D. 2007

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

Q20. The sum of three consecutive numbers is 42. Find the middle number.

A. 12
B. 18
C. 16
D. 14

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

Q21. Solve : $(x + 2y)(2x – y)$

A. $2x^2 + 5xy – 2y^2$
B. $2x^2 + 3xy – 2y^2$
C. $x^2 + 4xy + y^2$
D. $x^2 + 4xy – y^2$

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

Q22. What is the mean and mode of the numbers 1, 9, 5, 4, 2, 1, 9, 9, 2, 1, 9, 1, 2, 1?

A. 4 and 9
B. 5 and 1
C. 4 and 1
D. 5 and 9

(a) A
(b) D

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(c) C
(d) B

Q23. Four pairs of words are given, three of which are similar in some way and one is odd. Choose the odd one.

A. Hydrogen : Sulphuric acid
B. Chlorine : Salt
C. Oxygen : Water
D. Nitrogen : Hydrochloric Acid

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

Q24. Diseases Osteoporosis is associated with

A. Bone
B. Heart
C. Kidney
D. Lungs

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

Q25. Who among the following is not a Bharat Ratna recipient?

A. Bhimsen Joshi
B. A. R. Rahman
C. Lata Mangeshkar
D.MS subbulakshmi

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

Q26. The UNESCO World Heritage Site, Victoria Terminus is located in which Indian city?

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

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

Q27. The value of $(\sec^2\theta + \tan\theta\cot\theta - \tan^2\theta)$ is

A. 0
B. 1
C. 2
D. 3

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

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Q28. Who is known as the Bismark of India?

A. Jawaharlal Nehru

B. Vallabh Bhai Patel

C. Sarojini Naidu

D. Lokmanya Tilak

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

Q29. 9 women can complete a work in 50 days, if 6 women are increased further, how many days earlier the work be completed?

A. 30

B. 20

C. 15

D. 25

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

Q30. If 4x + 5y = 14 and x – 5y = 16 then the value of x and y are

A. 10 and –6/5

B. 6 and 2

C. 10 and 6/5

D. 6 and – 2

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

Q31. You have 20 big and 16 small diaries and want to make gift packs containing both in each pack. What is the maximum number of gift packs you can make without any left over?

A. 5

B. 4

C. 3

D. 2

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

Q32. In which year was the Mars Orbit Mission (MOM), Mangalyaan launched?

A. 2012

B. 2013

C. 2014

D. 2015

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

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Q33. Which of the following statements is false?

(a) Mangroves maintain biodiversity.
(b) Mangroves provide mangoes.
(c) Mangroves prevent flooding.
(d) Mangroves are being destroyed due to urbanization.

Q34. If P means '÷' Q means ' + ', R means '-' and S means '×', then the value of
10 R 192 P 48 S 48 P 96 Q 1 is

A. 10
B. 9
C. 8
D. 7

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

Q35. If L : M = 3 : 5 and M : N = 2 : 3, then N : L = ?

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

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

Q36. 10 dozen apples 15 dozen mangoes, 20 dozen oranges were kept for sale. If 1/2, 1/3 and 1/4 fruits were sold out of each respectively, then how many fruits are left?

A. 420
B. 380
C. 180
D. 360

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

Q37. When the human body temperature falls by about 2 – 3.5°f below the normal body temperature, the condition is known as

A. Fever
B. Hypothermia
C. Hypermetropia
D. Hyperthermia

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

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Q38. Find the similarity among the following:

Vulture, Kite, Bat, Owl

A. They are all birds flying at night.

B. They are all mammals.

C. They can fly.

D. There is no Similarity.

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

Q39. Full form of BIOS is

A. Binary Interchange Operation System

B. Basic Input Output System

C. Beginner's Input Operation Symbol

D. Basic Interface Oriented service

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

Q40. Which of the following is not generally a cause of cancer?

A. Environmental Factors

B. Genetic mutation

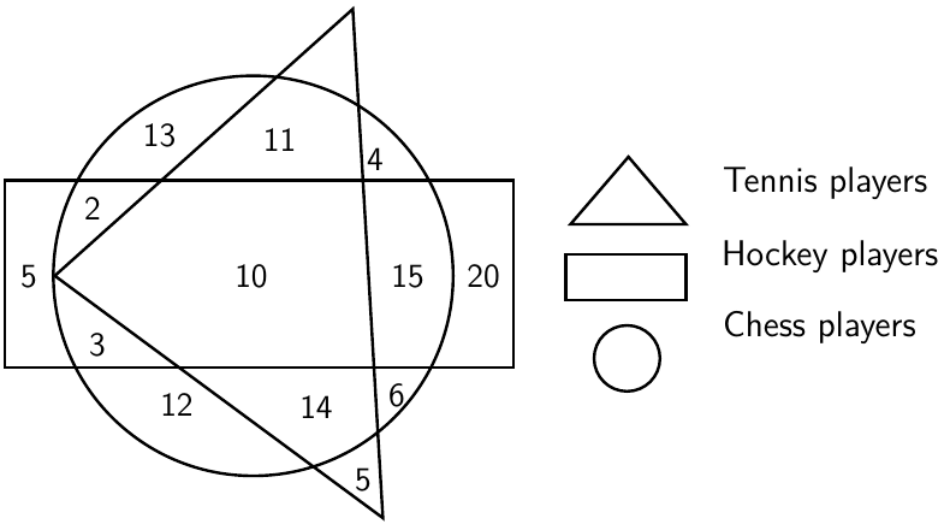
C. Genetic modification

D. Transmission

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

Directions

Study the following diagram and answer questions based on it.



Q41. The number of non-chess players is how much more than the players who play both chess and tennis

A. 5
B. 10
C. It is the same
D. cannot be determined

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

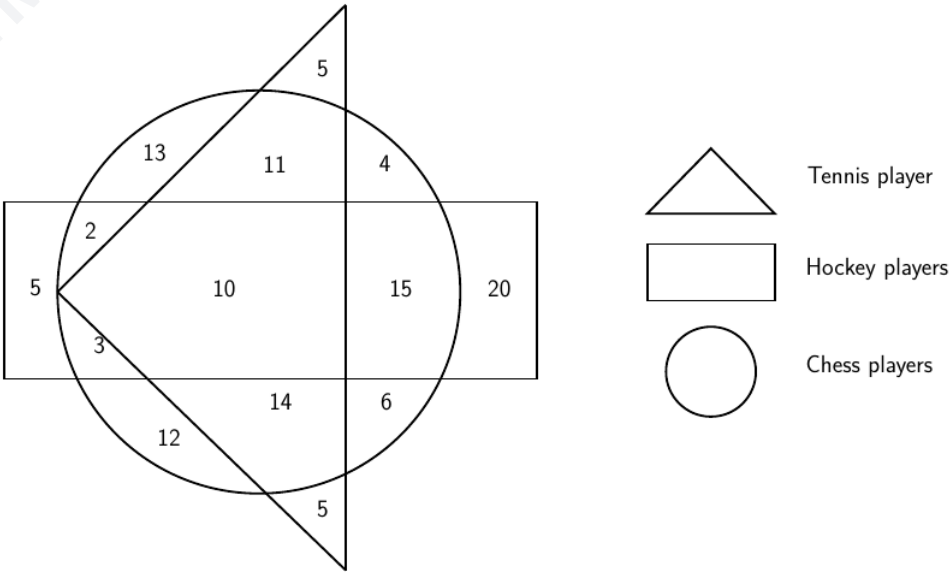
Q42. The number of tennis players who are not hockey players is

A. 10
B. 50
C. 55
D. 35

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

Directions

Direction: Study the following diagram and answer questions based on it.



Q43. The ratio of hockey players to chess players is :

A. 9/18
B. 10/18
C. 11/18
D. 15/18

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

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Q44. Find the missing (?) in the series

BCA, FGE, ? NOM, RSQ, VWU

A. IJH

B. KLJ

C. KJI

D. JKI

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

Q45. If the mathematical operator '+' means '÷', '-' means '+', '÷' means '×' and '×' means '-', then the value of 17 - 7 ÷ 27 + 3 × 79 is

A. -1

B. 0

C. 1

D. 2

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

Q46. The value of tan(–405°) is :

A. 1

B. –1

C. ∞

D. 0

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

Q47. Which of the following is not a greenhouse gas?

A.Ozone

B. Nitrous oxide

C. Water vapor

D. Hydrogen

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

Q48. The code name of India - Pakistan kargil war was _____.

A. Operation Blue Star

B. Operation Vijay

C. Operation Viraat

D. Operation Kargil

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

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Q49. In a creation language, if PLATE is written as CYNGR, then SHOCK will by written as

A. HSLXP
B. FUBPX
C. HUBPX
D. FSBXP

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

Q50. Which of the following does computing in a personal computer?

A. CPU
B. Motherboard
C. RAM
D. BIOS

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

Q51. What is the highest common factor of 360 and 450?

A. 90
B. 45
C. 10
D. 9

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

Q52. Mr. Salman said that "Rahim's son is my son's maternal uncle". How is Rahim related to Salman?

A. brother-in-law
B. father-in-law
C. father
D. Grand-father

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

Q53. Statements followed by some conclusions are given below.

