RRB NTPC Tier I Official Paper (Held On: 16 Apr 2016 Shift 1) (Previous Year Paper)

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

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

Q1. Which state in India is the highest producer of raw silk?

A. Kerala

B. Andhra Pradesh

C. Karnataka

D. Maharashtra

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

Q2. Mohan invested Rs. 100,000 in a garment business. After few months, Sohan joined him with Rs. 40000. At the end of the year, the total profit was divided between them in ratio 3 : 1. After how many months did Sohan join the business?

(a) 3
(b) 2
(c) 4
(d) 5

Q3. If two complimentary angles are in the ratio of 4 : 5, find the greater angle.

(a) 40°
(b) 50°
(c) 60°
(d) 30°

Q4. If HEAR is written as KJHA, then MILK can written as

(a) PTNS
(b) PNTS
(c) PNST
(d) PTSN

Q5. The mean of 12 observations is 15. One more observation is included and the new mean becomes 16. The 13^(th) observation is

(a) 20
(b) 24
(c) 26
(d) 28

Q6. Two bones can be connected to each other by another type of connective tissue called the _____.

(a) Tendons
(b) Cartilage
(c) Matrix
(d) Ligament

Q7. Find the least number which when divided by 12, 15, 18 and 27 leaves remainders 10, 13, 16 and 25 respectively.

(a) 540
(b) 538
(c) 542
(d) 552

Q8. Find the value of 6732.8 + 673.28 + 67.328 + 6.7328 + 0.67328.

(a) 74808.1408
(b) 7480.78408
(c) 74808.2408
(d) 7480.81408

Q9. Which Indian state was declared as first 'complete Digital State'?

A. Tamil Nadu
B. Kerala
C. Maharashtra
D. Karnataka

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

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

Assertion (A): Earth's temperature will increase.

Reason (R) :An increase in the level of Carbon dioxide will lead to an increase in temperature of Polar regions.

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

Q11. Saina Nehwal is associated with which sport?

A. Tennis
B. Cricket
C. Badminton
D. Gymnastics

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

Directions

The table below depicts the no. of pages printed by 6 Printers in 5 different months.

Study the table carefully and answer the following questions

Number of Pages Printed by 6 Printers in 5 Different Months

Month	Printer P	Printer Q	Printer R	Printer S	Printer T	Printer U
1^(st)	664	618	628	552	638	419
2^(nd)	569	441	519	438	621	537
3^(rd)	440	614	503	527	541	742
4^(th)	256	563	347	651	412	321

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5^(th)	717	429	598	582	519	693

Q12. What is the average number of pages printed by all the given printers in 4^(th) month?

(a) 415
(b) 430
(c) 425
(d) 325

Q13. Which printer printed maximum number of pages in all the given months together?

(a) Printer S
(b) Printer U
(c) Printer P
(d) Printer T

Q14. What is the ratio between the number of pages printed by printer Q in second month and the number of pages printed by printer U in the fifth month?

(a) 11 : 13
(b) 7 : 11
(c) 9 : 11
(d) 9 : 13

Q15. RHYTHM is related to MUSIC in the same way as DESIGN is related to

(a) ARCHITECT
(b) BUILDING
(c) BEAUTY
(d) SYMMETRY

Q16. In which country did the Hotaki dynasty flourish?

A. Sri Lanka
B. China
C. Nepal
D. Afghanistan

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

Q17. Which of the following is a nitrogen-fixing bacteria?

A. Salmonella
B. Rhizobium
C. E.coli
D. Pseudomonas

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

Q18. The angle of elevation of a ladder leaning against a house is 60° and the foot of the ladder is 6.5 metres from the house. The length of the ladder is

(a) 15 metres
(b) 13 metres
(c) 11.25 m
(d) 10.5 m

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Q19. Based on the analogy given, find the missing pair from the given options.

3/5:34 _:_

A. 3/7 :54

B. 4/7 :65

C. 3/11:140

D. 4/9 :87

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

Q20. In accordance with the Indian Constitution, Protection of Life and Personal Liberty is granted under which Article?

A. Article 20

B. Article 21

C. Article 22

D. Article 23

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

Q21. Mayank, Deepak and Pawan, each of them working alone can complete a work in 5, 10 and 15 days respectively. If all three of them work together to complete a work and earn a total of Rs. 11,000, What will be Deepak's share of the earnings?

(a) Rs. 2000
(b) Rs. 6000
(c) Rs. 4000
(d) Rs. 3000

Q22. Below are given statements followed by two conclusions I and II. You have to take the given statements to be true even if they seem to be at variance from commonly known facts.

Statements:

All birds are trees.

All trees are papers.

Some papers are books.

Conclusions:

I. All birds are papers.

II. Some birds are books.

Decide which of the below options logically follows the given conclusions.

A. Both conclusion I or II follows

B. Neither conclusion I nor II follows

C. Only conclusion I follows

D. Only conclusion II follows

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

Q23. If $x^2 - 4x + 4b = 0$ has two real solutions, find the value of 'b'.

(a) $b = 0$
(b) $b \leq 1$
(c) $b = +1, -1$

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(d) b ≥ 1

Q24. Where in the world can we find the Nobel museum?

A. Sri Lanka
B. Stockholm
C. Denmark
D. London

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

Q25. The mean of a distribution is 20 and the standard deviation is 4. What is the value of the coefficient variation?

(a) 10%
(b) 20%
(c) 40%
(d) 60%

Directions

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

There are six persons in a family. Chithra is the sister of Rakesh, Badhri is the brother of Enjya's husband. Dilip is the father of Arun and grandfather of Rakesh. There are two fathers, three brothers and a mother in the group.

Q26. How many male members are there in the family?

A. Three
B. One
C. Four
D. Two

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

Q27. Which of the following is a group of brothers?

A. Arun, Badhri, Dililp
B. Arun, Badhri, Rakesh
C. Badhri, Rakesh, Chithra
D. Badri, Dilip, Rakesh

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

Q28. How is Rakesh related to Eniya?

A. Son
B. Brother
C. Uncle
D. Cousin

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

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Q29. Choose the one which is different or odd from the following options:

A. Lion
B. Tiger
C. Horse
D. Giraffe

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

Q30. Which of the following planets does not have natural satellite?

(a) Mars
(b) Earth
(c) Jupiter
(d) Venus

Q31. How many bones does a human body at birth have?

A. 206
B. 234
C. 300
D. 354

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

Q32. Select the term that will come next in the following series.

11, 13, 17, 23, 31, 41, 53, 67, 83, ?

(a) 110
(b) 101
(c) 97
(d) 100

Q33. If the angles of a triangle are in the ratio of 2 : 5 : 8, then find the value of the smallest angle.

(a) 36°
(b) 18°
(c) 12°
(d) 24°

Q34. When Bablu decreases the selling price of the shoes from Rs. 360 to Rs. 345, his loss increases by 4%. The cost price of the shoes is:

(a) Rs. 275
(b) Rs. 375
(c) Rs. 425
(d) Rs. 450

Q35. Who received the Dinanath Mangeshkar award for 2015?

A. Sanjay Leela Bhansali
B. Ranveer Kapoor
C. Anil Kapoor
D. Amir Khan

(a) A
(b) B

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(c) D
(d) C

Directions

The following questions are based on the information given below:

In a school of 4000 students, 3000 know English, 2000 know French and 500 know Hindi, 1500 know French and English, 300 know French and Hindi, 200 know English and Hindi and 50 know all the three languages.

Q36. How many do not know any of the three languages?

A. 550
B. 500
C. 400
D. 450

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

Q37. How many know only two languages?

A. 450
B. 500
C. 1850
D. 1580

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

Q38. How many know at least one language?

A. 3550
B. 3000
C. 1850
D. 3500

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

Q39. What is the average of first 30 multiples of 9?

(a) 142
(b) 138.5
(c) 139.5
(d) 143.5

Q40. Centigrade, is a unit of measurement of temperature named after whom?

A. Kelvin
B. Jean-Pierre Christin
C. Marten Stromer
D. Anders Celsius

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

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(d) B

Q41. If 'when' means '×', 'she' means '÷', 'will' means '+' 'and' 'come' means '-', then what will the value of "8 when 12 will 16 she 2 come 10"?

A. 94
B. 96
C. 100
D. 10

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

Q42. Which among the following planets is orange in color with white bands on it?

A. Mars
B. Saturn
C. Jupiter
D. Venus

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

Q43. Which bacterium is used to turn the milk to curd?

A. Streptomyces
B. Vibrio
C. Lactobacillus
D. Spirilla

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

Q44. Who is the Railway Minister who presented the 2016 Rail Budget?

A. Suresh Prabhu
B. Arun Jaitley
C. Manoj Sinha
D. Jayant Sinha

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

Q45. What does SPM in the environment mean?

A. Suspended Pollution Mark
B. Suspended Particulate Matter
C. Suspended Particle Mode
D. Suspended Particle Management.

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

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Q46. Rearrange the jumbled up letters to form a meaningful word and find the odd one out.

A. ELMSL
B. ERHA
C. IKNTH
D. SATTE

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

Q47. What is the difference between the compound interests on a sum Rs. 10,000 for 1 year at 10% per annum, when compounded yearly and half-yearly?

(a) Rs. 10
(b) Rs. 25
(c) Rs. 5
(d) Rs. 50

Q48. Where did Muhammad Bin Tughlaq shift his capital to from Delhi?

A. Daulatabad
B. Aurangabad
C. Allahabad
D. Shaharanpur

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

Q49. If FHNPKMEG means GOLF, then what does RTSUHJBDJL stand for?

A. HORSE
B. STICK
C. PURSE
D. HOLES

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

Q50. If the standard deviation of a population is 4.5, what would be the population variance?

(a) 20.25
(b) 20
(c) 9
(d) 18

Q51. The tallest bridge in the world Millau Viaduct has been constructed over the river

A. Seine
B. Tarn
C. Durance
D. Loire

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

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Q52. A magnetic compass needle always points in?

(a) North Direction
(b) South Direction
(c) East Direction
(d) West Direction

Q53. Who is the current supreme commander of Indian Defense forces?

A. Narendra Modi
B. Sumitra Mahajan
C.Ram Nath Kovind
D. Lt. Gen Dalbir Singh

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

Q54. If B = 2, K = 11 ; MAN = 0, SIN = 14, then what is the value of HOT?

A. 3
B. 0
C. 1
D. 22

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

Q55. Find the value of $((0.064 - 0.008)(0.16 - 0.04))/((0.16 + 0.08 + 0.04)(0.4 + 0.2)^3)$

(a) 1/3
(b) 2/3
(c) 1/9
(d) 3/2

Q56. Who made the first chocolate bar?

A. Nestle
B. The Harshey Company
C. Joseph Fry & Sons.
D. Pearson's

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

Q57. Find the LCM of 0.63, 10.5, 2.1, 4.20.

(a) 63
(b) 0.63
(c) 6.30
(d) 6300

Q58. The camel's hump is a store of-

(a) Water
(b) Fat
(c) Starch
(d) Protein

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Q59. Based on the analogy given, find the missing word from the given options.

Foot : Toes ? Hand : ?

