RRB NTPC CBT-I Official Paper (Held On: 11 Jan 2021 Shift 1) (Previous Year Paper)

RRB NTPC • 2021 • 100 questions • 90 minutes • Answer key and solutions

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Q1. If 16 cot A = 12, then find the value of (sin A + cos A)/(sin A - cos A)

(a) 5
(b) 8
(c) 6
(d) 7

Q2. Rajesh can finish a task in 4 days while Mahesh can finish the same task in 3 days. If both of them finish the task together and get paid Rs. 350 in total, then find the share of Rajesh.

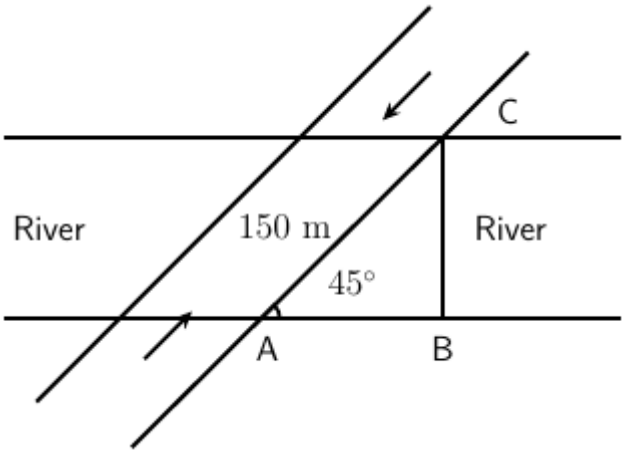
(a) Rs. 200
(b) Rs. 150
(c) Rs. 140
(d) Rs. 100

Q3. Select the number from among the given options that will come next in the following series.

290, 325, 362, ...

(a) 422
(b) 401
(c) 390
(d) 396

Q4. A bridge built across a river makes an angle of 45° with the river bank as shown in given figure. If the length of the bridge is 150 m, then what is the width of the river?



(a) 63√2 m
(b) 65 m
(c) 75√2 m
(d) 70 m

Q5. If x = r sin A cos C, y = r sin A sin C and z = r cos A, then find the value of $x^2 + y^2 + z^2$

(a) r^2
(b) $2r^2$
(c) 2r
(d) 0

Q6. Sugarcane plants are one of the most efficient convertors of _____ into chemical energy.

(a) air
(b) water
(c) juice
(d) sunlight

Q7. Calculate the least whole number, which when subtracted from both the terms of the ratio 5 : 6 gives a ratio less than 17 : 22.

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

Q8. The United Nations Conference on Environment and Development (UNCED) that was held in Brazil in 1992 is known as:

(a) N S Summit
(b) BRICS Summit
(c) Earth Summit
(d) G-20 Summit

Q9. Who was the first recipient of the Bharat Ratna award and the founder of Swatantra Party (1959)?

(a) K M Munshi
(b) Jagjivan Ram
(c) Baldev Singh
(d) C Rajagopalachari

Q10. Ajay, Sunil, Krishna and Sumit are good friends. They rent a house together at Rs. 15,000 per month. Ajay lives in this house for only 15 days in a month. Krishna and Sumit are also working and they decide to jointly contribute Rs. 10,000 as their share of the rent. Sunil lives in the house for the whole month. If Ajay and Sunil decide to contribute to the rent based on the number of days they live in the house, what would be the share of rent paid by Ajay, Sunil, Sumit and Krishna respectively?

(a) 1/3, 1/3, 1/4, 1/4
(b) 1/9, 1/3, 1/3, 2/9
(c) 1/9, 2/9, 1/3, 1/3
(d) 1/3, 1/3, 1/9, 2/3

Q11. What is the full form of SLR in the context of economics?

(a) Sterilisation Liquidity Ratio
(b) Stocks Liquidity Ratio
(c) State Liquidity Ratio
(d) Statutory Liquidity Ratio

Q12. A bus covers a distance of 5 km in 20 min. If its speed is decreased by 3 km/hr, then find the time taken by the bus to cover the same distance.