Statements:

1. Tea is green, Coffee is brown and milk is white.
2. More than half of the town likes tea.
3. People who like white don’t like green and some people who like brown don’t like white.

Conclusions:

I. Green is more popular in the town.
II. There is at least one coffee drinker who does not like tea.

Find which of the given conclusions logically follows from the given statements.

A. Only conclusion I follows.
B. Only conclusion II follows.

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C. Both I and II follow.

D. Neither I nor II follows.

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

Q54. The Rupee sign 'Rs. ' was adopted by Government of India in the year

A. 2009

B. 2010

C. 2011

D. 2012

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

Q55. The second largest river in terms of length in India is

A. Narmada

B. Yamuna

C. Brahmaputra

D. Godavari

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

Q56. On a certain principal, simple interest obtained is Rs. 2,000 in two years at the rate of 10% p.a. What will be the difference in the amount of interest if the same is compounded on annual basis?

A. Rs 200

B. Rs 220

C. Rs 100

D. Rs 120

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

Q57. A prime number

A. is not a positive integer.

B. has no divisor at all.

C. has only 1 and itself as divisors.

D. has more than two divisors.

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

Q58. Russian Sukhoi 24 (SU-24) flight was shot down in November 2015 by

A. Syria

B. North Korea

C. Afghanistan

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D. Turkey

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

Q59. Ram lent Rs. 6,000/– to Shiva for 3 years and Rs. 8,000/– to Krishna for 5 years at the same rate of simple interest per annum. He got a total interest of Rs. 5,220 from both. Find then rate of interest per annum.

A. 6%
B. 7%
C. 8%
D. 9%

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

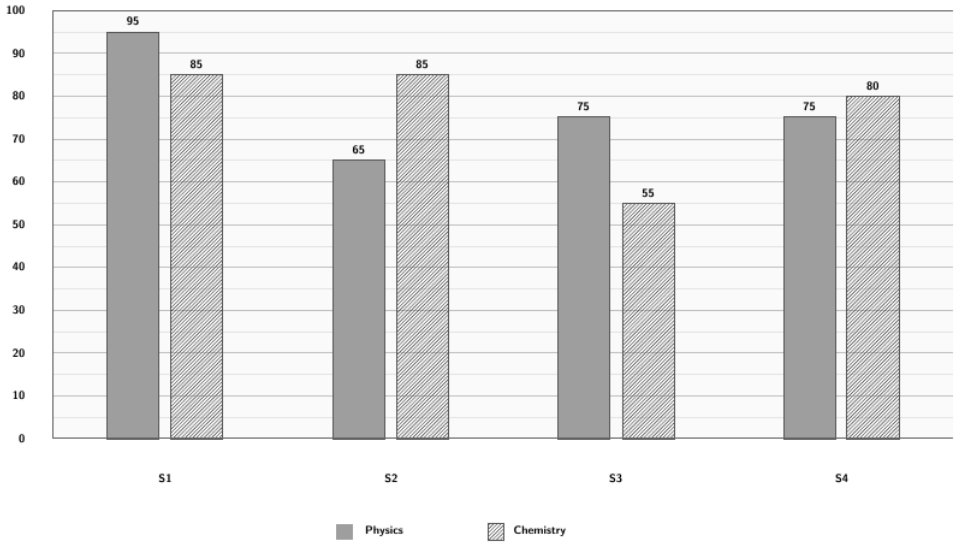
Q60. The first Indian to win an Olympic medal in badminton was

A. Syed Modi
B. Prakash Padukone
C. Pullela Gopichand
D. Saina Nehwal

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

Directions

Direction: The bar chart represents marks of four students S1, S2, S3 and S4 in Physics and Chemistry. Consider the bar chart and answer questions base on it.



Q61. Total marks scored by all the students in chemistry is what percent of the total marks scored in physics by all the students?

A. 94%
B. 96%
C. 98%
D. 102%

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

Q62. What is the ratio of total marks in both subjects obtained by S2 to that of S4?

A. 25/31
B. 30/31
C. 36/31
D. 31/25

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

Q63. What is the ratio of marks obtained in Physics of S3 to that of S1?

A. 11/19
B. 15/19
C. 13/19
D. 17/19

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

Q64. P + Q = 2(P – Q), if Q = 10, what is the value of P?

A.10
B. 40
C. 20
D. 30

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

Q65. Select the option that shows the same relation as the given pair.

Tiger : Cubs
A. Elephant : Calf
B. Dog : Cubs
C. Leopard : Kitten
D. Horse : reindeer

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

Q66. What is the area of the square, if the length of its diagonal is 13√2 units?

A. 104 sq. units
B. 169 sq. units
C. 3387 sq. units
D. 676 sq. units

(a) B

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

Q67. The pressure inside the cabin of the aircraft flying at an altitude is

A. The same as that outside.
B. Less than that outside.
C. More than that outside.
D. Normal atmospheric pressure at sea level.

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

Q68. The purchase price of 21/2 dozen of apples is Rs 300, each apple was sold for Rs 15. So what is the profit percentage?

A. 30%
B. 50%
C. 40%
D. 25%

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

Q69. 'Akash' developed by DRDO is

A. A surface-to-air missile system.
B. A surface-to-surface missile system
C. A air-to-surface missile system
D. Not a missile system.

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

Q70. In a certain town, ST Bazaar is the only option for people to buy groceries. A healthy marketplace is characterized by competition and not monopoly. Which conclusion follows the given statements?

A. ST Bazaar is a family owned business
B. ST Bazaar is a super market
C. ST Bazaar has a monopoly in the town
D. ST Bazaar is liked by most people of the town.

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

Q71. Which of the following fractions is the least of all?

A. 6/5
B. 4/3
C. 3/2
D. 5/4

(a) D

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

Q72. Rearrange the words given below to make a meaningful sentence.

5: and
6: Gopu
7: a famous mathematician
8: is also
9: is a great writer
The proper sequence should be:
A. 68759
B. 69875
C. 69587
D. 68795

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

Q73. How many 7s are there in the following sequence, which are immediately followed by 9, and which are not immediately preceded by 5?

5 1 7 9 9 7 5 9 8 7 8 7 9 5 7 9
A. 6
B. 1
C. 2
D. 4

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

Q74. 'Cow' has been declared as the personality of the year 2015 by

A. Microsoft
B. Google
C. Yahoo India
D. Facebook

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

Q75. ZIKA virus which causes neurological birth disorders is transmitted by

A. Rat bites
B. Mosquito bites
C. Snake bites
D. Monkey bites

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

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Q76. If a person has sold an article for Rs. 1,300 and made a profit of 30% find the cost price of the article.

A. Rs. 1,000
B. Rs. 1,200
C. Rs. 1,250
D. Rs. 1,100

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

Q77. "That's one small step for man, one giant leap for mankind.'
By whom it is said?

(a) Lyndom Jonson
(b) Richard Nixon
(c) Neil Armstrong
(d) John F Kennedy

Q78. If PERK = 5638 and BLACKEN = 4917862 then 7317896 is

A. PRICKLE
B. CRANKLE
C. CRIPPLE
D. CRACKLE

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

Q79. The GST Bill introduced in parliament in 2015 is

A. A financial bill.
B. Not a money bill.
C. A constitutional amendment bill.
D. An ordinary bill.

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

Q80. Which of the following agents is good for purifying drinking water?

A. Catalytic agent
B. Reducing agent
C. Sterilizing agent
D. Oxidizing agent

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

Q81. World Environment Day is celebrated on

A. 5^(th) April
B. 15^(th) May
C. 5^(th) June
D. 15^(th) July

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

Directions

Study the following information carefully and answer the questions based on it.

The seven students - S, Y, O, R, H, T and I are standing in disordered order in a row.

1. I stands second to the left of T and fifth to the left of Y.
2. R stands third to the right of S and O stands to the immediate left of R.
3. Y is standing at the right end.

Q82. Who is standing immediately to the right of the person standing in the middle of the queue?

A. S
B. R
C. I
D. O

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

Q83. Maximum one person stands between ___.

A. H and R
B. T and Y
C. O and S
D. I and H

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

Q84. Who stands at the left end?

A. H
B. T
C. I
D. S

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

Q85. The largest border of India with which country?

A. Pakistan
B. Bangladesh
C. China
D. Nepal

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

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Q86. Women's doubles world Champions for 2015 announced by International Tennis Federation are

A. Martina Hingis and Sania Mirza

B. M. Sands and L Safarova

C. Serena Williams and Venus Williams

D. Sara Errani and Roberta Vinci

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

Q87. Pushpa purchased 2 dozen pens for Rs. 480 and sold 4 pens for Rs. 100 per pack. What will be her profit%?

A. 20%

B. 16%

C. 18%

D. 25%

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

Q88. Find the range of the data : 11, 13, 9, 17, 13, 19, 10, 11.