A. Thumb

B. Palm

C. Fingers

D. Nails

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

Q60. Who designed the pendulum clock?

A. Galileo Galilei

B. Thomas Alva Edison

C. Frederick Jones

D. Davidson

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

Q61. The simple interest at y% for 'y' years will be Rs. y on a sum. Find the principal amount.

(a) 100/y
(b) 100 × y
(c) 100 × y^2
(d) 100/y^2

Q62. Based on the analogy given, find the missing pair from the given options.

Everest : Peak ? _____ : ____

A. Yamuna : River

B. Chilka : Lake

C. Sparrow : Bird

D. Jupiter : Planet

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

Q63. Which two signs should be interchanged to make the below equation mathematically correct?

75 ÷ 5 × 15 - 3 + 10 = 60

(a) -, +
(b) -, ×
(c) -, ÷
(d) ×, ÷

Q64. Find the remainder when 4^{13} divided by 3?

(a) 1
(b) 2
(c) 0
(d) 3

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Q65. If TABLE is written as 84973 and CHAIR is written as 51462, then how is TEACHER coded?

A. 8431532

B. 8341532

C. 8435132

D. 8345132

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

Q66. Ramu can row 9 km/hr in still water. It takes him twice the time to row up as to row down. Find the rate of flow of the stream.

(a) 16 km/hr
(b) 8 km/hr
(c) 3 km/hr
(d) 9 km/hr

Q67. Neeraj's earning was decreased by 60% and after that subsequently increased by 60%. Find the final loss % on his earning?

(a) 12%
(b) 36%
(c) 4%
(d) 5%

Q68. A bus is running at a speed of 90 kmph. What distance will it cover in 20 seconds?

(a) 500 m
(b) 450 m
(c) 180 m
(d) 600 m

Q69. In what ratio should Assam Tea costing Rs. 300 per kg be mixed with Darjeeling Tea costing Rs. 400 per kg, so that by selling the mixture at Rs. 408 per kg there is gain of 20%.

(a) 1 : 2
(b) 3 : 2
(c) 2 : 5
(d) 1 : 6

Q70. Consider the following statements & choose the correct option:

When two straight lines intersect then,

1. Adjacent angles are supplementary

2. Opposite angles are supplementary

(a) Both 1 & 2 are incorrect.
(b) Both 1 & 2 are correct
(c) 1 is incorrect and 2 is correct
(d) 1 is correct and 2 is incorrect

Q71. Which is the official language for Android development?

A. Java

B. COBOL

C. FORTRON

D. Ada

(a) C
(b) B

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(c) A
(d) D

Q72. The largest state (in terms of area) in India is:

(a) Madhya Pradesh
(b) Andhra Pradesh
(c) Maharashtra
(d) Rajasthan

Q73. Rearrange the jumbled up letters to form a meaningful word and find the odd one out.

A. CEKRTCI
B. OHKCYE
C. ESCSH
D. OTOLABLF

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

Q74. In humans, exhaled air contains oxygen about _____.

(a) 40%
(b) 44%
(c) 16%
(d) 64%

Q75. Who invented the mouse of a computer?

A. John Backus
B. Charlas Babbage
C. Douglas Engelbart
D. Simon Colton

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

Q76. Which among the following is the brain of the computer?

A. Software
B. Hardware
C. CPU
D. Monitor

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

Q77. Who is the current Chief Election Commissioner of India?(as asked NTPC 2016)

A. Syed Nasim Ahmed Zaidi
B. Navin Chawla
C. N. Gopalaswami
D. A.K. Jyoti

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

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(d) A

Q78. If '←' stands for '+', '→' stands for '-', '↑' stands for '÷', '↓', stands for 'x', '^' stands for '=', then which of the following alternatives is correct?

A. 3 ↓ 6 ↑ 2 ← 3 → 6 ^ 5

B. 2 ↓ 5 → 6 ← 2 ^ 6

C. 7 → 43 ↑ 6 ↓ 1 ^ 4

D. 5 ← 7 → 3 ↑ 2 ^ 4

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

Q79. Which among the following is a market where there is a single buyer for a Product/Service?

(a) Monopoly
(b) Duopoly
(c) Monopsony
(d) Oligopoly

Q80. B is thrice as efficient as A and C is 0.75 times as efficient as A. What is the ratio of number of days taken by A, B and C when they work individually?

(a) 4 : 1 : 3
(b) 3 : 1 : 4
(c) 2 : 3 : 1
(d) 5 : 1 : 2

Q81. How many bio-geographical zones are there in India?

A. 2

B. 4

C. 6

D. 10

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

Q82. Which of the following state have highest number of Lignite coal reserve?

(a) Odisha
(b) Assam
(c) Tamilnadu
(d) Jharkhand

Q83. Where did Rani Lakshmi Bai die fighting the British?

A. Varanasi

B. Gwalior

C. Morar

D. Jhansi

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

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Q84. Which is the most powerful piece in a game of chess?

A. King
B. Queen
C. Rook
D. Knight

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

Q85. An Assertion (A) and a Reason (R) are given below.
Assertion (A): The Indian Constitution came into force with effect from 26^(th) January 1950.
Reason (R). 26^(th) January is celebrated as the Republic day.
Choose the correct option.

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

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

Q86. If 20 -10 means 200, 8 ÷ 4 means 12, 6 × 2 means 4, 10 + 2 means 5, then 100 – 10 × 1000 ÷ 1000 + 100 × 10 = ?

A. 20
B. 10
C. 0
D. 1

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

Q87. Kwality Ltd, a processor of dairy products in India has plants in which of these states of India?

(a) Gujarat
(b) Haryana
(c) Maharashtra
(d) None of these

Q88. Who was the Chinese pilgrim who visited India during the Gupta period?

A. Hiuen Tsang
B. Fa Hien
C. I ching
D. Li Xiu

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

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Q89. Atul can do piece of work in 18 days, Aaravya is 50% more efficient than Atul. How much more time does Atul take than Aaravya to do the same piece of work?

(a) 12
(b) 6
(c) 18
(d) 10

Q90. Roots of the following equation are $6x^2 + 4x - 2 = 0$

(a) 1, -1 / 3
(b) 1 / 3, -1 / 3
(c) 1, 1 / 3
(d) -1, 1 / 3

Q91. 'Deuce' is a term associated with _____

(a) baseball
(b) cricket
(c) hockey
(d) lawn tennis

Q92. The shadow of a tower on ground level is increased by 30 m, when the angle of depression by the sun changes from 60° to 30°. The height of the tower is?

(a) 12√3 m
(b) 17√3 m
(c) 16√3 m
(d) 15√3 m

Q93. Which of the options given below is called laughing gas?

A. N2O
B. CO2
C. H2O
D. SO2

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

Q94. Deepak sells all his goods available in his shop at the cost price, but he cheats his customer and gives 20% less goods as he should give. Find his % profit.

(a) 30%
(b) 33%
(c) 25%
(d) 20%

Q95. Who is the current CEO of Flipkart?

A. Ananth Narayanan
B. Kalyan Krishnamurthy
C. Binny Bansal
D. Sachin Bansal

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

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Q96. What is the shape of the orbit of the planets?

A. Round

B. Straight line

C. Elliptical

D. Stretched out circles

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

Q97. What is the minimum value of 'Y' for which 267Y2 is divisible by 3?

(a) 2
(b) 1
(c) 0
(d) 5

Q98. Ram Naresh got two successive discounts, a bag with a list price of Rs. 400 is available at Rs. 160. If the second discount is 20%. Find the first discount?

(a) 40%
(b) 30%
(c) 50%
(d) 80%

Q99. Goecha La is a pass in which of the following Indian State?

A. Sikkim

B. Assam

C. Meghalaya

D. Uttarakhand

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

Q100. An Assertion (A) and a Reason (R) are given below.

Assertion (A): Clothes are not washed properly in hard water.

Reason (R): Hard water contains many minerals.

Choose the correct option.

A. A is true but R is false.

B. A is false but R is true.

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

D. Both A and R are true but R is not the correct explanation of A.

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

ANSWER KEY

1	b	2	b	3	b	4	c	5	d	6	d	7	b	8	d	9	d	10	a
11	b	12	c	13	a	14	b	15	b	16	d	17	c	18	b	19	d	20	c
21	d	22	b	23	b	24	c	25	b	26	a	27	b	28	b	29	d	30	d

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31	b	32	b	33	d	34	b	35	d	36	d	37	a	38	a	39	c	40	b
41	d	42	a	43	a	44	b	45	b	46	c	47	b	48	c	49	d	50	a
51	b	52	a	53	c	54	d	55	c	56	c	57	a	58	b	59	a	60	a
61	a	62	c	63	c	64	a	65	a	66	c	67	b	68	a	69	b	70	d
71	c	72	d	73	a	74	c	75	c	76	b	77	d	78	d	79	c	80	b
81	c	82	c	83	a	84	c	85	d	86	d	87	b	88	b	89	b	90	d
91	d	92	d	93	a	94	c	95	c	96	c	97	b	98	c	99	a	100	c

SOLUTIONS

Q1. Answer: (b) C

The Correct Answer is Option 2 i.e C.

• India is the second-largest producer of silk in the world.

• India is also the largest consumer of silk in the world.

• In India, mulberry silk is produced mainly in the states of Karnataka, Tamil Nadu, Andhra Pradesh, West Bengal, and Jammu & Kashmir, while the non-mulberry silks are produced in Jharkhand, Orissa, Chattisgarh, and north-eastern states.

• Kerala:

• Thiruvananthapuram is the capital of Kerala.

• Sree Padmanabha Swamy Temple is located in Thiruvananthapuram

• Shri. Pinarayi Vijayan is the CM of Kerala.

• Arif Mohammad Khan is the governor of Kerala.

• Karnataka:

• Bangalore is the capital of Karnataka.

• Bangalore is commonly referred to as the “Silicon Valley of India”.

• Karnataka is the highest producer of raw silk in India.

• Chief Minister - Basavaraj Bommai.

• Governor - Thawar Chand Gehlot

• Maharashtra:

• Mumbai is the capital city of Maharashtra.

• The Gateway of India is the most famous monument and Iconic landmark located in Mumbai.

• Eknath Shinde is the current CM of Maharashtra.

• Bhagat Singh Koshyari is the governor of Maharashtra.

• Andhra Pradesh:

• Andhra Pradesh is also known as “Rice Bowl of India”

• It is the second-largest producer of raw silk in the country.

• Jaganmohan Reddy is the current CM of Andhra Pradesh.

• Biswabhusan Harichandan is the current governor of Andhra Pradesh.

Q2. Answer: (b) 2

Given that profit was divided between them in the ratio 3 : 1

Let us consider Sohan joined the business after x months

=> (1,00,000 × 12)/ (40,000 × (12 - x)) = 3/1

=> 12,00,000 = 3 (4,80,000 - 40,000x)

=> 12,00,000 = 1440000 - 1,20,000x

=> 1,20,000x = 14,40,000 - 12,00,000

=> 1,20,000x = 2,40,000

=> x = 2,40,000/1,20,000 = 2

Therefore After 2 months Sohan join the business

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Q3. Answer: (b) 50°

Let the two complimentary angles be x and y

=> x/y = 4/5

=> x = 4y/5

We know that sum of two complimentary angles is 90°

=> x + y = 90°

Substitute x = 4y/5 in x + y = 90°

=> 4y/5 + y = 90

=> 4y + 5y = 450

=> 9y = 450

=> y = 50°

Substitute y = 50° in x + y = 90°

=> x + 50 = 90

=> x = 90 - 50 = 40°

Therefore The greater angle is y = 50°

Q4. Answer: (c) PNST

The logic is:

Similarly,

Hence, 'PNST' is the correct answer.