(a) 30 min
(b) 20 min
(c) 25 min
(d) 15 min

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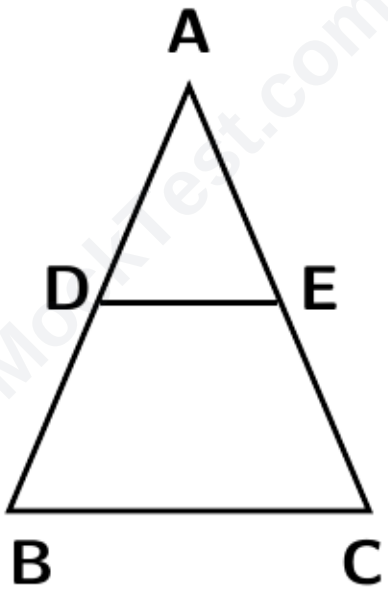
Q13. How long will it take a sum of money invested at 6% p.a. on simple interest to increase its value by 50%?

(a) 8 years
(b) 8 1/3 years
(c) 3 years
(d) 3 1/8 years

Q14. Sanchi Stupa is situated near the city of _____.

(a) Bhopal
(b) Gwalior
(c) Jhansi
(d) Agra

Q15. In a given triangle ABC, DE || BC and AD/DB=3/5. If AC = 5.6 cm, then find AE.



(a) 3.2 cm
(b) 2.1 cm
(c) 4 cm
(d) 1.8 cm

Q16. Select the number from among the given options that can replace the question mark (?) in the following series.
126, 217, 344, ?

(a) 513
(b) 470
(c) 614
(d) 688

Q17. Siraj ud-Daulah, the Nawab of Bengal, was defeated in the battle of Plassey in the year:

(a) 1755
(b) 1756
(c) 1757
(d) 1752

Q18. The International Atomic Energy Agency (IAEA) was established in:

(a) 1955
(b) 1967
(c) 1957
(d) 1966

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Q19. The Subsidiary Alliance was a non-intervention policy devised by _____ in 1798.

(a) Lord Bentinck
(b) Lord Wellesley
(c) Lord Cornwallis
(d) Lord Irwin

Q20. Find the value of k is such that the equations 2x + 3y + 11 = 0 and 6x + ky + 33 = 0 represent coincident lines.

(a) 9
(b) 6
(c) 5
(d) 12

Q21. Who among the following is known as the 'Father of Indian Cinema'?

(a) Raj Kapoor
(b) Satyajit Ray
(c) Prithviraj Kapoor
(d) Dadasaheb Phalke

Q22. Covalent bonds are formed by the sharing of electrons between two atoms so that both can achieve a completely filled _____ shell.

(a) outermost
(b) innermost
(c) centre
(d) proper

Q23. Modern electrical generator works on _____ principle.

(a) Magnetic Induction
(b) Electromagnetic Induction
(c) Electrical Induction
(d) Electrical Energy

Q24. Calculate the least number that is exactly divisible by 12, 16, 24 and 32.

(a) 90
(b) 96
(c) 84
(d) 102

Q25. The Fiscal Responsibility and Budget Management Act (FRBMA) was introduced in the year _____.

(a) 2003
(b) 2007
(c) 2004
(d) 2002

Q26. A set of accounts that summarises a country's transactions with the rest of the world is known as:

(a) Budget
(b) Balance of Payments
(c) Balance of Budget
(d) Capital Investment

Q27. Under which of the following Articles of the Constitution of India has an Inter-State Council been constituted for coordinating in inter-state disputes?

(a) Article 352
(b) Article 19
(c) Article 356
(d) Article 263

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Q28. Blood is a type of _____ tissue.

(a) epithelial
(b) nervous
(c) muscular
(d) connective

Q29. Who wrote the lyrical poem 'My Mother at Sixty-Six'?

(a) Robert Frost
(b) Ashokamitran
(c) Kamala Das
(d) Rabindranath Tagore

Q30. If the sum of two numbers is 17 and the sum of their squares is 145, then find the numbers.