A. 9

B. 10

C. 11

D. 13

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

Q89. Find the value of (?) in the series 3, 4, 6, 8, 12, ?, 18

A. 13

B. 14

C. 15

D. 19

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

Q90. World No-Tobacco Day falls on

A. 1^(st) May

B. 31^(st) May

C. 1^(st) June

D. 30^(th) June

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

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Q91. Expand : $(s + 2)^3$

A. $s^3 + 2s^2 + 12s + 8$

B. $s^3 + 3s^2 + 6s + 8$

C. $s^3 + 6s^2 + 12s + 8$

D. $s^3 + 6s^2 + 6s + 8$

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

Q92. Biotechnology means

A. Technical study of bacteria.

B. Technical study of chemicals in the body

C. Infusion of technology in human anatomy

D. Use of living organisms in industrial processes.

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

Q93. Karan's number in the queue is twelfth from the counter. There are five people between Karan and Sunil. What is Sunil's number in the queue?

A. 19

B. 18

C. 20

D. 17

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

Q94. Statements followed by some conclusions are given below.

Statements:

1. A bag has 2 white, 3 black, 4 red and 6 green balls.

2. 1 ball selected at random from the bag.

Conclusions:

I. The probability that a black ball is selected is 1/5

II. The probability that a red ball is selected is 6/15

Find which of the conclusions logically follows from the given statement

A. Only conclusion I follows.

B. Only conclusion II follows.

C. Both I and II follow.

D. Neither I nor II follows.

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

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Q95. Vikram and Vivek can finish a work in 50 days. They worked together for 20 days and then left. How much work has been done by them?

A. 3/5

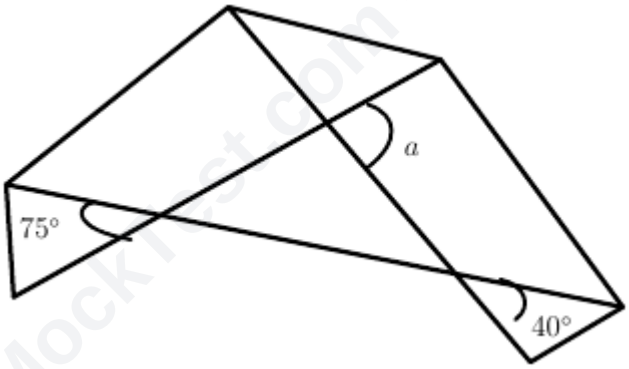
B. 1/3

C. 1/2

D. 2/5

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

Q96.



What is the value of a?

A. 65°

B. 75°

C. 105°

D. 115°

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

Q97. Debugging is the process of

A. Rolling out a software program.

B. Modifying a software program

C. Checking errors in a software program.

D. Changing the design structure of a program.

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

Q98. The 103^(rd) Indian annual Science Congress was held in

A. Bengaluru

B. Mysore

C. New Delhi

D. Lucknow

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

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Q99. An 18 feet high electric pole is located along a 6 feet tall tree at a distance of 10 feet from. What will be the length of the tree's shadow?

A. 10 feet

B. 7.5 feet

C. 6 feet

D. 5 feet

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

Q100. Who was the chief guest on the occasion of 69^(th) Republic day celebrations in India?

A. President of France

B. President of China

C. Prime Minister of Bhutan

D. 10 Asean leaders

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

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) [figure]

Given series:

On close observation, it is seen that 2^(nd) and 4^(th) image are mirror image of each other. Following the same logic, 1^(st) and the '?' image will be mirror image of each other.

According to option, '3^(rd)' option is the correct mirror image of first figure in the series.

Hence, option '3' is the correct answer.

Q2. Answer: (c) C

The codes are:

Hence, '6' represents sour.

Q3. Answer: (c) It is used to measure glucose in the blood.

Option 3 is correct, i.e. It is used to measure glucose in the blood.

Glucometer:

• provide readings by measuring a person's blood level of glucose. An individual pricks the skin most commonly, a finger to get a reading and applies the blood sample collected to a test strip inserted into the meter. The blood glucose interacts with the striped chemicals.

• Glucometer is also known as Glucose meter.

Q4. Answer: (a) A

Given: Car B is twice as fast as car A.

Let the speed of Car A be ‘a’ units.

So, speed of Car B is ‘2a’ units.

Car A covers 90 km in 2 hours

So, speed of Car A = Distance/Time = 90/2 = 45 km/hr

i.e, a = 45 km/hr

Therefore, speed of car B = 2a = 2 × 45 = 90 km/hr.

Hence, speed of car B is 90 km/hr.

Q5. Answer: (b) D

Option 2 is correct, i.e. Oxygen.

Oxygen:

• Oxygen is colorless and odorless gas.

• The molecular mass of atmospheric oxygen is 32 units.

• Mass at the atomic scale is measured in atomic mass units (amu), one amu is the average of the masses of a neutron and proton in their stationary state.

• Atmospheric oxygen is present in the form of a molecule with the chemical formula O2.

• As there are two atoms of oxygen we double the mass of a single oxygen atom 16 x 2 = 32 units.

Q6. Answer: (a) C

Short Trick:

Speed of X = (420/3) × 5/7 = 100 kmph

Detailed Solution:

Let, the speed of X = 5a kmph and speed of Y = 7a kmph

According to the question,

=> 7a = 420/3

=> 7a = 140

=> a = 20

Therefore Speed of X = 5 × 20 = 100 kmph

Q7. Answer: (c) D

Option 3 is correct, i.e. New Zealand & Australia.

• The 2015 Cricket World Cup was the 11th World Cup of crickets, hosted jointly by Australia and New Zealand from 14 February to 29 March 2015.

• Australia defeated India in the Semi-Finals.

• Australia defeated New Zealand by 7 wickets to win its fifth ICC Cricket World Cup.

• Player-of-the-Tournament Mitchell Starc, who picked up 22 wickets with his left-arm fast bowling.

Link: https://www.thehindu.com/topic/ICC_Cricket_World_Cup_2015/

Q8. Answer: (d) C

Option 4 is correct, i.e. Rock shelters.

• Bhimbetka caves of Bhimbetka rock shelters are located in Madhya Pradesh.

• It is situated 45 km to the south of Bhopal.

• It is also a UNESCO World Heritage Site, designated in the year 2003.

• The Bhimbetka rock shelters are an archaeological site of the Paleolithic, exhibiting the earliest traces of human life on the Indian Subcontinent, and thus the beginning of the Indian Stone Age.

• They are located in the foothills of the Vindhya Mountains on the southern edge of the central Indian plateau, in the Raisen district of MP.

• It is located inside the Ratapani Wildlife Sanctuary.

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Q9. Answer: (a) B

Concept:

For a set x1, x2, ..., xn of n observations:

• Mean: x =(x1+x2+ ... +x_n)/n.

• Variance: σ² =((x1-x)²+(x2-x)²+...+(x_n-x)²)/n=(∑ (x_i-bar x)²)/n=(∑ x_i²)/n-bar x².

• Standard Deviation: σ=√(σ²)=√Variance.

Calculations:

Average of the numbers = (10 + 11 + 9 + 11 + 9)/5 = 10

We get,

(10 – 10)² = 0

(11 – 10)² = 1

(9 – 10)² = 1

(11 – 10)² = 1

(9 – 10)² = 1

Therefore Standard deviation of the set = √((0 + 1 + 1 + 1 + 1)/5) = 2/(√5)

Q10. Answer: (b) B

Assertion (A): Plants convert light energy into chemical energy during the process of photosynthesis.

Reason (R): Sugar produced from photosynthesis by plants is used by human beings as a source of energy.

A. Both A and R are true and R is the correct explanation of A → False

Both the statements are true but R is not the correct explanation of A as in a conversion of energy is discussed while in R, production of sugar and its use is discussed.

B. Both A and R are true but R is not the correct explanation of A → True

C. A is true but R is false → False

Both the statements are true.

D. A is false, but R is true → False

Both the statements are true.

Hence, option '2' is the correct answer.

Q11. Answer: (c) C

Number 5 occurs 20 times in the range from 1 to 100.

Those are = 5, 15, 25, 35, 45, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 65, 75, 85, 95

In the number 55, number 5 occurs two(2) times.

Hence, it becomes clear that the number 5 occurs 20 times in the range of numbers from 1 to 100.

Q12. Answer: (c) A

CONCEPT:

• Kinetic energy (KE): The energy possessed by a body by virtue of its motion is called kinetic energy.

KE = 1/2mv²

Where m = mass of the body and v = velocity of the body

• Potential energy (PE): The energy possessed by a body by virtue of its position or configuration is called potential energy.

PE = mgh

Where, m = mass of the body, g = acceleration due to gravity and h = height of the body

EXPLANATION:

• Kinetic energy is directly proportional to the square of velocity. Hence a body in motion essentially acquires kinetic energy. So option 3 is correct.

• Since the kinetic energy is also mechanical energy. But here we have direct kinetic energy that's why answer will be kinetic energy.

• Heat is energy due to temperature.

Q13. Answer: (b) A

The logic is:

Letters are first replaced by their reverse letter and then moved one step forward.

Similarly,

Hence, 'ITSJH' is the correct answer.

Q14. Answer: (c) C

Short Trick:

21/2kg = 2500gm and 1/2 kg = 500gm

Therefore Cost of 1/2 kg vegetable = 120 × 500/2500 = Rs 24

Detailed solution :

Let, cost of 1 kg vegetable = Rs x

According to the question,

=> x × 21/2 = 120

=> 5x/2 = 120

=> x = 48

Therefore Cost of 1/2 kg vegetable = Rs 48 × 1/2 = Rs 24

Q15. Answer: (b) C

The logic is:

Yarn : Fabric → Fabrics are made from the yarn.