Q5. Answer: (d) 28

Given that mean of 12 observations is 15

Therefore Sum of 12 observations = 12 × 15 = 180

Also given that when one observation is included the new mean is 16

=> Mean of 13 observations = 16

Therefore Sum of 13 observations = 13 × 16 = 208

=> Sum of one observation added = sum of 13 observations - sum of 12 observations

= 208 - 180

= 28

One observation that is, 13^(th) observation which is added = 28

Q6. Answer: (d) Ligament

• Ligament is the connective tissue which connects bone to bone.

• Tendon connects muscle to bone and fasciae connects muscle to muscle.

• Cartilage Smoothen bone surface at joints.

Q7. Answer: (b) 538

As per the given data,

LCM of 12, 15, 18 and 27 = 2 × 2 × 3 × 3 × 3 × 5 × 1 = 540

We need the remainders 10, 13, 16 and 25

=> 12 - 10 = 2, 15 - 13 = 2, 18 - 16 = 2, 27 - 25 = 2

Therefore Difference is 2 in each case

=> We need to subtract 2 to from the LCM of 12, 15, 18, 27 = 540 - 2 = 538

Therefore Least number = 538

Q8. Answer: (d) 7480.81408

From the given data,

=> 6732.8 + 673.28 + 67.328 + 6.7328 + 0.67328 = 7480.81408

Q9. Answer: (d) B

The Correct Answer is Option 4 i.e B.

Key Points

• Kerala:

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• Kerala has become India's first 'complete digital state'.
• Thiruvananthapuram is the capital of Kerala.
• Sree Padmanabha Swamy Temple is located in Thiruvananthapuram
• Shri. Pinarayi Vijayan is the CM of Kerala.
• Arif Mohammad Khan is the governor of Kerala.
• Tamil Nadu:
• Chennai is the capital and largest city of Tamil Nadu.
• Tamil Nadu is bounded on the north by Andhra Pradesh and Karnataka, on the west by Kerala, on the east by the Bay of Bengal, and on the south by the Indian Ocean.
• M K Stalin is the current CM of Tamil Nadu.
• Shri Banwarilal Purohit is the current governor of Tamil Nadu.
• Karnataka:
• Bangalore is the capital of Karnataka.
• It is commonly referred to as the “Silicon Valley of India”.
• B. S. Yediyurappa is the current CM of Karnataka.
• Vajubhai Vala is the current governor of Karnataka.
• Maharashtra:
• Mumbai is the capital city of Maharashtra.
• The Gateway of India is the most famous monument and Iconic landmark located in Mumbai.
• Uddhav Thackeray is the current CM of Maharashtra.
• Bhagat Singh Koshyari is the Governor of Maharashtra.

Q10. Answer: (a) Both A and R are true and R is the correct explanation of A

Assertion (A): Earth’s temperature will increase.

Reason (R) :An increase in the level of Carbon dioxide will lead to an increase in temperature of Polar regions.

The Arctic coastal seas absorb the greenhouse gas carbon dioxide to an ever-decreasing extent. This leads to an increase in the level in the atmosphere and an increase in the rate of warming in the Arctic. The Arctic coastal seas absorb the greenhouse gas carbon dioxide to an ever-decreasing extent.

Hence, A and R both are true, and R is the correct explanation of A.

Q11. Answer: (b) C

The Correct Answer is Option 2 i.e C.

Famous Indian Badminton Players	**• Prakash Padukone - Saina Nehwal - P. Kashyap - P. V. Sindhu - Dipankar Bhattacharya - Pulella Gopichand**
Famous Indian Gymnastics Players	• Dipa Karmakar - Ashish Kumar - Darshan Mondal
Famous Indian Cricket Players	• Ravishankar Shastri - M.S.Dhoni - Virat Kohli - Yuvraj Singh - Ravindra Jadeja - Saurav Ganguly - Sachin Tendulkar
Famous Indian Tennis Players	• Leander Paes - Sania Mirza - Mahesh Shrinivas Bhupathi - Yuki Bhambri - Rohan Bopanna

Q12. Answer: (c) 425

Total number of pages printed by printer P, Q, R, S, T and U in the fourth month = 256 + 563 + 347 + 651 + 412 + 321 = 2550

There are a total of 6 printers

Therefore Average number of pages printed by all the given printers in the fourth month = 2550/6 = 425

Q13. Answer: (a) Printer S

From the given data,

Number of pages printed by printer P in all the months = 664 + 569 + 440 + 256 + 717 = 2646

Number of pages printed by printer Q in all the months = 618 + 441 + 614 + 563 + 429 = 2665

Number of pages printed by printer R in all the months = 628 + 519 + 503 + 347 + 598 = 2595

Number of pages printed by printer S in all the months = 552 + 438 + 527 + 651 + 582 = 2750

Number of pages printed by printer T in all the months = 638 + 621 + 541 + 412 + 519 = 2731

Number of pages printed by printer U in all the months = 419 + 537 + 742 + 321 + 693 = 2712

Therefore Maximum number of pages is printed by the printer S = 2750

Q14. Answer: (b) 7 : 11

Number of pages printed by printer Q in the second month = 441

Number of pages printed by printer U in the fifth month = 693

Therefore Ratio of number of pages printed by printer Q in the second month to the number of pages printed by printer U in the fifth month = 441 : 693 = 7 : 11

Q15. Answer: (b) BUILDING

The relation is:

RHYTHM is related to MUSIC:

Music - vocal or instrumental sounds (or both) combined in such a way as to produce beauty of form, harmony, and expression of emotion.

Rhythm - a strong, regular repeated pattern of movement or sound.

So, Rhythm is music's pattern in time.

Similarly,

DESIGN is related to:

Design - a plan or drawing produced to show the look and function or workings of a building, garment, or other object before it is made.

1) ARCHITECT - a person who designs buildings and in many cases also supervises their construction.

2) BUILDING - a structure with a roof and walls, such as a house or factory.

3) BEAUTY - a combination of qualities, such as shape, colour, or form, that pleases the aesthetic senses, especially the sight.

4) SYMMETRY - the quality of being made up of exactly similar parts facing each other or around an axis.

So, DESIGN is related to BUILDING in the same way as RHYTHM is related to MUSIC.

Hence, ‘BUILDING’ is the correct answer.

Q16. Answer: (d) D

The Correct Answer is Option 4 i.e D.

Key Points

• Hotaki dynasty (1709-1738):

• It was established by Mir Wais Hotak in the year 1709.

• The dynasty ruled over parts of modern Afghanistan with the capital Kandahar.

• Mir Wais was succeeded by Abdul Aziz.

Additional Information

• Sri Lanka:

• Ranil Wickremesinghe is the current President of Sri Lanka.

• Dinesh Gunawardena is the current Prime Minister of Sri Lanka

• Sri Jayewardenepura is the capital of Sri Lanka.

• China:

• China is the world's most populous country.

• Xi Jinping is the current president of China.

• Beijing is the capital of China.

• Renminbi is the currency of China.

• Nepal:

• Kathmandu is the capital city of Nepal.

• It is a landlocked country in South Asia with China in the north and India in the south, east, and west.

• Pushpa Kamal Dahal is the current PM of Nepal.

• Ram Chandra Poudel is the current President of Nepal.

Q17. Answer: (c) B

The Correct Answer is Option 3 i.e B.

• Salmonella:

• Salmonella is a type of bacteria that makes people sick.

• They were first discovered in 1885 by Dr. Daniel E. Salmon.

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• Salmonellosis is a disease caused by the bacteria Salmonella.
• salmonella bacteria cause foodborne illness.
• It is a rod-shaped bacteria or bacillus.
• Rhizobium:
• Rhizobium is Nitrogen fixation bacteria.
• It is a soil bacteria found in association with the root nodules of the leguminous plants.
• The bacteria take nitrogen from the atmosphere and turn it into ammonia (NH3).
• They are frequently branched and are cylindrical in shape.
• E.coli:
• Escherichia coli is abbreviated as E.coli.
• It is a rod-shaped bacteria.
• It is a type of bacteria found normally in the intestines of people and animals.
• Pseudomonas:
• It is a type of bacteria that is found commonly in the environment.
• It is rod-shaped, a sporogenous, and mono flagellated bacterium.
• Pseudomonas infections are illnesses that are caused by the bacteria Pseudomonas.

Q18. Answer: (b) 13 metres

Let C be the foot of the ladder and AC is the ladder.
Then In right triangle ABC,
=> cos60° = BC/AC
=> 1/2 = 6.5/AC
=> AC = 6.5 × 2
=> AC = 13 m

Q19. Answer: (d) B

The logic is:
3/5 : 34 → 3/5 : ($3^2 + 5^2$) = 9 + 25 = 34
Similarly,
A. → 3/7 : ($3^2 + 7^2$) = 9 + 49 = 58 ≠ 54
B. → 4/7 : ($4^2 + 7^2$) = 65
C. → 3/11 : ($3^2 + 11^2$) = 9 + 121 = 130 ≠ 140
D. → 4/9 : ($4^2 + 9^2$) 16 + 81 = 97 ≠ 87
Hence, '4/7 : 65' is the correct answer.

Q20. Answer: (c) B

The correct answer is option 3 i.e B(Article 21).

Article	Description
Article 19	It guarantees six freedoms to every citizen. 1. Speech and expression 2. Assembly 3. Association or Unions 4. Movement throughout the territory of India 5. Residence 6. Profession
Article 20	Protection with respect to the conviction for offenses.
Article 21	Protection of life and personal liberty
Article 21 A	Right to education
Article 22	Protection against arrest and detention in certain cases
Article 23	Prohibition of traffic in human beings and forced labor
Article 24	Prohibition of employment of children in factories, etc

Q21. Answer: (d) Rs. 3000

Shortcut Trick
Ratio of Earnings is directly proportional to Efficiency when all work for the same duration.

Ratio of days → Mayank : Deepak : Pawan = 5 : 10 : 15 = 1 : 2 : 3.

Ratio of Efficiency → (1/1) : (1/2) : (1/3) = 6 : 3 : 2.

Deepak's share = [3 / (6 + 3 + 2)] × 11,000 = (3/11) × 11,000 = 3000.

Therefore The correct answer is Rs. 3000.

Alternate Method

Given: Time taken by Mayank = 5 days, Deepak = 10 days, Pawan = 15 days. Total wages = Rs. 11,000.

Formula Used: Total Work = LCM of individual days; Efficiency = Total Work ÷ Time; Share = (Individual Efficiency ÷ Total Efficiency) × Total Wages.

Person	Days	Total Work	Efficiency
Mayank	5	30	6
Deepak	10	3	
Pawan	15	2	

=> Total Efficiency = 6 + 3 + 2 = 11 units/day.