(a) 8 and 9
(b) 5 and 12
(c) 11 and 6
(d) 10 and 7

Q31. Find the value of 1/4+1/(4 × 5) + 1/(4 × 5 × 6) (rounded up to 2 decimals)

(a) 0.31
(b) 0.38
(c) 0.21
(d) 0.33

Q32. Select the option that is related to the third term in the same way as the second term is related to the first term.
BLCM : FHGI :: KHWS : ?

(a) ODSO
(b) OLSO
(c) ODAO
(d) OLAW

Q33. If a student multiplied a number by 3/4 instead of 4/3, then find the percentage of error in that calculation (approximate).

(a) 48%
(b) 73%
(c) 44%
(d) 53%

Q34. Which one is not an e-shopping website from the following?

(a) www.jabong.com
(b) www.flipkart.com
(c) www.twitter.com
(d) www.pepperfry.com

Q35. Find the volume of the largest sphere that can be carved out of a cube of side 21 cm.

(a) 4851 cm^3
(b) 4158 cm^3
(c) 5841 cm^3
(d) 8514 cm^3

Q36. Who is known as the founding father of Macroeconomics as a separate discipline?

(a) John Maynard Keynes
(b) Amartya Sen
(c) Karl Marx
(d) Adam Smith

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Q37. Name of the region where "The Great Depression of 1929" started.

(a) North America
(b) Asia
(c) Europe
(d) South America

Q38. A number when divided by 5 leaves a remainder 3. When the square of the same number is divided by 5, then the remainder is:

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

Q39. The Gateway of India was built in the traditional _____ style to welcome King George V and Queen Mary to India in 1911.

(a) Persian
(b) Western
(c) European
(d) Indo-Saracenic style

Q40. If 370 students appeared for an examination, of which 352 passed, then the find the pass percentage (approximate).

(a) 95%
(b) 90%
(c) 97%
(d) 86%

Q41. Girnar Hills of Junagadh, Gujarat is famous for _____ Mangoes.

(a) Totapuri
(b) Kesar
(c) Alphonso
(d) Dasheri

Q42. Which of the following is a single chip based device that is a complete processor in itself and is capable of performing arithmetic and logical operations?

(a) Microprocessor
(b) Multiprocessing
(c) Operating System
(d) Modem

Q43. If α and β are the zeros of the polynomial

$f(x) = x^2 – 5x + k$

such that $\alpha – \beta = 1$, then find the value of k.

(a) 6
(b) 3
(c) 4
(d) 5

Q44. A company offers 5% discount on cash purchases. How much would Darshan pay, in cash, for a bike purchased from the company, if the marked price is Rs. 75,200?

(a) Rs. 71,440
(b) Rs. 74,000
(c) Rs. 70,450
(d) Rs. 72,540

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Q45. Calculate the compound interest on a sum of Rs. 12,000 at 16% p.a. for 3 months. compounded quarterly.

(a) Rs. 1200
(b) Rs. 500
(c) Rs. 400
(d) Rs. 480

Q46. When was the First Round Table Conference started?

(a) August 1932
(b) October 1929
(c) September 1931
(d) November 1930

Q47. Mahesh sold 3/4 of his stock at a gain of 20% and the remaining stock at a gain of 15%. Find the total gain percentage (approximate).

(a) 19%
(b) 20%
(c) 15%
(d) 17%

Q48. In the context of computers, the time taken to receive data from a storage device or to obtain data from a peripheral unit is known as _____.

(a) Time sharing
(b) Downtime
(c) Time slicing
(d) Access time

Q49. Consider the given statement and decide which of the given assumptions is/are implicit in the statement.

Statement:

"The Indian cricket team is expected to win the World Cup in 2019" – Mahender Singh Dhoni.

Assumptions:

I. Indian cricket team is good.

II. Indians want the Indian cricket team to win the World Cup 2019.

(a) Neither assumption I nor II is implicit.
(b) Both assumptions I and II are implicit.
(c) Only assumption II is implicit.
(d) Only assumption I is implicit.

Q50. Who was the flag bearer at the opening ceremony for India at the 2018 Asian Games?

(a) Neeraj Chopra
(b) P V Sindhu
(c) Manpreet Singh
(d) Rani Rampal

Q51. On 23 August 2018, _____ launched the world's first blockchain bond named 'bond-i'.