Similarly,

A. Root : Tree → Roots are organs of the plant that lies below the soil.

B. Heart : Body → Heart is an organ of the human body.

C. Metal : Sword → Sword is made from metal.

D. Ink : Pen → Ink is a liquid used in pen that helps to write.

Hence, 'Metal : Sword' is the correct answer.

Q16. Answer: (c) C

Option 3 is correct, i.e. 2014.

• The Nobel Peace Prize 2014 was awarded jointly to Kailash Satyarthi from India and Malala Yousafzai from Pakistan "for their struggle against the suppression of children and young people and for the right of all children to education."

• Kailash Satyarthi is an internationally acclaimed child rights activist from India who has been at the \

• of the global movement to end child slavery and exploitation of children since 1980.

• He left a lucrative career as an Electrical Engineer and started 'Bachpan Bachao Andolan' (BBA)

• He established a short term rehabilitation centre 'Mukti Ashram' in the outskirts of Delhi and a long term rehabilitation centre 'Bal Ashram' at Virat Nagar near Jaipur in India.

Extra facts:

• Nobel Peace Prize winner Kailash Satyarthi was conferred with the Harvard University's prestigious humanitarian award for the year 2015, in recognition of his continuing contribution to the cause of child rights.

• The annual award by the prestigious university is given to an individual whose works and deeds have served to improve the quality of lives and have inspired people to greater heights. Mr. Satyarthi is the first Indian to have been given this award.

Q17. Answer: (c) B

Option 3 is correct, i.e. Aditya.

• ISRO is planning to launch a satellite called Aditya to study the sun.

• This was said by PM Narendra Modi in his 'Mann ki Baat' program of AIR.

• He said that India has many powerful telescopes around the country including a giant meter-wave telescope near Pune and other powerful telescopes located in Kodaikanal, Udagamandalam, Guru Shikhar and Hanle Ladakh.

• Aditya (which means Sun) or Aditya-L1 is a spacecraft whose mission is to study the Sun.

• It was conceptualised by the Advisory Committee for Space Research in January 2008.

• It has been designed and will be built in collaboration between Indian Space Research Organisation and various Indian research organizations and will be launched by ISRO around 2019 or 2020.

• This will be the first Indian space mission to study the Sun, and also the first Indian mission to be placed at Lagrangian point L1.

Q18. Answer: (a) C

Option 1 is correct, i.e. Annie Besant.

Annie Besant:

• She presided over the 1917 session in Calcutta and became the first woman president of INC.

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• Annie Besant was the second President of The Theosophical Society from 1907 to 1933.

Extra facts:

Sarojini Naidu:

• She presided over the 1925 session in Kanpur.

• She is often known as the 'The Nightingale of India'.

Vijayalakshmi Pandit:

• She becomes the first woman in pre-independent India to hold a cabinet position of local self-government and public health in the year 1937 to 1939.

• she is better known as Jawaharlal Nehru's younger sister.

Madam Cama:

• On August 21, 1907, an International Socialist Conference was being held at Stuttgart, a city in Germany.

• It was on this occasion that Bhikaji Rustom Cama unfurled the first version of the Indian national flag a tricolor of green, saffron, and red stripes.

Q19. Answer: (a) B

Option 1 is correct, i.e. 2005.

• The Right To Information (RTI) Act came into effect in the year 2005.

Note:

• Only citizens of India have the right to seek information under the provisions of Right to Information Act, 2005.

• Subject to the provisions of the Act, the citizens of India could file the online application under the RTI Act, 2005.

• Non-Resident Indians can file Right to Information (RTI) applications to seek governance-related information from the Central government departments.

Q20. Answer: (c) D

Short Trick:

The middle number = 42/3 = 14

Detailed solution:

Let, three consecutive numbers are (x – 1), x, (x + 1)

According to the question,

=> x – 1 + x + x + 1 = 42

=> 3x = 42

=> x = 42/3 = 14

Therefore The middle number = 14

Q21. Answer: (d) B

=> (x + 2y) (2x – y)

=> $2x^2 – xy + 4xy – 2y^2$

=> $2x^2 + 3xy – 2y^2$

Q22. Answer: (c) C

Shortcut Trick

Mean of the numbers = (1 + 9 + 5 + 4 + 2 + 1 + 9 + 9 + 2 + 1 + 9 + 1 + 2 + 1)/ 14 = 56/14 = 4

Mode of the numbers = 1 [Because it is present highest number of times]

Alternate Method

Sum of the numbers = (1 + 9 + 5 + 4 + 2 + 1 + 9 + 9 + 2 + 1 + 9 + 1 + 2 + 1) = 56

Therefore Mean of the numbers = 56/14 = 4

In these numbers,

1 is present 5 times

9 is present 4 times

5 is present 1 time

4 is present 1 time

2 is present 3 times

Therefore Occurrence of 1 is highest

Therefore Mode of the numbers = 1

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Q23. Answer: (c) D

The logic is:

A. Hydrogen : Sulphuric acid → The symbol of Hydrogen is H2 and formula of Sulphuric acid is H2SO4. H2 is common in both.

B. Chlorine : Salt → The symbol of Chlorine is Cl and formula of salt for example say common salt is NaCl. Cl is common in both.

C. Oxygen : Water → Symbol of Oxygen is O2 and formula of water is H2O. 'O' is common in both.

D. Nitrogen : Hydrochloric Acid → Symbol of Nitrogen is N and formula of Hydrochloric Acid is HCl. Nothing is common in these two.

Hence, 'Nitrogen : Hydrochloric Acid' is the odd one out.

Q24. Answer: (d) A

Option 4 is correct, i.e. Bone.

• Osteoporosis causes bones to become weak and brittle — so brittle that a fall or even mild stresses such as bending over or coughing can cause a fracture. Osteoporosis-related fractures most commonly occur in the hip, wrist or spine.

• Bone is living tissue that is constantly being broken down and replaced. Osteoporosis occurs when the creation of new bone doesn't keep up with the loss of old bone.

• Osteoporosis affects men and women of all races. But white and Asian women — especially older women who are post menopause — are at the highest risk. Medications, a healthy diet and weight-bearing exercise can help prevent bone loss or strengthen already weak bones.

Note:

• The Deficiency of Vitamin D in the human body leads to Osteoporosis.

• Osteoporosis is a condition in which bones become weak and brittle.

• Major sources of Vitamin D are Sun, Milk, Orange Juice and Tuna Fish.

Q25. Answer: (a) B

Option 1 is correct, i.e. A. R. Rahman.

• 'Bharat Ratna', the highest civilian Award of the country, was instituted in 1954 and the first recipient was Chakravarti Rajagopalachari, Dr. Sarvapalli Radhakrishnan and Dr. Chandrasekhara Venkata Raman.

• It is awarded in recognition of exceptional service/performance of the highest order in any field of human endeavor.

• The recommendations for Bharat Ratna are made by the Prime Minister himself to the President.

• The number of annual awards is restricted to a maximum of three in a particular year.

• On conferment of the award, the recipient receives a Sanad (certificate) signed by the President and a medallion. The Award does not carry any monetary grant.

Extra facts:

• Name of all Recipients with year.

• Pranab Mukherjee (2019),

• Madan Mohan Malaviya (2015),

• Atal Bihari Vajpayee (2015)

• Sachin Tendulkar (2014)

• C. N. R. Rao (2014)

• Bhimsen Joshi (2009)

• Bismillah Khan (2001)

• Lata Mangeshkar (2001)

• Gopinath Bordoloi (1999)

• Amartya Sen (1999), Ravi Shankar (1999), Jayaprakash Narayan (1998), Chidambaram Subramaniam (1998), MS Subbulakshmi (1998), Aruna Asaf Ali (1997), Gulzarilal Nanda (1997), APJ Abdul Kalam (1997), Satyajit Ray (1992), JRD Tata (1992), Abul Kalam Azad (1992), Morarji Desai (1991), Vallabhbhai Patel (1991), Rajiv Gandhi (1991), Nelson Mandela (1990), BR Ambedkar (1990), MG Ramachandran (1988), Khan Abdul Ghaffar Khan (1987), Vinoba Bhave (1983), Mother Teresa of Calcutta (1980), K. Kamaraj (1976), VV Giri (1975), Indira Gandhi (1971), Pandurang Vaman Kane (1988). 1963), Zakir Hussain (1963), Rajendra Prasad (1962), Purushottam Das Tandon (1961), Bidhan Chandra Roy (1961), Dhondo Keshav Karve (1958), Govind Ballabh Pant (1957), Jawaharlal Nehru (1955), Mokshagundam. Visvesvarayya (1955), Bhagwan Das (1955), Radhakrishnan (1954), CV Raman (1954),C Rajagopalachari (1954).

Q26. Answer: (a) A

The correct answer is Mumbai.

• Chhatrapati Shivaji Maharaj Terminus (CSMT) was built in 1887 to commemorate Queen Victoria's Golden Jubilee.

• It was originally named Victoria Terminus in her honor, located in Mumbai.

• The name of the station was changed to "Chhatrapati Shivaji Terminus" In March 1996.