=> Deepak's share = (Efficiency of Deepak ÷ Total Efficiency) × Total Wages

=> Deepak's share = (3 ÷ 11) × 11,000

=> Deepak's share = 3 × 1,000 = 3,000.

Therefore The correct answer is Rs. 3000.

Additional Information

Work and Wages Principle

Wages are distributed in the ratio of the work done by each person. If they work for the same time, the ratio of work done is the same as the ratio of their efficiencies.

Efficiency and Time Relationship

Efficiency is inversely proportional to the time taken to complete the work. Efficiency = 1 ÷ Time.

Total Work Calculation

Total work is generally assumed as the LCM (Least Common Multiple) of the individual days taken to simplify efficiency calculations into whole numbers.

Q22. Answer: (b) C

The least possible venn diagram is:

I. All birds are papers. → True (It is definite)

II. Some birds are books. → False (It can be possible but it is not definite)

Hence, only conclusion I follows.

Q23. Answer: (b) b ≤ 1

Given:

$x^2 - 4x + 4b = 0$ has two real solutions.

Concept used:

Discriminant for a quadratic equation $ax^2 + bx + c = 0$

$b^2 - 4ac \geq 0$

Calculation:

a = 1, b = - 4, c = 4b

Discriminant of equation

$(-4)^2 - 4(1 \times 4b) \geq 0$

=> 16 - 4(4b) ≥ 0

=> 16 - 16b ≥ 0

=> 16 ≥ 16b

=> 1 ≥ b

Thus, the value of b is either 1 or lesser than 1.

Q24. Answer: (c) B

The Correct Answer is Option 3 i.e B.

Country	Museums
Stockholm(Capital of Sweden)	• Nobel Prize Museum - Vasa Museum - Skansen Museum - ABBA The Museum
Denmark	• Ny Carlsberg Glyptotek - Louisiana Museum of Modern Art - The David Collection - Den Gamle By
London	• The British Museum - The Victoria and Albert Museum - The Science Museum - The Churchill War Rooms - The Museum of the Home

Q25. Answer: (b) 20%

We know that coefficient of variation = standard deviation/mean = 4/20 = 0.2 = 0.2 × 100 = 20 %

Q26. Answer: (a) C

The family tree diagram is shown below:

1. Chithra is the sister of Rakesh.
2. Badhri is the brother of Enjya's husband. (i.e., Enjya is female)
3. Dilip is the father of Arun and grandfather of Rakesh.
4. There are two fathers, three brothers, and a mother in the group.

Hence, there are four male members in the family.

Q27. Answer: (b) B

The family tree diagram is shown below:

1. Chithra is the sister of Rakesh.
2. Badhri is the brother of Enjya's husband. (i.e., Enjya is female)
3. Dilip is the father of Arun and grandfather of Rakesh.
4. There are two fathers, three brothers, and a mother in the group.

A. Arun, Badhri, Dililp → Dilip has no brother.

B. Arun, Badhri, Rakesh → Arun is brother of Bhadri. Rakesh is brother of Chitra.

C. Badhri, Rakesh, Chithra → Chitra is female.

D. Badri, Dilip, Rakesh → Dilip has no brother.

Hence, 'Arun, Badhri, Rakesh' is the correct answer.

Q28. Answer: (b) A

The family tree diagram is shown below:

1. Chithra is the sister of Rakesh.
2. Badhri is the brother of Enjya's husband. (i.e., Enjya is female)
3. Dilip is the father of Arun and grandfather of Rakesh.
4. There are two fathers, three brothers, and a mother in the group.

Hence, Rakesh is son of Eniya.

Q29. Answer: (d) C

All options except 'horse' are wild animals who live in jungle and are not domesticated, while horse is a domestic animal and is used for commercial purpose too.

Hence, 'horse' is the odd one out.

Q30. Answer: (d) Venus

Option 4 is the correct answer: Venus does not have a natural satellite.

• A satellite is an object (natural or man-made) revolving around a heavenly body.

• For example, the planets and asteroids orbiting around the sun moons or manmade machines orbiting the planets.

• In our solar system, all the planets have natural satellites except Mercury and Venus.

• The planet Saturn has the maximum number of natural satellites.

• Earth has one natural satellite and Mars has two.

• The Jovian Planets or the gas giants have a large number of satellites: Jupiter has 79 satellites, Saturn has 145, Uranus has 27 and Neptune has 14 satellites.

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• Temporary satellite (natural):

• When a small heavenly body comes near a planet and starts revolving around it for a temporary period it is called a temporary satellite.

• For eg. : 2006 RH120, and 2020 CD3 are the temporary satellites of the Earth.

Planet	Major satellites
Mars	Phobos and Demos (only 2)
Earth	Moon (only one)
Jupiter	Io, Europa, Ganymede

Q31. Answer: (b) C

The Correct Answer is Option 2 i.e C.

• The human body is composed of around 300 bones at birth.

• The number of bones decreases to 206 by adulthood.

• Bone mass is the amount of bone tissue in the skeleton.

• The bone mass reaches maximum density by around the age of 21.

Q32. Answer: (b) 101

The pattern follow here is,

11 + 2 = 13;

13 + 4 = 17;

17 + 6 = 23;

23 + 8 = 31;

31 + 10 = 41;

41 + 12 = 53;

53 + 14 = 67;

67 + 16 = 83;

83 + 18 = 101

Hence, “101” is the correct answer.

Q33. Answer: (d) 24°

Let the angles of a triangles are in the ratio of 2x : 5x : 8x

We know that sum of the angles in a triangle = 180°

=> 2x + 5x + 8x = 180°

=> 15x = 180

=> x = 180/15 = 12°

Therefore Smallest angle = 2x = 2 × 12 = 24°

Q34. Answer: (b) Rs. 375

Short Trick:

4% = 360 - 345 = 15

100% = 375

Detailed solution:

From the given data,

Let us the loss percent be x and the cost price of the shoes be y

=> loss % = [(cost price – selling price)/cost price] × 100

=> x = [(y - 360)/y] × 100

=> xy = (100y - 36000)

=> 100y - xy = 36000 ---- equation (1)

Also given that when the selling price Rs.345, his loss is increased by 4%

=> x + 4 = [(y - 345)/y] × 100

=> xy + 4y = 100y - 34500

=> 96y - xy = 34500 ---- equation (2)

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

=> 4y = 1500

=> y = 1500/4 = Rs.375

Therefore Cost price of the shoes is Rs.375

Q35. Answer: (d) C

The Correct Answer is Option 4 i.e C.

• Dinanath Mangeshkar award:

• The award was instituted in 1999 in the memory of Dinanath Mangeshkar, father of Lata Mangeshkar.

• It is awarded annually to persons for their outstanding contributions to music and movies.

• Anil Kapoor has been conferred with the Deenanath Mangeshkar Award 2015.

• Aamir Khan:

• Aamir Khan received Deenanath Mangeshkar Award 2017 for Dangal movie.

• He received Padma Shri in the year 2003.

• He also received Padma Bhushan in the year 2010.

• Sanjay Leela Bhansali:

• Sanjay Leela Bhansali is one of the most acclaimed directors and producers in Bollywood.

• He received the “Padma Shri” in the year 2015.

• Sanjay Leela Bhansali received the Deenanath Mangeshkar Award for 2016.

• Ranveer Kapoor:

• He is an Indian Bollywood film actor.

• Ranveer Kapoor received the Deenanath Mangeshkar Award for 2016.

• Deenanath Mangeshkar Award 2019 was awarded to film director Madhur Bhandarkar.

• He is an Indian film director, scriptwriter, and producer.

• He received the “Padma Shri” in the year 2016.

Q36. Answer: (d) D

In a school of 4000 students 3000 know English, 2000 know French and 500 know Hindi, 1500 know French and English, 300 know French and Hindi, 200 know English and Hindi and 50 know all the three languages.

Students who know only French = 2000 – (1450 + 50 + 250) = 250

Students who know only English = 3000 – (1450 + 150 + 50) = 1350

Students who know only Hindi = 500 - (250 + 150 + 50) = 50

The venn diagram is shown below:

Students who do not know any of the three languages = 4000 – (1450 + 250 + 150 + 50 + 250 + 1350 + 50) = 4000 – 3550 = 450

Hence, ‘450’ students do not know any of the three languages.

Q37. Answer: (a) C

In a school of 4000 students 3000 know English, 2000 know French and 500 know Hindi, 1500 know French and English, 300 know French and Hindi, 200 know English and Hindi and 50 know all the three languages.

Students who know only French = 2000 – (1450 + 50 + 250) = 250

Students who know only English = 3000 – (1450 + 150 + 50) = 1350

Students who know only Hindi = 500 - (250 + 150 + 50) = 50

The venn diagram is shown below:

Students who know only two languages = (250 + 1450 + 150) = 1850

Hence, 1850 students know only two languages.

Q38. Answer: (a) A

In a school of 4000 students 3000 know English, 2000 know French and 500 know Hindi, 1500 know French and English, 300 know French and Hindi, 200 know English and Hindi and 50 know all the three languages.

Students who know only French = 2000 – (1450 + 50 + 250) = 250

Students who know only English = 3000 – (1450 + 150 + 50) = 1350

Students who know only Hindi = 500 - (250 + 150 + 50) = 50

The venn diagram is shown below:

Students who know at least one language = Total number of students – Students who do not know any language

= 4000 – 450

= 3550

Hence, '3550' know at least one language.

Q39. Answer: (c) 139.5

Short trick:

Required average = (30 × 31 × 9) / (2 × 30) = 139.5

Detailed solution:

Sum of the n^(th) term = n/2 × (2a + (n – 1) × d)

n = number of terms

a = first term

d = Common difference

Sum of the 30^(th)terms = 30/2 × (2 × 9 + (30 – 1) × 9) (n = 30, a = 9, d = 9)

= 15 × (18 + 29 × 9) = 4185

Sum of the first 30 multiples of 9 = 4185

Therefore Average of the first 30 multiples of 9 = 4185/30 = 139.5

Q40. Answer: (b) D

The Correct Answer is Option 2 i.e D.

• Anders Celsius (1701-1744)

• He was a Swedish astronomer.

• He was known for inventing the Celsius (Centigrade) temperature scale.

• Centigrade is a unit of measurement of temperature.

• In Celsius temperature scale 0 represents the freezing point of water, and 100 represents the boiling point.

• Jean-Pierre Christin (1683-1755):

• He was a French physicist, mathematician, astronomer, and musician.

• His newly designed thermometer was called the Thermometer of Lyon as he was born in Lyon.

• He used a new scale where 0 was the temperature at which water froze and 100 was the temperature at which water boiled.

• Marten Stromer (1707-1770):

• He was a Swedish mathematician and astronomer.

• Kelvin (1824-1907):

• Kelvin temperature scale was named after the British physicist Lord Kelvin.

• Kelvin is the SI unit of temperature.

Q41. Answer: (d) A

Words	When	She	Will	Come
Meaning	×	÷	•	•

Given expression: 8 when 12 will 16 she 2 come 10

After replacing the operators by their meaning, we get:

8 × 12 + 16 ÷ 2 – 10

= 96 + 8 – 10

= 104 – 10

= 94

Hence, '94' is the correct answer.