(a) Swiss Bank
(b) World Bank
(c) Reserve Bank of India
(d) State Bank of India

Q52. If the code for LETTER is written as 1252072218 and BLISS is written as 2129198, then which of the given options will be the code for COMMON?

(a) 31513141214
(b) 31152131512
(c) 31513141113

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(d) 31214131514

Q53. Among the four numbers listed, three are alike in some manner and one is different. Select the one that is different from the rest.

(a) 72900
(b) 43700
(c) 34700
(d) 51600

Q54. If '+' means '×', '×' means '–', and '÷' means '+', then which of the following would be the value of 14 ÷ 2 + 8 × 5?

(a) 25
(b) 75
(c) 47
(d) 123

Q55. Find the mean of the following distribution.

x:	5	6	7	8	9
f:	4	8	14	11	3

(a) 7.025
(b) 5.225
(c) 8.325
(d) 9.125

Q56. The nanosatellite designed and developed by Indian Institute of Technology, Kanpur for the purpose to provide data for agriculture and disaster monitoring was named as:

(a) ANUSAT
(b) STUDSAT
(c) Jugnu
(d) Kalamsat

Q57. Lucknow is famous for which traditional art of embroidery?

(a) Phulkari
(b) Kantha
(c) Patchwork
(d) Chikankari work

Q58. Who won the Women's Singles title in the 2020 Australian Open Tennis Tournament?

(a) Naomi Osaka
(b) Petra Kvitova
(c) Sofia Kenin
(d) Simona Halep

Q59. The dimensions of a metallic cuboid are 50 cm × 40 cm × 32 cm. This cuboid is melted and recast into a cube. Find the total surface area of the cube.

(a) 9,600 cm²
(b) 7,150 cm²
(c) 8,700 cm²
(d) 8,350 cm²

Q60. When was the Atomic Energy Commission set up to supervise atomic energy activities in India?

(a) January 1948
(b) August 1949
(c) August 1948
(d) December 1950

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Q61. Imperial Bank of India was renamed as State Bank of India after nationalization in the year _____.

(a) 1955
(b) 1954
(c) 1953
(d) 1950

Q62. From given options the number that will completely divide (3^(61) + 3^(62) + 3^(63) + 3^(64)) is:

(a) 30
(b) 11
(c) 25
(d) 16

Q63. Which of the following hills in India are known as the Blue Mountains?

(a) Shivalik Hills
(b) Garo Hills
(c) Nilgiri Hills
(d) Khasi Hills

Q64. The speeds of A and B are in the ratio of 4 : 5 to cover a certain distance. If A takes 20 minutes more than B to reach the destination, then find the time taken by A to reach the destination.

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

Q65. If 154/0.154= 15.4/x, then find the value of x.

(a) 154
(b) 1.54
(c) 0.0154
(d) 15.4

Q66. If 70 is subtracted from two-thirds of a number, then the result is equal to the sum of 30 and one-fourth of that number. Find the number.

(a) 230
(b) 200
(c) 240
(d) 340

Q67. Find the missing value of p for the following distribution, whose mean is 12.58.

x:	**5**	**8**	**10**	**12**	**p**	**20**	**25**
f:	2	5	8	22	7	4	2

(a) 13
(b) 10
(c) 20
(d) 15

Q68. The ability of the eye to focus on both, near and distant objects, by adjusting its focal length, is called the _____ of the eye.

(a) refractiveness
(b) adjustment
(c) accommodation
(d) suitability

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Q69. In a certain code language, G is written as 20 and E is written as 22. How will GREAT be written as in that language?

(a) 20923267
(b) 20925267
(c) 20924267
(d) 20922267

Q70. Find the smallest number by which 720 should be multiplied so that the product becomes a perfect square.

(a) 5
(b) 6
(c) 3
(d) 4

Q71. If A = 26 and H = 19, then FASHION = ?