• A British architect Frederick William Stevens designed the terminus.

• It is on the UNESCO World Heritage Site list.

Additional Information

• The list of World Heritage Sites is maintained by the international 'World Heritage Programme', administered by the UNESCO World Heritage Committee.

• The United Nations Educational, Scientific, and Cultural Organization (UNESCO) seeks to encourage the identification, protection, and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity.

• This is embodied in an international treaty called the Convention concerning the Protection of the World Cultural and Natural Heritage, adopted by UNESCO in 1972.

• India has 40 world heritage sites that include 32 Cultural properties, 7 Natural properties, and 1 mixed site.

Q27. Answer: (b) C

=> $(\sec^2\theta + \tan\theta\cot\theta - \tan^2\theta)$

=> $(\sec^2\theta - \tan^2\theta) + \tan\theta\cot\theta$

=> 1 + 1 = 2

Q28. Answer: (c) B

Option 3 is correct, i.e. Vallabh Bhai Patel.

• Vallabhbhai Patel is known as the Iron Man of India.

• Mahatma Gandhi gave the title of Sardar to Vallabhbhai Patel.

• It was the women of Bardoli who bestowed the title Sardar for the first time, which in Gujarati and most Indian languages means Chief or Leader.

• He is also known as the Bismark of India because he had played a major role in uniting India.

• He is also related to Bardoli Satyagraha.

Extra facts:

Sarojini Naidu:

• Sarojini Naidu played an important role in the awakening of Indian women to fight for independence and who is also known as Nightingale of India.

• Sarojini Naidu was a poet and politician.

• Naidu served as the first governor of the United Provinces of Agra and Oudh from 1947 to 1949. She was the first woman to become the governor of an Indian state.

• Sarojini Naidu was the first Indian woman to become the president of INC in 1925.

Q29. Answer: (b) B

Short Trick:

No. of days required = 50 × 9/(9 + 6) = 30

Therefore The work will be completed (50 – 30) = 20 days early

Detailed Solution:

Let, the work will be completed in x days

According to the question,

=> (9 + 6) × x = 50 × 9

=> x = 450/15 = 30

Therefore The work will be completed in 30 days

Therefore The work will be completed (50 – 30) = 20 days early

Q30. Answer: (b) D

4x + 5y = 14 ------ (1)

x – 5y = 16 ------ (2)

From (1) + (2) we get,

=> 5x = 30

=> x = 6

Putting the value of x in (1) we get,

=> 4 × 6 + 5y = 14

=> 5y = – 10

=> y = – 2

Q31. Answer: (c) B

Short Trick:

HCF of 20 and 16 = 4

Therefore 4 gift packs can be made without any left over

Detailed Solution:

When two numbers are divided by their HCF, no remainder is left

Therefore Max number of gift packs can be obtained by calculating the HCF of 20 and 16

HCF of 20 and 16 = 4

Therefore 4 gift packs can be made without any left over

Q32. Answer: (d) B

Option 4 is correct, i.e. 2013.

• The Mars Orbiter Mission was launched from the Satish Dhawan Space Centre, Andhra Pradesh using a Polar Satellite Launch Vehicle (PSLV) C25 XL on 5 November 2013.

• t is one of the world's most reliable launch vehicles.

• The XL variant was earlier used to launch Chandrayaan (2008), GSAT-12 (2011) and RISAT-1 (2012).

• MOM is India's first venture into interplanetary space.

• It will explore and observe Mars surface features, morphology, mineralogy and the Martian atmosphere.

Note: PSLV stands for Polar Satellite Launch Vehicle.

Q33. Answer: (b) Mangroves provide mangoes.

The incorrect statement is Mangroves provide mangoes.

• West Bengal has the maximum area of the Mangrove forest. Sundarbans is the largest Mangroves region in the world.

• Mangroves maintain biodiversity.

• Mangroves are being destroyed due to urbanization.

• Mangroves prevent flooding.

• The Mangrove ecosystems are unique & rich in biodiversity and they provide numerous ecological services.

• Mangrove cover has been separately reported in the ISFR 2019 and the total mangrove cover in the country is 4,975 sq km. An increase of 54 sq Km in mangrove cover has been observed as compared to the previous assessment of 2017.

• Top three states showing mangrove cover increase are Gujarat (37 sq km) followed by Maharashtra (16 sq km) and Odisha (8 sq km).

• As per India State of Forest Report, the 2019 state-wise area of Mangroves is given in the following table.

State	Area(Sq. km)
1) West Bengal	2114
2) Gujarat	1177
3)Maharashtra	320
4) Tamil Nadu	49
5) Goa	26

Q34. Answer: (a) B

Alphabets	P	Q	R	S
Meaning	÷	•	•	×

Given equation: 10 R 192 P 48 S 48 P 96 Q 1

After interchanging the alphabets, we get:

10 - 192 ÷ 48 × 48 ÷ 96 + 1

= 10 – 4 × 0.5 + 1

= 10 –2 + 1

= 11 – 2

= 9

Hence, '9' is the correct answer.

Q35. Answer: (c) B

Given:

L : M = 3 : 5

M : N = 2 : 3

Concept Used:

Properties of ratio.

Calculation:

Short Trick :

L = (3/5) × (2/3) × N

=> N/L = 5/2

Therefore N : L = 5 : 2

Detailed Solution :

=> L : M = 3 : 5

=> L/M = 3/5

=> L = 3M/5 ------ (1)

=> M : N = 2 : 3

=> M/N = 2/3

=> M = 2N/3 ------ (2)

From (1) and (2) we get,

=> L = (3/5) × (2/3) × N

=> N/L = 5/2

Therefore N : L is 5 : 2.

Q36. Answer: (d) D

Short Trick:

Total number of fruits = 540

No. of fruits sold = 1/2 × 10 × 12 + 1/3 × 15 × 12 + 1/4 × 20 × 12 = 60 + 60 + 60 = 180

Remaining Fruits = 540 – 180 = 360

Detailed Solution:

Total number of fruits = 540

Total no. of apples = 10 × 12 = 120

Therefore No. of apples sold = 1/2 × 120 = 60

Total no. of mangoes = 15 × 12 = 180

Therefore No. of mangoes sold = 1/3 × 180 = 60

Total no. of oranges = 20 × 12 = 240

Therefore No. of oranges sold = 1/4 × 240 = 60

Total no. of fruits sold = 60 + 60 + 60 = 180

Therefore Remaining Fruits = 540 – 180 = 360

Q37. Answer: (d) B

Option 4 is correct, i.e. Hypothermia.

• Heat stroke can happen when the body becomes too hot, and hypothermia when the body becomes too cold.

• Hypothermia is a medical emergency that happens when the body loses heat faster than it can generate heat, producing a body temperature that is dangerously low. Standard body temperature is approximately 98.6 F (37° C).

• Hypothermia occurs when the body temperature drops below 95 F (35° C).

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Q38. Answer: (b) C

A. They are all birds flying at night → bat is a mammal, hence the statement is false.

B. They are all mammals → Only bat is a mammal, rest are birds,

hence the statement is false.

C. They can all fly → True.

Hence, option c is correct.

Q39. Answer: (a) B

Option 1 is correct, i.e. Basic Input Output System.

• BIOS (basic input/output system) is the program a personal computer's microprocessor uses to get the computer system started after you turn it on.

• It also manages data flow between the computer's operating system and attached devices such as the hard disk, video adapter, keyboard, mouse and printer.

• BIOS is a firmware, in short. It is stored on a chip on a part of the computer motherboard and is basically a set of instructions that run to help load the operating system.

Q40. Answer: (a) D

The Correct Answer is Option 1 i.e Transmission.

• Environmental factors:

• Environmental exposure, for instance to radon and UV radiation, and fine particulate matter.

• The most significant environmental risk factor for cancer is tobacco, whether they're using products like cigarettes, pipes, cigars, chewing tobacco, snuff or vaping, or being exposed to secondhand smoke.

• Genetic Mutation and genetic modification:

• Cancer is a genetic disease i.e cancer is caused by certain changes to genes that control the way our cells function, especially how they grow and divide.

• Cancer develops when changes, or mutations, in a cell's DNA, cause the cell to grow out of control.

• Sometimes, the mutations are caused by chemicals and other toxic substances in the environment—classified as carcinogens because of their cancer-causing potential.

• Transmission:

• In some people, cancers may be caused by certain viruses (some types of human papillomavirus, or HPV, for example) and bacteria (such as Helicobacter pylori).

• While a virus or bacterium can spread from person to person, the cancers they sometimes cause cannot spread from person to person.

Q41. Answer: (c) C

The number of non-chess players = Players outside the circle = 5 + 20 + 5 + 5 = 35

The players who play both chess and tennis = Players in the intersection of triangle and circle = 11 + 10 + 14 = 35

The number of non-chess players and the players who play both chess and tennis are the same i.e, 35.

Hence, option 3 is the correct answer.

Q42. Answer: (d) D

The number of tennis players who are not hockey players = Players in the intersection of triangle and circle except rectangle = 5 + 11 + 14 + 5 = 35

Hence, '35' is the correct answer.