Q42. Answer: (a) C

The Correct Answer is Option 1 i.e C.

• Jupiter:

• Jupiter is the planet, orange in color with white bands on it.

• Jupiter is the largest planet in the Solar System.

• It is a gas giant planet.

• Jupiter's atmosphere is mostly made up of Hydrogen (H2) and Helium (He).

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• Mars:
• Mars is reddish in color.
• Mars is also known as the Red Planet.
• It is red in color due to the presence of Iron oxides.
• Mars has two moons named Phobos and Deimos.
• Saturn:
• Saturn is known most for its rings.
• It is the second-largest planet in our solar system.
• Saturn's atmosphere is also mostly made up of Hydrogen (H2) and Helium (He).
• Venus:
• Venus is Earth's twin in size.
• Venus is the hottest planet in our solar system.
• It is the brightest planet in the Solar System.

Q43. Answer: (a) C

The correct Answer is Option 1 i.e C.
• Lactobacillus:
• It is a genus of Gram-positive bacteria.
• These are rod-shaped and can be found in fermented foods and supplements.
• It is the bacteria that is used to convert milk into curd.
• Conversion of milk into curd is done by the process called fermentation.
• Streptomyces:
• It is a genus of Gram-positive bacteria.
• It grows in various environments like soil etc.
• Its shape resembles filamentous fungi.
• Vibrio:
• Vibrio is a genus of Gram-negative bacteria.
• They are in the shape of curved rod or comma.
• Cholera is a disease that is caused by the bacteria Vibrio cholerae.
• Spirilla:
• It is a genus of G ram-negative bacteria.
• It has a rigid spiral structure.

Q44. Answer: (b) A

The Correct Answer is Option 2 i.e A.
• Suresh Prabhu:
• He was the former Minister of Railways, Minister of Commerce & Industry, and Civil Aviation.
• He was the minister of railways in 2016, who presented the 2016 Rail Budget.
• Piyush Goyal is the current Railway Minister of India.
• Arun Jaitley:
• He was the former Ministry of Finance, and the Ministry of Corporate Affairs, Government of India (2014-2019).
• He was also the Minister of Defence (2014 & 2017) and the Minister of Information and Broadcasting, Government of India (2014-2016).
• He was posthumously awarded the Padma Vibhushan in 2020 in the field of Public Affairs.
• Manoj Sinha:
• He is an Indian Politician.
• He was Minister of State for Railways from 2014-2019
• He was Minister of State (Independent Charge) Ministry of Communications from 2016-2019
• Jayant Sinha:
• He is an Indian Politician.
• He was the former Minister of State for Finance and the Minister of State for Civil Aviation in the Government of India.

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Q45. Answer: (b) B

The Correct Answer is Option 2 i.e B.

• Suspended Particulate Matter (SPM):

• Particulate matter suspended in the air such as dust, fly ash, liquids, and soot is called Suspended Particulate Matter (SPM).

• These are very minute particles of solid or liquid matter that are suspended in the air.

• The size and weight of the Particulate Matter determine their suspension from few seconds to months in the atmosphere.

• Major sources of SPM are vehicles, power plants, construction and demolition activities, agricultural activities, market place, industries, etc.

• Based on the size, particulate matter is often divided into two main groups.

• Inhalable coarse particles: These particles range from 2.5 micrometers to 10 micrometers in diameter (PM10 – PM2.5).

• Fine particles: These particles are less than 2.5 µm (PM2.5), are commonly found in smoke and haze.

Q46. Answer: (c) C

The meaningful word formed by the jumbled letters are:

A. ELMSL → SMELL

B. ERHA → HEAR

C. IKNTH → THINK

D. SATTE → TASTE

All words except 'IKNTH' are human sense organs.

Hence, 'IKNTH' is the odd one out.

Q47. Answer: (b) Rs. 25

Shortcut Trick

For 1 year, Yearly Compound Interest rate is 10%.

For 1 year, Half-yearly Compound Interest rate is 5% for two periods.

Effective rate (Half-yearly) = 5 + 5 + (5 × 5) / 100 = 10.25%.

Difference in interest rate = 10.25% − 10% = 0.25%.

Difference in value = 0.25% of 10,000 = Rs. 25.

Therefore The correct answer is Rs. 25.

Alternate Method

Given: Principal (P) = Rs. 10,000, Rate (R) = 10% per annum, Time (T) = 1 year.

Formula Used: $CI = P[(1 + R/100)^n - 1]$

Case 1: Compounded Yearly

=> Time (n) = 1 year

=> $CI_{(yearly)} = 10,000 \times (10 / 100) \times 1 = Rs. 1,000$

Case 2: Compounded Half-yearly

=> New Rate (r) = 10 / 2 = 5% per half-year

=> Time (n) = 2 half-years

=> $CI_{(half-yearly)} = 10,000 \times [(1 + 5/100)^2 - 1]$

=> $CI_{(half-yearly)} = 10,000 \times [(1.05)^2 - 1]$

=> $CI_{(half-yearly)} = 10,000 \times [1.1025 - 1] = 10,000 \times 0.1025 = Rs. 1,025$

Difference:

=> Difference = $CI_{(half-yearly)} - CI_{(yearly)}$

=> Difference = 1,025 − 1,000 = Rs. 25

Therefore, Option (2) is the correct answer.

Therefore The correct answer is Rs. 25.

Additional Information

Effective Interest Rate

When interest is compounded more than once a year, the effective annual rate is given by $R_{(eff)} = [(1 + r/n)^n - 1] \times 100$, where n is the number of compounding periods.

Difference between CI and SI for 2 years

The difference between Compound Interest and Simple Interest for two years (or two periods) is calculated as $D = P \times (R/100)^2$.

Compounding Frequency

For half-yearly compounding, divide the annual rate by 2 and multiply the number of years by 2. For quarterly compounding, divide the rate by 4 and multiply years by 4.

Q48. Answer: (c) A

The Correct Answer is Option 3 i.e A.

• Mohammad bin Tughlaq (1325-1351):

• He shifted his capital from Delhi to Deogir and renamed it as Daulatabad.

• Daulatabad is situated in Maharashtra.

• He built a road from Delhi to Deogir and also set up rest houses for the people.

• He introduced bronze coins or Jittal of the same value as Silver coins (Tanka).

• He established a new department of agriculture known as “Diwan-i-Kohi."

• He also provided agricultural loan “Takkavi” to the farmers.

• Aurangabad:

• The city was founded by Malik Ambar in 1610.

• Later Aurangzeb renamed it as Aurangabad.

• Aurangabad is the tourism capital of Maharashtra.

• Allahabad:

• Emperor Akbar founded the city in by the name of “ILLAHABAS” which later became ALLAHABAD

• It is a city in the Indian state of Uttar Pradesh.

• Allahabad has been officially renamed as Prayagraj.

• It is situated at the confluence of three rivers- Ganga, Yamuna, and the invisible Saraswati.

• Saharanpur:

• The city was named after Saint Shah Harun Chisti.

• Saharanpur is a city in the Indian state of Uttar Pradesh.

• The city was founded by Sah Ranveer Singh.

Q49. Answer: (d) B

The logic is:

FHNPKMEG means GOLF:

F + H = 6 + 8 = 14; 14 ÷ 2 = 7 and 7 = G

N + P = 14 + 16 = 30; 30 ÷ 2 = 15 and 15 = O

K + M = 11 + 13 = 24; 24 ÷ 2 = 12 and 12 = L

E + G = 5 + 7 = 12; 12 ÷ 2 = 6 and 6 = F

Similarly,

RTSUHJBDJL

R + T = 18 + 20 = 38; 38 ÷ 2 = 19 and 19 = S

S + U = 19 + 21 = 40; 40 ÷ 2 = 20 and 20 = T

H + J = 8 + 10 = 18; 18 ÷ 2 = 9 and 9 = I

B + D = 2 + 4 = 6; 6 ÷ 2 = 3 and 3 = C

J + L = 10 + 12 = 22; 22 ÷ 2 = 11 and 11 = K

Hence, ‘STICK’ is the correct answer.

Q50. Answer: (a) 20.25

Given standard deviation $\sigma = 4.5$

We know that variance is the square of the standard deviation

Therefore Variance = (standard deviation)^2 = $(\sigma)^2 = 4.5^2 = 20.25$

Q51. Answer: (b) B

The Correct Answer is Option 2 i.e B.

• Millau Viaduct:

• it is a cable-stayed bridge in France.

• It is constructed over the River Tarn near Millau.

• Its designers are the French engineer Michel Virlogeux and British architect Norman Foster.

• Seine:
• It is a river in France.
• The Seine river rises in the Source-Seine.
• It flows through Paris and drains into the English Channel at Le Havre.
• Durance:
• It is a river in France.
• It raises in the south-western Alps and flows to the Mediterranean sea.
• Loire:
• It is the largest river in France.
• It raises in the Mont Gerbier de Jonc in France.
• It flows to the Atlantic Ocean.

Q52. Answer: (a) North Direction

CONCEPT:

Elements of Earth's Magnetic Field:

• The magnitude and direction of the magnetic field of the earth at a place are completely given by certain quantities known as magnetic elements.

EXPLANATION:

Earth has its own magnetic field whose poles are

• Magnetic North is in Geographical South pole.
• Magnetic South is in Geographical North Pole.
• A compass needle is a bar magnet with a pointed north pole. It is attracted to the magnetic south pole.
• Hence magnetic needle points in North Direction (Magnetic South). Therefore option 1 is correct.

Q53. Answer: (c) C

NOTE - This is a Previous Year Question. Since the current President is Droupadi Murmu.

The Correct Answer is Option 3 i.e

• Ram Nath Kovind
• He was the 14th and current President of India.
• He is the second person from the Dalit caste, after K. R. Narayanan.
• He served as the 26th Governor of Bihar from 2015 to 2017 and as a Member of Parliament, Rajya Sabha from 1994 to 2006.
• He was a lawyer for 16 years and practised in the Delhi High Court and the Supreme Court until 1993.
• The Supreme commander of Indian Defense forces is the President of India.
• According to the given options, the current Supreme Commander of Indian Defense forces is Draupadi Murmu (President of India).

Additional Information

• Pranab Mukharjee:
• He was the 13th President of India from 2012 until 2017.
• He was awarded Bharat Ratna in 2019.
• He was awarded Padma Vibhushan in the year 2008.
• Narendra Modi:
• PM Modi was honored with the United Nations ‘Champions of the Earth Award.’
• He was the Chief Minister of Gujarat from 2001 to 2014.
• He was the 14th and current Prime Minister of India since 2014.
• He was the leader of the house of people.
• He was conferred with the 2018 Seoul Peace Prize
• Sumitra Mahajan:
• She is an Indian Politician.
• She was the Speaker of the 16th Lok Sabha from 2014 to 2019.
• She is the second woman to be elected as the Speaker of the Lok Sabha after Meira Kumar.
• Lt. Gen Dalbir Singh:
• He was the 26th Chief of the Indian Army Staff from 2014 to 2016.
• He is the current High Commissioner of India to the Republic of Seychelles.