(a) 2126819181217
(b) 2126819181213
(c) 2126819181215
(d) 2126819181214

Q72. Ram is elder than Shyam and Shyam is younger than Abhijeet. Abhijeet celebrates his 18^(th) birthday today. Abhijit is younger than Sanjeev. Sanjeev, Ram and Shyam are brothers and Ram is the eldest among them. Which one of the brothers is NOT yet legally an adult?

(a) Shyam
(b) Sanjeev
(c) Ram
(d) Abhijeet

Q73. If the letters of the English alphabet are written in reverse order, which letter comes in the middle of the 13^(th) letter and the 25^(th) letter?

(a) H
(b) M
(c) G
(d) I

Q74. Kerosene oil rises up in a wick of lantern because of:

(a) Gravitation
(b) Diffusion
(c) Capillarity
(d) Osmosis

Q75. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

A. No mobile is a telephone.

B. All telephone are TV.

Conclusions:

1. No mobile is a TV.

2. Some mobiles are TV.

(a) Either conclusions 1 or 2 follow.
(b) Both conclusions 1 and 2 follow.
(c) Only conclusion 1 follows.
(d) Only conclusion 2 follows.

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Q76. Find the H.C.F of 2/3, 4/9, 8/15 and 10/21.

(a) 2/315
(b) 315/2
(c) 4/315
(d) 315/4

Q77. Which of the following countries has been removed from the 'Currency Monitoring List' of major trading partners by the US Treasury Department in 2019?

(a) South Korea
(b) India
(c) Japan
(d) China

Q78. The states of Chhattisgarh, Uttarakhand and Jharkhand were created in the year _____.

(a) 2000
(b) 2001
(c) 1999
(d) 2002

Q79. If the sum of number-clusters 395 and 727 is represented as 101112; and by the same code, the sum of number-clusters 276 and 957 is represented as 111213, then which of the following will be code for sum of number-clusters 689 and 877?

(a) 131415
(b) 121314
(c) 141312
(d) 141516

Q80. A topical gel to protect the skin of farmers from pesticides is developed by the:

(a) Institute for Stem Cell Science and Regenerative Medicine
(b) National Botanical Research Institute
(c) Indian Institute of Toxicology Research
(d) Indian Agricultural Research Institute

Q81. Ban Ki-Moon, the eighth Secretary General of UN, is from:

(a) South Korea
(b) Japan
(c) China
(d) North Korea

Q82. If D = 23 and T = 7, then EDITION = ?

(a) 2223187181213
(b) 2223187181215
(c) 2223187181214
(d) 2223187181216

Q83. In 2018, the Union Government constituted a group of eminent persons to study the Special Economic Zones (SEZ) Policy of India. The group is chaired by _____.

(a) Anil Ambani
(b) Ratan Tata
(c) Baba Kalyani
(d) Jaiprakash Gaur

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Q84. Who among the following made the remark "South Africa was the making of the Mahatma"?

(a) Bal Gangadhar Tilak
(b) Bipin Chandra Pal
(c) Chandran Devanesan
(d) Jawaharlal Nehru

Q85. If a = (√3 + 1)/(√3- 1) and b = (√3 - 1)/(√3 + 1), then find the value of $a^2 + b^2 – 4$.

(a) 12
(b) 14
(c) 11
(d) 10

Q86. The table below provides the percentage of marks obtained by students, A, B, C, D and E in each of the six semesters. Study the table and answer the following question.

Students	1^(st) Sem	2^(nd) Sem	3^(rd) Sem	4^(th) Sem	5^(th) Sem	6^(th) Sem
A	74	79	73	78	72	86
B	55	51	68	53	72	69
C	40	43	50	52	60	66
D	59	59	58	57	59	57
E	66	76	71	81	89	92

The percentage of marks in 1^(st) semester of which of the following students is nearest to the average percentage of marks of all the students in the same semester?

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

Q87. The table below provides the percentage of marks obtained by students, A, B, C, D and E in each of the six semesters. Study the table and answer the following question.

Students	First Sem	Second Sem	Third Sem	Fourth Sem	Fifth Sem	Sixth Sem
A	74	79	73	78	72	86
B	55	51	68	53	72	69
C	40	43	50	52	60	66
D	59	59	58	57	59	57
E	66	76	71	81	89	92

What is the approximate absolute difference between the overall percentage of A and E for the six semesters?