Q43. Answer: (d) C

Total no. of hockey players = (5 + 2 + 3 + 10 + 15 + 20) = 55

Total no. of chess players = (2 + 13 + 11 + 4 + 15 + 6 + 14 + 12 + 3 + 10) = 90

Therefore Required Ratio = 55/90 = 11/18

Q44. Answer: (a) D

The logic is:

Hence, 'JKI' is the correct answer.

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Q45. Answer: (d) C

Symbol	•	•	÷	×
Meaning	÷	•	×	•

Given equation: 17 - 7 ÷ 27 + 3 × 79

After interchanging the symbols, we get:

17 + 7×27÷ 3 – 79

= 17 + 7 × 9 – 79

= 17 + 63 – 79

= 80 – 79

= 1

Hence, '1' is the correct answer.

Q46. Answer: (b) B

Formula:

tan(–Θ) = – tan Θ and tan (360° + Θ) = tan Θ

Therefore tan(–405°) = – tan 405° = – tan(360° + 45°) = – tan 45° = – 1

Q47. Answer: (c) D

Option 3 is correct, i.e. Hydrogen.

• Gases that trap heat in the atmosphere are called greenhouse gases.

• Hydrogen gas is not a greenhouse gas. While hydrogen is abundant and involved in many atmospheric processes, it does not in itself absorb and emit radiant energy within the thermal infrared range, which is characteristic of greenhouse gases.

• On the other hand, Ozone (A), Nitrous oxide (B), and Water vapor (C) are all considered greenhouse gases because they can absorb and emit radiant energy within the thermal infrared range. This property causes the greenhouse effect, in which these gases capture heat in the Earth's atmosphere, leading to global warming.

Carbon dioxide (CO2):

• It enters the atmosphere through burning fossil fuels solid waste, trees, and other biological materials.

• Carbon dioxide is removed from the atmosphere, when it is absorbed by plants as part of the biological carbon cycle.

Methane (CH4):

• Methane is emitted during the production and transport of coal, natural gas, and oil.

• Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.

Nitrous oxide (N2O):

• Nitrous oxide is emitted during agricultural and industrial activities, combustion of fossil fuels and solid waste, as well as during the treatment of wastewater.

Fluorinated gases:

• Hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes.

Q48. Answer: (a) B

Option 1 is correct, i.e. Operation Vijay.

• The code name of India - Pakistan kargil war was Operation Vijay.

Note:

• The year 2019, marks the 20th anniversary of victory in 'Operation VIJAY' popularly known as the 'Kargil War'.

• This year, the 20th anniversary is being celebrated with the theme 'Remember, Rejoice and Renew'.

• The celebration was for over 3 days from 25-27 July 2019 and will be organized at Dras and New Delhi.

• People of Ladakh participated in the run 'Ek Daud Shaheedon Ke Naam'.

• A 'Wreath Memorial Ceremony organised at the 'Kargil War Memorial' in Dras on the Kargil Vijay Diwas (26 July 2019).

Q49. Answer: (a) B

The logic is:

Similarly,

Hence, 'FUBPX' is the correct answer.

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Q50. Answer: (b) A

Option 2 is correct, i.e. CPU.

• A computer's central processing unit (CPU) is the central brain of the computer. A central processing unit (CPU) is the electronic circuitry within a computer that carries out the instructions of a computer program by performing the basic arithmetic, logical, control and input/output (I/O) operations specified by the instructions.

• The arithmetic logic unit (ALU) performs arithmetic and logical operations.

• The control unit (CU), extracts instructions from memory and decodes and executes them, calling on the ALU when necessary.

• A processor register is one of a small set of data holding places that are part of the computer processor. A register holds an instruction, a storage address, or any kind of data such as a bit sequence or individual characters.

Q51. Answer: (c) A

Short Trick:

Highest common factor of 360 and 450 = 2 × 3 × 3 × 5 = 90

Detailed Solution:

=> 360 = 2 × 2 × 2 × 3 × 3 × 5

=> 450 = 2 × 3 × 3 × 5 × 5

Therefore Highest common factor of 360 and 450 = 2 × 3 × 3 × 5 = 90

Q52. Answer: (c) B

Salman said Rahim's son is the maternal uncle of my son which means Rahim's son is brother-in-law of Salman, which means Salman is married to the daughter of Rahim.

So, Rahim is either father-in-law or mother-in-law of Salman as Rahim's gender is not specified.

As in the option only father-in-law is present, it is clear that Rahim is father-in-law of Salman.

Hence, 'father-in-law' is the correct answer.

Q53. Answer: (b) A

Statements:

1. Tea is green, Coffee is brown and milk is white.

2. More than half of the town likes tea.

3. People who like white don't like green and some people who like brown don't like white.

Conclusions:

I. Green is more popular in the town → True

As, tea is green and more than half of the town likes tea.

II. There is at least one coffee drinker who does not like tea. → False

It can be possible but it is not definitely true.

Q54. Answer: (c) B

The correct answer is. 2010.

Key Points

• The Indian sign of rupee 'Rs. ' is the currency symbol for the Indian rupee, India's official currency.

• Designed by Udaya Kumar, it was unveiled to the public on 15 July 2010 by the Government of India, following its selection through "open" competition between Indian citizens.

• The symbol 'Rs. ' is an amalgamation of Devnagari and Roman languages.

• It has been designed by Udaya Kumar, a post-graduate from IIT Bombay.

Q55. Answer: (a) D

Option 1 is correct, i.e. Godavari.

• Godavari river is one of the longest rivers in India and its total length is about 1,465 km.

• The Godavari River rises in northwestern Maharashtra in the Western Ghats range, only about 80 km from the Arabian Sea, and flows for most of its course generally eastward across peninsular India.

• After traversing Maharashtra it enters northern Telangana and then Andhra Pradesh.

• The river then turns southeastward for the last 320 km of its course, flowing through a gap in the Eastern Ghats ranges and then across Andhra Pradesh state before reaching the Bay of Bengal.

• There it empties via its two mouths: the Gautami Godavari to the north and the Vasishta Godavari to the south.

Extra facts:

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• Nashik is located on the banks of the river Godavari.
• The tributaries of the Godavari are Purna, the Wardha, the Pranhita, the Manjra, the Wainganga and the Penganga.

Rivers Name	Length (kilometer)
Narmada	1,312
Yamuna	1,376
Brahmaputra	900 (In India)
Godavari	1,465

Q56. Answer: (a) C

Short Trick:
Simple interest for two years = Rs 2000
Therefore Simple interest for one year = Rs 2000/2 = Rs 1000
Therefore Required difference = 1000 × 1 × 10/100 = Rs 100
Detailed Solution:
Let, principal = Rs x
According to the question,
=> x × 2 × 20/100 = 2000
=> 0.2x = 2000
=> x = 10000
Therefore Principal = Rs 10000
In compound interest,
Principal = Rs 10000
Rate of interest = 10%
No. of years = 2
Therefore Amount = 10000 × $(1 + 10/100)^2$ = 10000 × 1.21 = Rs 12100
Therefore Compound interest for two years = Rs (12100 – 10000) = Rs 2100
Therefore Required difference = Rs (2100 – 2000) = Rs 100
SI = RT% of principal
=> 2000 = 20% of x
=> x = 10,000
Differecne between CI and SI for 2 years = $PR^2/100^2$
=> 10000 × 100/10,000 = 100
Therefore Required difference = 100

Q57. Answer: (d) C

Prime numbers are whole numbers greater than 1, that have only two factors – 1 and the number itself.
Prime numbers are divisible only by the number 1 or itself.
For example, 2, 3, 5, 7 and 11 are the first five prime numbers.
• 2 is the only even prime number
• Prime numbers are also called Non-composite numbers.
• 0 and 1 are not considered as prime numbers.
• Prime numbers that are two spaces apart are called twin primes. For Eg: (3, 5), (5, 7), (29, 31)
• Except for 0 and 1, a number is either a prime number or a composite number.

Q58. Answer: (b) D

Option 2 is correct, i.e. Turkey.
• At 9:24 am on 24 November 2015, as it was returning to Khmeimim airbase, an AIM-9X Sidewinder missile from a patrolling Turkish Air Force F-16 fighter jet shot down a Russian Sukhoi Su-24 aircraft with tail number 83 near the Syrian – Turkish border.

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Q59. Answer: (b) D

Short Trick:

According to the question,

=> 6000 × 3 × x/100 + 8000 × 5 × x/100 = 5220

=> 180x + 400x = 5220

=> x = 5220/580 = 9

Therefore Rate of interest per annum = 9%

Detailed Solution:

Let, rate of interest = x%

In case of Shiva,

Principal = Rs 6000

Time = 3 years

Therefore Interest = 6000 × 3 × x/100 = Rs 180x

In case of Krishna,

Principal = Rs 8000

Time = 5 years

Therefore Interest = 8000 × 5 × x/100 = Rs 400x

According to the question :

=> 180x + 400x = 5220

=> x = 5220/580 = 9

Therefore Rate of interest per annum = 9%

Q60. Answer: (b) D

Option 2 is correct, i.e. Saina Nehwal.

• Saina Nehwal has an Olympic bronze medal (London 2012), two world championship medals (silver in 2015 and bronze in 2017), and three Commonwealth Games titles to her name.