Q54. Answer: (d) A

The logic is:

B = 2, K = 11

Similarly,

Hence, '3' is the correct answer.

Q55. Answer: (c) 1/9

Shortcut Trick

Recognize that $0.064 = 0.4^3$ and $0.008 = 0.2^3$.

Let a = 0.4 and b = 0.2. The expression is $[(a^3 - b^3)(a^2 - b^2)] / [(a^2 + ab + b^2)(a + b)^3]$.

This simplifies to $[(a - b) / (a + b)]^2$ after canceling common factors.

Plugging values: $[(0.4 - 0.2) / (0.4 + 0.2)]^2 = (0.2 / 0.6)^2 = (1/3)^2 = 1/9$.

Therefore The correct answer is 1/9.

Alternate Method

Given: The expression $[(0.064 - 0.008)(0.16 - 0.04)] / [(0.16 + 0.08 + 0.04)(0.4 + 0.2)^3]$

Formula Used: $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$ and $a^2 - b^2 = (a - b)(a + b)$

=> Let a = 0.4 and b = 0.2

=> $0.064 - 0.008 = a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

=> $0.16 - 0.04 = a^2 - b^2 = (a - b)(a + b)$

=> $0.16 + 0.08 + 0.04 = (0.4)^2 + (0.4 \times 0.2) + (0.2)^2 = a^2 + ab + b^2$

=> $(0.4 + 0.2)^3 = (a + b)^3$

=> Expression = $[(a - b)(a^2 + ab + b^2) \times (a - b)(a + b)] / [(a^2 + ab + b^2) \times (a + b)^3]$

=> Canceling $(a^2 + ab + b^2)$ and $(a + b)$: $[(a - b) \times (a - b)] / (a + b)^2$

=> Expression = $(a - b)^2 / (a + b)^2 = [(0.4 - 0.2) / (0.4 + 0.2)]^2$

=> Value = $[0.2 / 0.6]^2 = (1/3)^2 = 1/9$

Therefore The correct answer is 1/9.

Additional Information

Algebraic Identities

Standard identities like $a^3 \pm b^3$ and $a^2 - b^2$ are essential for simplifying complex decimal expressions quickly.

BODMAS Rule

Always solve brackets first, followed by orders (powers/roots), then division, multiplication, addition, and subtraction.

Decimal Powers

Recall common decimal cubes: $0.1^3 = 0.001$, $0.2^3 = 0.008$, $0.3^3 = 0.027$, $0.4^3 = 0.064$, and $0.5^3 = 0.125$.

Q56. Answer: (c) C

The Correct Answer is Option 3 i.e C.

• Joseph Fry & Sons:

• The first chocolate bar was made by Joseph Fry & Sons in Britain in the year 1847.

• Joseph Fry was born in Wiltshire into a Quaker family.

• Nestle:

• It is the largest food and beverage company in the world.

• Its Head Quarters is in Switzerland.

• Ulf Mark Schneider is the CEO of Nestle.

• Hershey Company:

• MICHELE BUCK is the CEO of Hershey Company.

• It is chocolate manufacturing Company,

• Its Headquarters is in USA.

• It was founded in 1894 by Milton S. Hershey.

• Pearson:

• It is a multinational publishing and education company.

• It is headquartered in London.

• It was founded by Samuel Pearson in 1844.

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Q57. Answer: (a) 63

Given numbers are 0.63, 10.5, 2.1, 4.20

Multiply each number with 100, so that decimals parts will be removed.

Therefore The numbers are 63, 1050, 210, 420

LCM of 63, 1050, 210, 420 = 2 × 2 × 3 × 3 × 5 × 5 × 7 × 1 = 6300

Again divide the numbers and LCM with 100, we get

=> LCM of 0.63, 10.5, 2.1, 4.20 is 63.

Q58. Answer: (b) Fat

The correct answer is Fat.

Important Points

• Camels store fat in their humps.

• Camels use the humps to store energy-rich fat deposits allowing the gangly beast to travel days through the desert without stopping for a bite to eat.

• A camel can carry up to 80 pounds of fat on its back.

• When a camel consumes the emergency food supply, the hump will shrink and fall to one side. Again refueling and a good night's sleep will return the hump to its upright position.

Key Points

• Camels have three sets of eyelids and two rows of eyelashes to keep sand out of their eyes.

• Camels can completely shut their nostrils during sandstorms.

Q59. Answer: (a) C

The relation is:

Foot : Toes → Toes are any of the five digits at the end of the human foot.

Similarly,

Hand : ?

A. Thumb → the short, thick first digit of the human hand, set lower and apart from the other four and opposable to them.

B. Palm → the inner surface of the hand between the wrist and fingers.

C. Fingers → each of the four slender jointed parts attached to either hand (or five, if the thumb is included).

D. Nails → a horny covering on the upper surface of the tip of the finger and toe in humans and other primates.

Hence, 'fingers' is the correct answer.

Q60. Answer: (a) A

The Correct Answer is Option 1 i.e A.

Invention	Inventor
Frederick Jones	First automatic refrigeration system for long-haul trucks and railroad cars
Thomas Alva Edison	Cinematography, Electric Lamp, Gramophone
Robert Davidson	Model electric locomotive in 1837
Galileo Galilei	The earliest design of Pendulum clock, Celatone

Q61. Answer: (a) 100/y

Given that simple interest = Rs.y

Rate of interest R = y%

Time period T = y

We know that simple interest S.I = P × T × R/100

=> y = P × y × y /100

=> 100/y = P

Therefore Principle P = 100/y

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Q62. Answer: (c) D

The relation is:

As Mount Everest is a peak in the Himalaya mountain range,

Similarly,

Jupiter is the fifth planet from the Sun and the largest in the Solar System.

A. Yamuna : River → The Yamuna is the second largest tributary river of the Ganges (Ganga) and the longest tributary in India.

B. Chilka : Lake → Chilika Lake is a brackish water lagoon, spread over the Puri, Khurda and Ganjam districts of Odisha state on the east coast of India, at the mouth of the Daya River, flowing into the Bay of Bengal, covering an area of over 1,100 km.

C. Sparrow : Bird → Sparrows are a family of small passerine birds. They are also known as true sparrows, names also used for a particular genus of the family, Passer.

D. Jupiter : Planet → Jupiter is the fifth planet from the Sun and the largest in the Solar System. It is a gas giant with a mass one-thousandth that of the Sun, but two-and-a-half times that of all the other planets in the Solar System combined.

Hence, 'Jupiter : Planet' is the correct answer.

Q63. Answer: (c) -, ÷

1) -, +

Given equation: 75 ÷ 5 × 15 - 3 + 10 = 60

After interchanging '-, +', we get:

L.H.S = 75 ÷ 5 × 15 + 3 - 10

= 15 × 15 + 3 - 10

= 225 + 3 - 10

= 228 - 10

= 218 ≠ R.H.S

2) -, ×

Given equation: 75 ÷ 5 × 15 - 3 + 10 = 60

After interchanging '-, ×', we get:

L.H.S = 75 ÷ 5 - 15 × 3 + 10

= 15 - 45 + 10

= 25 - 45

= - 20 ≠ R.H.S

3) -, ÷

Given equation: 75 ÷ 5 × 15 - 3 + 10 = 60

After interchanging '-, ÷', we get:

L.H.S = 75 - 5 × 15 ÷ 3 + 10

= 75 - 25 + 10

= 85 - 25

= 60 = R.H.S

4) ×, ÷

Given equation: 75 ÷ 5 × 15 - 3 + 10 = 60

After interchanging '×, ÷', we get:

L.H.S = 75 × 5 ÷ 15 - 3 + 10

= 25 - 3 + 10

= 35 - 3

= 32 ≠ R.H.S

Hence, '-, ÷' is the correct answer.

Q64. Answer: (a) 1

As per the given data,

Let us consider $4^1 = 4$, when divided by 3 gives the remainder 1

=> Four power odd number when divided by 3 gives the remainder 1

Similarly,$4^3 = 64$, when divided by 3 gives the remainder 1

Therefore 4^{13} divided by 3 also gives the remainder 1

Q65. Answer: (a) D

The logic is:

T	A	B	L	E
8	4	9	7	3

C	H	A	I	R
5	1	4	6	2

Similarly,

T	E	A	C	H	E	R
8	3	4	5	1	3	2

Hence, '8345132' is the correct answer.

Q66. Answer: (c) 3 km/hr

Let Ramu's rate upstream be x km /hr, then his rate downstream = 2x km/hr

Therefore Rate in still water = 1/2 × (2x + x) = 3x/2 km/hr

=> 3x/2 = 9

=> 3x = 9 × 2 = 18

=> x = 18/3 = 6 km/hr

Therefore Rate of upstream = 6 km/hr

Rate of downstream = 2 × 6 = 12 km/hr

=> Rate of stream = 1/2 × (12 - 6) = 6/2 = 3 km /hr

Q67. Answer: (b) 36%

We know that if a number is decreased by x% and then successively increased by y %, then the net change is given by (- x + y + xy/100) %

From the given data, earnings was decreased by 60%, x = 60 and subsequently increased by 60%, y = 60

=> Final loss percent = [-60 + 60 + (60 × 60)/100] = 3600/100 = 36

Final loss on his earnings is 36%

Q68. Answer: (a) 500 m

Given:

Speed of the bus is 90 km/hr and time taken is 20 sec

Formula used:

speed = distance/time

Calculation:

speed = 90 km/hr

time = 20 sec = 20/3600 hr

=> 90 = Distance/(20/3600)

=> Distance = (90 × 20)/3600 = 0.5 km = 500 m

Q69. Answer: (b) 3 : 2

Given:

Assam Tea costing Rs. 300 per kg be mixed with Darjeeling Tea costing Rs. 400 per kg.

Selling the mixture at Rs. 408 per kg.

There is gain of 20%.

Concept used:

Basic concept of ratio of distribution.

Calculation:

From the given data,

Selling price of mixture is Rs. 408 per kg

Profit% = (selling price/Cost price – 1) × 100

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=> 20 = {(408/Cost price) – 1} × 100

=> 0.2 + 1 = 408/Cost price

=> Cost price of mixture = 408/1.2 = Rs.340 per kg

Therefore Ratio of Assam Tea to the Darjeeling Tea = (400 - 340) : (340 - 300) = 60 : 40 = 3 : 2

Therefore The ratio should be 3 : 2.

Earned 20% on Rs. 408

Cost price of sold team is,

=> 100/120 × 408

=> Rs. 340

By allegation method,

=> 60 : 40

=> 3 : 2

Therefore The ratio is 3 : 2.

Q70. Answer: (d) 1 is correct and 2 is incorrect

As per the given data,

We know that opposite angles are equal and adjacent angles are supplementary expect for the two straight lines which are intersecting perpendicularly.

i.e. Opposite angles are not supplementary

Q71. Answer: (c) A

The Correct Answer is Option 3 i.e A.

• Java:

• Java is a computer programming language.

• Java was developed by James Gosling in 1995.

• He is known as the father of Java.

• It is primarily used for Internet-based applications.

• It is the official language for Android development.

• COBOL:

• COBOL stands for Common Business Oriented Language.

• It is first developed in 1960 by the CODASYL Committee (Conference on Data Systems Languages).

• It is primarily designed for use in business-oriented applications.

• Fortran:

• It is a computer programming language.

• It was created in 1957 by John Backus.

• The name produced from the two words FORmula TRANslation.

• It is commonly used for numeric and scientific computing.

• Ada:

• It is a computer programming language.

• Ada was named after Ada Lovelace, the world's first computer programmer.

• It is widely used in a variety of applications from missile control to payroll processing to air traffic control.

Q72. Answer: (d) Rajasthan

The correct answer is Rajasthan.

• Rajasthan is the largest state of India in terms of area.

• It covers an area of 342,239 sq. km and has a population of 6.85 crores as per the 2011 census.

• Uttar Pradesh is the largest state of India in terms of population.

Additional Information

• Area wise states-

S.no	States
1.	Rajasthan
2.	Madhya Pradesh

3.	Maharashtra
4.	Uttar Pradesh

• Population wise states-

S.no	States
1.	Uttar Pradesh
2.	Maharashtra
3.	Bihar
4.	West Bengal

Q73. Answer: (a) C

The meaningful word formed by the jumbled letters are:

A. CEKRTCI → CRICKET

B. OHKCYE → HOCKEY

C. ESCSH → CHESS

D. OTOLABLF → FOOTBALL

All options except option 'C' are outdoor games, while 'CHESS' is an indoor game.

Hence, 'ESCSH' is the odd one out.

Q74. Answer: (c) 16%

The correct answer is 16%

Explanation:

• The air inhaled by humans contains approximately 21% oxygen.

• During the process of gas exchange in the lungs, some of the oxygen is absorbed into the bloodstream, and the body utilizes it for metabolic processes.

• As a result, the exhaled air contains a lower concentration of oxygen, approximately 16%, along with increased levels of carbon dioxide and other gases.

• In humans, the content of oxygen in the exhaled air is about 16%.

The Composition of exhaled air is:

• 5 to 6.3% water vapour

• 74.4% Nitrogen

• 13.6 to 16% Oxygen

• 4 to 5.3% Carbon Dioxide

• 1% Argon

Q75. Answer: (c) C

The Correct Answer is Option 3 i.e C.

Inventor	Invention
Charles Babbage (father of the computer)	Analytical Engine
Douglas Engelbart	Computer mouse
Simon Colton	The Painting Fool is software created by him, currently working as a professor at the Queen Mary University of London.
John Backus	Fortran, Computer language was created in 1957 by him.

Q76. Answer: (b) C

The Correct Answer is Option 2 i.e C.

Name of the parts of the computer	Function

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CPU (Central Processing Unit)	• Performs the main function of information processing. - It makes all the required calculations and processes data. - It is called the brain of the computer.
Software	• It relates to a set of programs. - The software controls the computer hardware parts and makes them operational.
Hardware	• It comprises of the physical units of a computer system. - The keyboard, the monitor, the mouse, and the central processing unit are examples of hardware.
Monitor	• It is an output device. - It displays information processed by the computer's video card in the form of picture

Q77. Answer: (d) A

The Correct Answer is Option 4 i.e A.

• Sunil Arora is the current 23rd Chief Election Commissioner as of May 2020.

• Om Prakash Rawat was the Chief Election Commissioner before Sunil Arora (22nd Chief Election Commissioner).

• Syed Nasim Ahmed Zaidi:

• He was the 20th Chief Election Commissioner of India.

• He has served as the Director-General of Civil Aviation.

• He is a retired I.A.S. officer from the Uttar Pradesh cadre.

• Navin Chawla:

• He was the 16th Chief Election Commissioner of India.

• General Elections in April-May 2009 were executed under his supervision.

• He was best known for his biography of Mother Teresa.

• N.Gopalaswami:

• He was the 15th Chief Election Commissioner of India.

• He was awarded Padma Bhushan in the year 2015.

• He has been appointed as the BCCI electoral officer for BCCI elections in October 2019.

• A.K. Jyoti:

• He was the 21st Chief Elec tion Commissioner of India.

• He was an IAS officer of Gujarat cadre.

Important Points

• Rajiv Kumar is appointed as the new Chief Election Commissioner.

Q78. Answer: (d) B

Symbol	←	→	↑	↓	^
Meaning	•	•	÷	×	=

A. 3 ↓ 6 ↑ 2 ← 3 → 6 ^ 5

After replacing the symbols by their meaning, we get:

3 × 6 ÷ 2 + 3 - 6 = 5

L.H.S = 9 + 3 – 6

= 12 – 6

= 6 ≠ R.H.S

B. 2 ↓ 5 → 6 ← 2 ^ 6

After replacing the symbols by their meaning, we get:

2 × 5 - 6 + 2 = 6

L.H.S = 10 – 6 + 2

= 12 – 6

= 6 = R.H.S

C. 7 → 43 ↑ 6 ↓ 1 ^ 4

After replacing the symbols by their meaning, we get:

7 - 43 ÷ 6 × 1 = 4

L.H.S = 7 – 7.16

= -0.16 ≠ R.H.S

D. 5 ← 7 → 3 ↑ 2 ^ 4

After replacing the symbols by their meaning, we get:

5 + 7 - 3 ÷ 2 = 4

L.H.S = 12 – 1.5

= 10.5 ≠ R.H.S

Hence, '2 ↓ 5 → 6 ← 2 ^ 6' is the correct answer.

Q79. Answer: (c) Monopsony

The market where there is a single buyer for a product/service is known as Monopsony.

• A monopsony is a market condition in which there is only one buyer who is a large buyer and who has controls over the market.

• The word Monopsony has been believed to be derived from the Greek language which means 'Single Purchaser' and has been discussed for the first time in the book named 'The Economics of Imperfect Competition' authored by Ms Joan Robinson.

• A monopsony occurs when a firm has market power in employing factors of production (e.g. labour, capital etc.). and when buyers have some influence over the price of their inputs.

Q80. Answer: (b) 3 : 1 : 4

Shortcut Trick

Efficiency ratio of A : B : C = 1 : 3 : 0.75 = 4 : 12 : 3.

Time ratio is the reciprocal of efficiency: 1/4 : 1/12 : 1/3.

Multiply by LCM (12) → 3 : 1 : 4.

Therefore The correct answer is 3 : 1 : 4.

Alternate Method

Given:

Efficiency of B = 3 × Efficiency of A

Efficiency of C = 0.75 × Efficiency of A

Formula Used:

Efficiency prop. to 1 / Time (Days)

Calculations:

=> Let Efficiency of A = 1

=> Efficiency of B = 3

=> Efficiency of C = 0.75 = 3/4

=> Efficiency Ratio (A : B : C) = 1 : 3 : 3/4 = 4 : 12 : 3

=> Days Ratio (A : B : C) = 1/4 : 1/12 : 1/3

=> Multiply by 12: (1/4 × 12) : (1/12 × 12) : (1/3 × 12)

=> Days Ratio = 3 : 1 : 4

Therefore The correct answer is 3 : 1 : 4.

Additional Information

Efficiency and Time Relation

The number of days required to complete a work is inversely proportional to the efficiency of the person. Formula: Work = Efficiency × Time.

Ratio Conversion

To convert a fractional ratio (1/x : 1/y : 1/z) into a simple integer ratio, multiply all terms by the LCM of the denominators.

Q81. Answer: (c) D

The Correct Answer is Option 3 i.e D.

There are 10 biogeographical zones in India.

Biogeographical region	% of the total geographical area
Trans-Himalayan Region	5.6
Himalayan Zone	6.4
Indian Desert Zone	6.6

Semi-Arid Region	16.6
Western Ghats	4
Deccan Plateau	42
Gangetic Plain	10.8
North-East Region	5.2
Coastal Region	2.5
Andaman and Nicobar Islands	0.3

Q82. Answer: (c) Tamilnadu

Tamilnadu has 90 per cent of the total Liginte reserves. Lignite coal is mainly produced in two states – Tamil Nadu and Gujarat. Small lignite coal fields are also found in Rajasthan and Jammu and Kashmir. Neyveli is the lignite field in Tamil Nadu.Neyveli is the largest lignite coal mine of India.

Q83. Answer: (a) B

The Correct Answer is Option 1 i.e B.

• Rani Lakshmi Bai:
• She was one of the prominent leading figures of the 1857 war of independence.
• She was the queen of Jhansi.
• She died in June 1858 while fighting against the British in Gwalior.
• Gwalior is a city in the Indian state of Madhya Pradesh.
• Gwalior is the tourist capital of Madhya-Pradesh.
• Jhansi:
• The city is situated between the rivers Pahunj and Betwa.
• The city is in the Indian state of Uttar Pradesh.
• Dalhousie annexed the state of Jhansi (1853 AD) by applying the doctrine of lapse.
• Varanasi:
• It is a city in the Indian state of Uttar Pradesh.
• Varanasi is known as the Spiritual Capital of India.
• It is situated on the banks of the river Ganges.
• Morar:
• Morar was formerly a British Military Cantonment.
• During the revolt of 1857, Morar is known as one of the places for the uprising in Central India.
• Morar is one of the towns of Gwalior in Madhya Pradesh.

Q84. Answer: (c) B

The Correct Answer is Option 3 i.e B.

• A Chessboard consists of 64 equal squares (eight rows and eight columns).
• Queen:
• The Queen is the most powerful piece of chess.
• It can move any number of squares either vertically, horizontally, or diagonally.
• King:
• It has a small value due to its weak mobility but it is the most important piece in the game.
• Rook:
• It can move either only forward to backward or from side to side.
• Knight:
• It is the only piece that can jump over other pieces on board.
• it moves in an L shape in any direction, L is being composed of 4 squares.

Q85. Answer: (d) D

Assertion (A) and Reason (R), both are true statements. But (R) is not the correct reason of (A)

The Constitution of India came into force on 26 January 1950. 26 January was chosen as the date for Republic day because it

was on this day in 1929 when the Declaration of Indian Independence (Purna Swaraj) was proclaimed by the Indian National Congress as opposed to the Dominion status offered by the British Regime.

Hence, 'both A and R are true but R is not the correct explanation of A' is the correct answer.

Q86. Answer: (d) C

The logic is:

20 – 10 means 200

20 × 10 = 200

So, '-' here refers to '×'

8 ÷ 4 means 12

8 + 4 = 12

So, '÷' here refers to '+'

6 × 2 means 4

6 – 2 = 4

So, '× ' here refers to '-'

10 + 2 = 5

So, '+' here refers to '÷'

Operator	•	÷	×	•
Meaning	×	•	•	÷

Given expression: 100 – 10 × 1000 ÷ 1000 + 100 × 10 = ?

After replacing the operators by their meaning, we get:

100 × 10 - 1000 + 1000 ÷ 100 - 10

= 1000 – 1000 + 10 – 10

= 0

Hence, '0' is the correct answer.

Q87. Answer: (b) Haryana

Kwality Ltd, a handler and processor of dairy products in India in the private sector has 6 plants in Haryana, Rajasthan, and Uttar Pradesh with a processing capacity of around 3.4 million litres of milk per day. It produces various types of dairy products such as milk, butter, ghee, milk powder, curd, cheese, etc.