Extra facts:

• Five women from India have won an Olympic medal and their names are as follows:- Karnam Malleswari, Mary Kom, Saina Nehwal,P.V. Sindhu & Sakshi Malik.

• Karnam Malleswari is the first Indian woman to win a medal at the Olympics at the 2000 Sydney Olympics.

• Jwala Gutta is a retired left-handed Indian badminton player who has won the National Badminton Championships thirteen times until 2010.

• Pusarla Venkata Sindhu in 2016 Rio de Janeiro Olympic Games lost the finals and became the first Indian woman to win an Olympic silver medal.

Q61. Answer: (c) C

Total marks in chemistry = (85 + 85 + 55 + 80) = 305

Total marks in Physics = (95 + 65 + 75 + 75) = 310

Therefore Required percentage = 305/310 × 100% = 98.4% ≈ 98%

Q62. Answer: (b) B

Total marks scored by S2 = 65 + 85 = 150

Total marks scored by S4 = 75 + 80 = 155

Therefore Required ratio = 150/155 = 30/31

Q63. Answer: (c) B

Marks obtained by S3 in Physics = 75

Marks obtained by S1 in Physics = 95

Therefore Required ratio = 75/95 = 15/19

Q64. Answer: (a) D

=> P + Q = 2(P – Q)

Putting Q = 10, we get,

=> P + 10 = 2(P – 10)

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=> P + 10 = 2P – 20

=> P = 30

Q65. Answer: (d) A

The logic is:

Tiger : Cubs → The young one of a tiger is called cub. (Animal – Young one)

Similarly,

A. Elephant : Calf → The young one of an elephant is called calf.

B. Dog : Cubs → The young one of a dog is called puppy.

C. Leopard : Kitten → The young one of a leopard is called cub.

D. Horse : reindeer → The young one of a horse is called foal.

Hence, 'Elephant : Calf' is the correct answer.

Q66. Answer: (a) B

Short Trick:

Area of the square = (Diagonal)²/2 = (13√2)²/2 = 169 sq. units

Detailed Solution:

Let, side of the square = x unit

Hence, diagonal = √2 × Side = x√2

According to the question,

=> x√2 = 13√2

=> x = 13

Therefore Area of the square = Side² = 13² = 169 sq. units

Q67. Answer: (a) C

Option 1 is correct, i.e. More than that outside.

• The pressure inside the cabin of the aircraft flying at an altitude more than that outside.

• Although aircraft cabins are pressurized, cabin air pressure at cruising altitude is lower than air pressure at sea level. At typical cruising altitudes in the range 11,000–12,200 m (36 000–40 000 feet).

• Air pressure in the cabin is equivalent to the outside air pressure at 1800–2400 m (6000–8000 feet) above sea level.

• As a consequence, less oxygen is taken up by the blood (hypoxia) and gases within the body expand. The effects of reduced cabin air pressure are usually well tolerated by healthy passengers.

Q68. Answer: (a) B

Short Trick:

CP of 21/2 dozens of apples = Rs 300

Therefore CP of 1 apple = Rs 300/30 = Rs 10

Therefore Profit percentage = (15 – 10)/10 × 100% = 50%

Detailed Solution:

21/2 dozens of apples = 30 apples

Let, cost price of each apple = Rs x

According to the question,

=> 30x = 300

=> x = 10

SP of each apple = Rs 15

Therefore Profit percentage = (15 – 10)/10 × 100% = 50%

Q69. Answer: (a) A

Option 1 is correct, i.e. A surface-to-air missile system.

• Indian Army inducted the first regiment of the indigenously developed Akash surface-to-air missile system.

• Akash Missile System is an indigenously developed supersonic short-range surface-to-air missile system with the capability to engage a wide variety of aerial threats like aircraft, helicopters and unmanned aerial vehicles up to a maximum range of 25 km and up to an altitude of 20 Km.

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Q70. Answer: (c) C

Since it is said that it In a certain town, ST Bazaar is the only option for people to buy groceries and it also says A healthy marketplace is characterized by competition and not a monopoly. and ST Bazaar is the only option, then it rules the monopoly in that place.e,

Hence, ST Bazaar has a monopoly in the town is the correct statement.

Q71. Answer: (d) A

6/5 = (6 × 12)/(5 × 12) = 72/60

4/3 = (4 × 20)/(3 × 20) = 80/60

3/2 = (3 × 30)/(2 × 30) = 90/60

5/4 = (5 × 15)/(4 × 15) = 75/60

Because 90 > 80 > 75 > 72

Therefore Least among all fractions = 72/60 = 6/5

Q72. Answer: (d) C

Given:

5: and

6: Gopu

7: a famous mathematician

8: is also

9: is a great writer

The best way to rearrange the statements, such that it forms a meaningful sentence is to follow the basic English grammar rules:

A sentence always starts with a Proper Noun/ Subject.

6: Gopu

Verb follows a proper noun.

9: is a great writer

Conjunction connects two sentence together.

5: and

8: is also

Ending statement.

7: a famous mathematician

Hence, the meaningful sentence is:

6: Gopu

9: is a great writer

5: and

8: is also

7: a famous mathematician

Hence, ‘69587’ is the correct answer.

Q73. Answer: (d) C

5 1 7 9 9 7 5 9 8 7 8 7 9 5 7 9

There are two 7s in the sequence, which are immediately followed by 9, and which are not immediately preceded by 5.

Hence, ‘2’ is the correct answer.

Important Points

Preceded → come before in order or position.

Followed → come after in order or position.

Q74. Answer: (d) C

Option 4 is correct, i.e. Yahoo India.

• ‘Cow’ has been declared as the personality of the year 2015 by Yahoo India.

• "In an unexpected twist, the humble 'Cow' emerged as 'Personality of the Year', trumping other high-profile contenders for the top spot. It started with the Maharashtra government announcing a ban on sale of beef in the state - a move, which led to massive debates online and offline, spiraling into the 'beef controversy'," Yahoo said in a statement.

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Q75. Answer: (b) B

Option 2 is correct, i.e. Mosquito bites.

• Zika virus is a member of the virus family Flaviviridae.

• It is spread by daytime-active Aedes mosquitoes, such as A. aegypti and A. albopictus.

• Its name comes from the Zika Forest of Uganda, where the virus was first isolated in 1947.

• On July 24, 2017 researchers from San Antonio Catholic University of Murcia announced the discovery of a molecule that could be used as a potential drug to fight the effects of a Zika virus infection.

• The novobiocin molecule (compound) was previously used in antibiotic drugs to fend off “nosocomial” infections (those acquired inside a hospital).

Q76. Answer: (a) A

Short Trick:

CP of the article = Rs 1300 × 100/130 = Rs 1000

Detailed Solution:

Let, cost price of the article = Rs 100x

According to the question,

=> 100x + 100x × 30/100 = 1300

=> 130x = 1300

=> x = 10

Therefore Cost Price of the article = Rs 100 × 10 = Rs 1000

Q77. Answer: (c) Neil Armstrong

• "That's one small step for man, one giant leap for mankind.' was said by Neil Armstrong.

• Neil Alden Armstrong was the first person to step on the lunar surface.

• He took the first step to the lunar surface on 20 July 1969.

• Buzz Aldrin became the second person to land on the moon.

• Neil Armstrong and Buzz Aldrin went to the lunar surface in an expedition called Apollo 11.

Q78. Answer: (a) D

P	E	R	K
5	6	3	8

B	L	A	C	K	E	N
4	9	1	7	8	6	2

Similarly,

7	3	1	7	8	9	6
C	R	A	C	K	L	E

Hence, ‘CRACKLE’ is the correct answer.

Q79. Answer: (d) C

Option 4 is correct, i.e. A constitutional amendment bill.

• The GST Bill introduced in parliament in 2015 is a constitutional amendment bill.

• The 101st Amendment made in 2016 brought the Goods And Services Tax (GST) in effect from 1st July 2017.

• The first idea of GST was introduced all the way back in 2000 by the Vajpayee administration.

• The GST brought all the various taxes under a single roof making tax administration easier.

• The 122 Amendment bill introduced the GST bill but passed as 101 amendment Act. After parliament passed the bill, it became Act.

Q80. Answer: (c) D

Option 4 is correct, i.e. Oxidizing agent.

• AERATION sprays water into the air to increase the level of oxygen, break down odors and balance the dissolved gases. It takes energy, though, is expensive, and picks up airborne pollutants.

• OZONE is a very effective bactericide that uses highly charged oxygen molecules to destroy microorganisms in contact with iron, manganese, and other dissolved minerals for post-filtration.

• ELECTRONIC PURIFICATION and DISSOLVED OXYGEN GENERATION creates super oxygenated water in a dissolved state that lowers the surface tension of the water and effectively treats all three types of contamination: physical, chemical, and biological.

Q81. Answer: (c) C

Option 3 is correct, i.e. 5^(th) June.

• World Environment Day falls on 5 June every year. It is celebrated since 1974 for raising worldwide awareness and action to protect the environment from growing concerns such as the depletion of the ozone layer, toxic chemicals, desertification and global warming.

• Every year the official celebration of World Environment Day is hosted by different countries, in 2019 it has been hosted by China with a theme of " Beat Air Pollution" or "Air Pollution".