Q88. Answer: (b) B

The Correct Answer is Option 2 i.e B.

• Fa-Hien:

• He is a Chinese traveller and visited India during the reign of Chandra Gupta II.

• He wrote an elaborate account of the life of its people.

• He didn't mention the name of the king in his accounts.

• Hiuen Tsang:

• The Chinese traveller Hiuen Tsang visited India during the reign of emperor Harsha.

• He describes the glory of the monastery with many storeys built by Harsha at Nalanda.

• He mentioned in his account that the Sudras practised agriculture during the period of Harsha.

• He also mentioned in his account about the conference held at Allahabad, known as Prayag.

• I-tsing:

• He is a 7th-century Chinese Buddhist pilgrim and translator.

• He wrote the lives of sixty Chinese pilgrims who visited India during the seventh century.

Important Points

Gupta Dynasty:

• The founder of the Gupta dynasty was Sri Gupta.

• He was succeeded by Ghatotkacha. These two were called Maharajas.

• The next ruler was Chandragupta I and he was the first to be called Maharajadhiraja.

• Chandragupta, I was succeeded by Samudragupta in about 330 A.D., who reigned for about fifty years.

• He was a great military genius and is said to have commanded a military campaign across the Deccan, and also subdued the

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forest tribes of the Vindhya region.

• Samudragupta's successor Chandragupta II, also known as Vikramaditya, conquered the extensive territories of Malwa, Gujarat and Kathiawar.

Key Points

Some famous events during the rule of Gupta Kings:

• The famous Chinese pilgrim, Fahien visited India during the reign of Chandragupta II.

• Out of his nine years of stay in India, he spent six years in the Gupta empire.

• Chandragupta II waged war against the Saka satraps of western India.

• Rudrasimha III, the last ruler of the Saka satrap was defeated, dethroned, and killed. His territories in western Malwa and the Kathiawar Peninsula were annexed into the Gupta Empire.

• Kumaragupta laid the foundation of Nalanda University.

Q89. Answer: (b) 6

As per the given data,

Efficiency is inversely proportional to the time taken

Aaravya is 50% more efficient, Ratio of efficiency of Atul and Aaravya = 100: 150

Therefore Time taken by Atul to the Aaravya= 150: 100

Let x be the number of days taken by Aaravya to do a piece of work

=> 150 : 100 = 18 : x

=> x = 100 × 18/150 = 12

Therefore Atul takes 18 - x = 18 - 12 = 6 days than Aaravya to do the same piece of work.

Q90. Answer: (d) -1, 1 / 3

Given:

equation: $6x^2 + 4x - 2 = 0$

Calculation:

=> $6x^2 + 4x - 2 = 0$

=> $6x^2 + 6x - 2x - 2 = 0$

=> $6x(x + 1) - 2(x + 1) = 0$

=> $(x + 1)(6x - 2) = 0$

=> x = 1 / 3, -1

Therefore Required roots = 1 / 3, -1

Q91. Answer: (d) lawn tennis

The Correct Answer is lawn Tennis.

Key Points

• Tennis originally was known as lawn tennis, and formally still is in Britain, because it was played on grass courts by Victorian gentlemen and ladies.

• It is now played on a variety of surfaces.

• The object of the game is to manoeuvre the ball in such a way that the opponent is not able to play a valid return.

• The deuce is a special score in tennis.

• When both the opponent have won three points each and the score is 40-40

• This is called a deuce.

• It is also known as advantage scoring in other words.

Additional Information

Sport	Terms associated
Cricket	Dead Ball, Bouncer, Wide ball, Bye, Carron Ball, Duck
Hockey	Apple, Bender, Biscuit, Bucket, Celly, clapper, dangle, Flamingo, Muffin
Baseball	Diamond, Fly ball, Pinch hitter, Balk, Bunt, Relay
lawn tennis	Ace, Advantage, Deuce, Backspin, Deep, Double Bagel, Groundstroke, Approach Shot

Q92. Answer: (d) 15√3 m

From the given data,

Let AB be the height of the tower

Let x be the length of the shadow of tower when the angle of depression of sun is 60°

From the figure, we get

=> tan 60° = AB/x

=> AB = √3 × x - - - - equation (1)

Also tan 30° = AB/(x + 30)

=> 1/√3 = AB/(x + 30)

=> (x + 30)/√3 = AB - - - - equation (2)

By equating equation (1) and equation(2), we get

=> √3 × x = (x + 30) /√3

=> 3x = x + 30

=> 2x = 30

=> x = 30/2 = 15 m

Substitute x = 15 m in equation (1)

=> AB = √3 × 15 = 15√3 m

Therefore The height of the tower is 15√3 m

Q93. Answer: (a) A

The correct answer is A.

Key Points

• Nitrous oxide (N2O):

• Nitrous oxide is commonly known as laughing gas.

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

• Nitrous oxide is a colourless and odourless gas.

Additional Information

• Carbon dioxide (CO2):

• It is an important heat-trapping (greenhouse) gas.

• It is released through human activities such as deforestation and burning fossil fuels.

• It was also released through natural processes such as respiration and volcanic eruptions.

• Sulfur Dioxide (SO2):

• It is a colourless gas with a suffocating odour.

• Burning of fossil fuels by power plants and other industrial facilities is the largest source of SO2 in the atmosphere.

• It is also released as a natural byproduct of volcanic activity.

• Water (H2O):

• Water appears as a clear, non-toxic liquid composed of hydrogen and oxygen.

• It is the most widely used solvent.

• Water is a transparent fluid that forms the world's streams, lakes, oceans, and rain.

• Water is the major constituent of the fluids of organisms.

• Water occurs in solid as well as liquid state at 0°C temperature.

Q94. Answer: (c) 25%

Shortcut Trick

Profit % in cheating cases = [Error ÷ (True Value − Error)] × 100

Here, the error is 20% of the total goods.

Profit % = [20 ÷ (100 − 20)] × 100

Profit % = [20 ÷ 80] × 100 = 1/4 × 100 = 25%

Therefore The correct answer is 25%.

Alternate Method

Given:

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Let the Cost Price (CP) of 100 units of goods be Rs. 100.

=> Selling Price (SP) of 100 units = Rs. 100 (since he sells at Cost Price).

=> But he gives 20% less goods → Actual goods given = 100 − 20 = 80 units.

=> Cost Price of 80 units = Rs. 80.

=> Selling Price received for these 80 units = Rs. 100.

=> Profit = SP − CP = 100 − 80 = Rs. 20.

=> Profit % = (Profit ÷ CP) × 100

=> Profit % = (20 ÷ 80) × 100 = 25%.

Therefore The correct answer is 25%.

Additional Information

Dishonest Dealer (Cheating while Selling)

When a dealer cheats by weight while selling, the profit percentage is calculated on the actual weight given: % Profit = [Weight saved ÷ Actual weight given] × 100.

Successive Cheating

If a dealer cheats by x% while buying and y% while selling, the effective profit is calculated using the successive percentage formula or unit method based on total goods acquired vs given.

Marked Price & Discount

If the dealer also marks up the price or gives a discount, the final ratio is the product of all individual factors: (SP/CP)_(final) = (SP/CP)_(price) × (Actual Weight/False Weight).

Q95. Answer: (c) B

The Correct Answer is Option 3 i.e B.

NOTE - As of 2020, Kalyan Krishnamurthy is the current CEO of Flipkart.

• Ananth Narayanan:

• He is the co-founder and CEO of Medlife, the largest e-health company in India.

• Narayanan was born in Tamil Nadu, India.

• He also served as the CEO of Myntra and Jabong.

• Kalyan Krishnamurthy

• Kalyan Krishnamurthy is the CEO of Flipkart. Prior to joining Flipkart, Mr. Krishnamurthy served as the Director of Finance and Portfolio Companies at Tiger Global Management.

• Binny Bansal:

• He was the co-founder of the e-commerce platform Flipkart along with Sachin Bansal in 2007.

• He is an Indian entrepreneur.

• Sachin Bansal:

• He is the co-founder of Flipkart.

• Sachin Bansal co-founded Navi Technologies, along with Ankit Agarwal.

• Navi Technologies was previously known as BACQ.

• Flipkart was acquired by Walmart in 2018.

Q96. Answer: (c) C

The correct answer is C.

• An orbit is a regular, repeating path that one object takes around another one in space.

• Orbits have different shapes.

• For the planets, the orbits are not perfect circles in shape.

• All orbits are elliptical, which means they are an ellipse, similar to an oval.

• For the planets, the orbits are almost circular.

• The orbits of comets have a different shape.

Q97. Answer: (b) 1

From the given data,

For a number to be divisible by 3, sum of the digits of that number must be divisible by 3

=> Sum of the digits of number 267Y2 = 2 + 6 + 7 + Y + 2 = 17 + Y

The minimum value of Y that to be added to 17 + Y, so that it is divisible by Y is 1

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=> 17 + Y = 17 + 1 = 18, which is divisible by 3

Therefore The minimum value of Y is 1

Q98. Answer: (c) 50%

Let the first discount be x%

Then:

(100 – 20)% of (100 - x)% of 400 = 160

=> 80/100 × (100 - x)/100 × 400 = 160

=> 80 × (100 - x) × 4 = 16000

=> 100 - x = 50

=> x = 100 - 50 = 50

Therefore First discount is 50%

Q99. Answer: (a) A

The Correct Answer is Option 1 i.e A.

State	Name of the pass	Connects
Sikkim	Nathu La	Connects Sikkim and Tibet
Sikkim	Jelep La	Connects Sikkim with Lhasa, the capital of Tibet.
Sikkim	Goecha la pass	
Sikkim	Dongkha la	Sikkim with Tibet
Uttarakhand	Lipu Lekh	Trijunction of Uttarakhand, Nepal, Tibet
Uttarakhand	Mana Pass	Uttarakhand with Tibet
Uttarakhand	Niti Pass	Uttarakhand with Tibet
Uttarakhand	Mangsha Dhura Pass	Uttarakhand with Tibet

• Assam:

• Assam is the sentinel of north-east India and gateway to the North-Eastern States.

• The State has international borders with Bangladesh and Bhutan.

• Assam shares its boundaries with Nagaland, Arunachal Pradesh, Manipur, Mizoram, Tripura, Meghalaya, West Bengal.

• The Kaziranga National Park and the Manas Tiger Project (National Park) are internationally famous for one-horned Rhino and Royal Bengal Tiger respectively.

• Sarbananda Sonowal is the current CM of Assam

• Jagdish Mukhi is the current governor of Assam.

• Meghalaya:

• Shillong is the capital of Meghalaya.

• It is widely known as “Scotland of the East”.

• Tathagata Roy is the current Governor of Meghalaya.

• Conrad Sangma is the current CM of Meghalaya.

Q100. Answer: (c) C

Assertion (A): Clothes are not washed properly in hard water. → True

Clothes are not washed properly in hard water because it does not form lather with soap.

Reason (R): Hard water contains many minerals. → True

Calcium and magnesium dissolved in water are the two most common minerals that make water "hard." The degree of hardness becomes greater as the calcium and magnesium content increases and is related to the concentration of multivalent cations dissolved in the water.

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

Hence, option 3 is the correct answer.

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