Additional Information:

• 2nd December: World Computer Literacy Day. World Pollution Prevention Day. International Day for Abolition of Slavery.

• 16th September: World Ozone Day.

• 11th July: World Population Day.

Q82. Answer: (c) D

1. The seven students - S, Y, O, R, H, T and I are standing in disordered order in a row.

2. I stands second to the left of T and fifth to the left of Y.

Let us consider all of them are facing north.

3. R stands third to the right of S and O stands to the immediate left of R.

4. Y is standing at the right end.

On merging all the statements together, the arrangement we get is shown below:

'T' is standing in the middle of the queue and 'O' is standing to its immediate right.

Hence, 'O' is the correct answer.

Q83. Answer: (b) C

1. The seven students - S, Y, O, R, H, T and I are standing in disordered order in a row.

2. I stands second to the left of T and fifth to the left of Y.

Let us consider all of them are facing north.

3. R stands third to the right of S and O stands to the immediate left of R.

4. Y is standing at the right end.

On merging all the statements together, the arrangement we get is shown below:

A. H and R → 4 person

B. T and Y → 2 person

C. O and S → 1 person

D. I and H → no person

Hence, maximum one person stands between 'O and S'.

Q84. Answer: (b) A

1. The seven students - S, Y, O, R, H, T and I are standing in disordered order in a row.

2. I stands second to the left of T and fifth to the left of Y.

Let us consider all of them are facing north.

3. R stands third to the right of S and O stands to the immediate left of R.

4. Y is standing at the right end.

On merging all the statements together, the arrangement we get is shown below:

'H' is standing at the left end.

Hence, 'H' is the correct answer.

Q85. Answer: (d) B

Option 4 is correct, i.e. Bangladesh.

• India has 15106.7 km of land border in which it has the longest border with Bangladesh and the shortest border with Afghanistan.

Country	Lenght of the Border (in km)
Bangladesh	4,096.7
China	3,488
Pakistan	3,323
Nepal	1,751
Myanmar	1,643
Bhutan	699
Afghanistan	106
Total	15,106.7

Q86. Answer: (b) A

Option 2 is correct, i.e. Martina Hingis and Sania Mirza.

• Women's doubles world Champions for 2015 announced by the International Tennis Federation are Martina Hingis and Sania Mirza.

• The ITF is the governing body of world tennis, wheelchair tennis, and beach tennis.

• It was established by twelve national associations in 1913 as the International Lawn Tennis Federation, and as of 2016, it is affiliated with 211 national tennis associations and six regional associations.

• The headquarters of the International Tennis Federation in London, United Kingdom.

Q87. Answer: (b) D

Short Trick:

CP of each pen = 480/24 = Rs 20

SP of each pen = 100/4 = Rs 25

Therefore Profit percentage = (25 – 20)/20 × 100% = 25%

Detailed Solution:

Cost price of 2 dozens of pen = Rs 480

Therefore Cost price of each pen = Rs 480/(2 × 12) = Rs 20

Selling price of 4 pens = Rs 100

Therefore Selling price of each pen = Rs 100/4 = Rs 25

Therefore Profit percentage = (25 – 20)/20 × 100% = 25%

Q88. Answer: (d) B

Largest value = 19

Smallest value = 9

Therefore Range of the data = (19 – 9) = 10

Important Points

The range of a set of data is the difference between the highest and lowest values in the set.

Q89. Answer: (d) B

Given series: 3, 4, 6, 8, 12, ?, 18

The logic is: Prime numbers + 1

Prime number series starts with 2.

2 + 1 = 3

3 + 1 = 4

5 + 1 = 6

7 + 1 = 8

11 + 1 = 12

13 + 1 = 14

17 + 1 = 18

Hence, '14' is the missing number in the series.

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Q90. Answer: (a) B

Option 1 is correct, i.e. 31^(st) May.

• World No-Tobacco Day falls on 31^(st) May.

Additional Information

• The focus of World No Tobacco Day 2019 is on "tobacco and lung health."

• The campaign was to increase awareness of the negative impact that tobacco has on people's lung health, from cancer to chronic respiratory disease, the fundamental role lungs play for the health and well-being of all people.

• The campaign also serves as advocating for effective policies to reduce tobacco consumption.

Q91. Answer: (c) C

$\Rightarrow (s + 2)^3$

$\Rightarrow s^3 + 2^3 + 3 \times s \times 2 \times (s + 2)$

$\Rightarrow s^3 + 8 + 6s^2 + 12s$

$\Rightarrow s^3 + 6s^2 + 12s + 8$

Q92. Answer: (b) D

Use of living organisms in industrial processes.

• Biotechnology means use of living organisms in industrial processes.

• The exploitation for industrial and other purposes of biological processes, in particular the genetic modification of microorganisms for the production of antibiotics, hormones, etc.

Q93. Answer: (b) B

Karan's number in the queue is twelfth form the counter.

Rank of Karan = 12

There are five people between Karan and Sunil.

Sunil may be ahead of Karan or behind of Karan.

If, Sunil is ahead of Karan, and there are five people between them, then rank of Sunil = (12 - 5) – 1 = 6

If, Sunil is behind Karan, and there are five people between them, then rank of Sunil = (12 + 5) + 1 = 18

But, in the option only '18' is given which means Sunil is behind of Karan and his rank is 18.

Hence, Sunil's number in 18 the queue.

Q94. Answer: (d) A

I. Probability that a black ball is selected = 3/15 = 1/5

Therefore Conclusion I follows

II. Probability that a red ball is selected = 4/15

Therefore Conclusion II does not follow

Therefore Only conclusion I follows.

Q95. Answer: (a) D

Vikram and Vivek can finish a work in = 50 days

1 day work by them = 1/50

Therefore Work done by them in 20 days = 20 × (1/50) = 2/5

Q96. Answer: (d) D

According to the question,

$\Rightarrow x + 75° + 40° = 180°$

$\Rightarrow x = 65°$

According to the question,

$\Rightarrow x + a = 180°$

$\Rightarrow a = 180° – 65° = 115°$

Q97. Answer: (a) C

Option 1 is correct, Checking errors in a software program.

Additional Information

• Debugging is the process of detecting and removing errors called bugs from program code.

• A computer programmer figures out the process of designing, writing, testing, debugging/troubleshooting and maintaining the source code of computer programs.

• This source code is written in a programming language so the computer can understand it. Thus Logical mind is the primary requisite of a good computer programmer.

Q98. Answer: (c) B

Option 3 is correct, i.e. Mysore.

• The 103rd Indian Science Congress was inaugurated in the morning of January 3, 2016 at university of Mysore by Shri. Narendra Modi, Hon'ble Prime Minister of India.

Extra facts:

• The 5th Women's science congress was organized with the theme "Science & Technology for Indigenous development of Women in India".

• Honorable Union HRD Minister Smt.Smriti Irani inaugurated the Women's Science Congress on 4th January 2016 and enumerated the contributions made by the leading past and present women scientists.

Q99. Answer: (b) D

Shortcut Trick

The ratio of heights of the pole and the tree is 18 : 6 = 3 : 1.

In similar triangles, the ratio of their total distance from the shadow tip to the shadow length must be the same: (10 + s) : s = 3 : 1.

Using the unitary method, if 3 parts = 10 + s and 1 part = s, then the difference (2 parts) = 10 feet.

Since 2 parts = 10 feet, then 1 part (shadow length s) = 10 ÷ 2 = 5 feet.

Therefore The correct answer is 5 feet.

Alternate Method

Given: Height of electric pole (H) = 18 feet, Height of tree (h) = 6 feet, Distance between pole and tree (d) = 10 feet.

The light ray from the top of the pole passes the top of the tree to form the shadow, creating two similar triangles.

=> (Height of Pole) ÷ (Total Distance from Pole to Shadow Tip) = (Height of Tree) ÷ (Shadow Length)

=> 18 ÷ (10 + s) = 6 ÷ s

=> 18 × s = 6 × (10 + s)

=> 3s = 10 + s

=> 3s − s = 10

=> 2s = 10

=> s = 5 feet

Therefore The correct answer is 5 feet.

Additional Information

Properties of Similar Triangles

Two triangles are similar if their corresponding angles are equal; their corresponding sides are always in the same ratio.

Shadow Length Formula

For objects sharing the same elevation angle of a light source: (Object Height1 / Shadow Length1) = (Object Height2 / Shadow Length2).

Thales Theorem

Also known as the Basic Proportionality Theorem, it states that a line drawn parallel to one side of a triangle divides the other two sides in the same ratio.

Q100. Answer: (d) D

Option 4 is correct, i.e. 10 Asean leaders.

• India celebrates its 69th Republic Day with a grand parade watched by thousands of people along with 10 Asean leaders, who attended the event as chief guests.

• Leaders of countries representing the Association of Southeast Asian Nations (ASEAN) took the stage along with their host, Prime Minister Narendra Modi, as President Ram Nath Kovind took the salute in New Delhi.

• The invite to leaders from Indonesia, Vietnam, Cambodia, Laos, Singapore, Myanmar, Thailand, Brunei, the Philippines, and Malaysia comes at a time when India is celebrating 25 years of partnership with the economically vibrant ASEAN.

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