(a) 6%
(b) 2%
(c) 12%
(d) 4%

Q88. The table below provides the percentage of marks obtained by students, A, B, C, D and E in each of the six semesters. Study the table and answer the following question.

Students	1st Sem	2nd Sem	3rd Sem	4th Sem	5th Sem	6th Sem
A	74	79	73	78	72	86
B	55	51	68	53	72	69

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C	40	43	50	52	60	66
D	59	59	58	57	59	57
E	66	76	71	81	89	92

Which semester shows the highest improvement in percentage of marks considering average of marks obtained by all the students for the semester?

(a) 5^(th)
(b) 2^(nd)
(c) 6^(th)
(d) 3^(rd)

Q89. The table below provides the percentage of marks obtained by students, A, B, C, D, and E in each of the six semesters. Study the table and answer the following question.

Students	1st Sem	2nd Sem	3rd Sem	4th Sem	5th Sem	6th Sem
A	74	79	73	78	72	86
B	55	51	68	53	72	69
C	40	43	50	52	60	66
D	59	59	58	57	59	57
E	66	76	71	81	89	92

Which student has the highest percentage of improvement from the 1^(st) to 6^(th) semester?

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

Q90. In a certain code language, YES is written as 435 and TOP is written as 709. How will POST be written in that language?

(a) 9035
(b) 9057
(c) 9052
(d) 6057

Q91. Select the option that is related to the third number in the same way as the second number is related to the first number.

9 : 729 :: 11 : ?

(a) 1331
(b) 991
(c) 112
(d) 1024

Q92. A is the paternal grandfather of B, D is the brother of A and E is the son of D. How is E related to B?

(a) Cousin
(b) Paternal Uncle
(c) Brother
(d) Grandfather

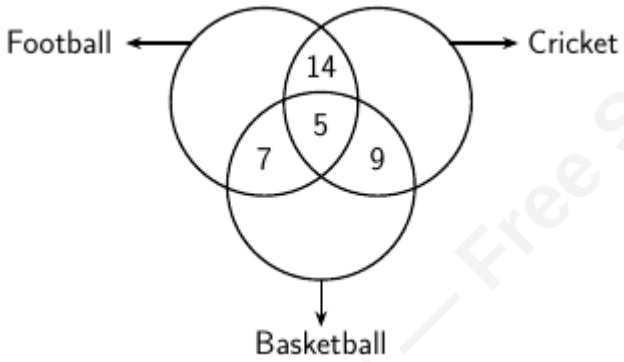
Q93. If the code for LOCK is written as LAND POWER TACT AWAKE, then which of the given options will be the code for POST?

(a) PLATO OFFER REST ROAD
(b) PEACE ROAD DISH EDIT
(c) PEER DOTS SOME TECH

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(d) PAIR POWER CASH SETUP

Q94. Observe the given figure and answer question below



If 50 play football, 40 play cricket and 30 play basketball, then what is the number of players who play basketball but not Cricket?

(a) 21
(b) 30
(c) 11
(d) 16

Q95. Among the four words listed, three are alike in some manner and one is different. Select the odd one.

(a) Sentence
(b) Verb
(c) Noun
(d) Adjective

Q96. In the following letter series, how many times does JKL occur in such a way that this sequence is followed by N?

BCNKLJKLMJKLQJKLMNJKLABJKLJKLMNJKLSKTKJLLKJNJKLJLTKLT

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

Q97. In a group of 60 students, 65% mentioned their gender as 'Male' and 30% mentioned their gender as 'Female'. How many students have NOT mentioned their gender?

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

Q98. Consider the given question and decide which of the given assumptions is/are implicit in the question.

Question:

Could India become a terror free country in future?

Assumptions:

I. India has declared a zero-tolerance policy.

II. India's security establishment is working hard on all the fronts.

(a) Only assumption I is implicit.
(b) Both assumptions I and II are implicit.
(c) Either assumption I or II is implicit.
(d) Only assumption II is implicit.

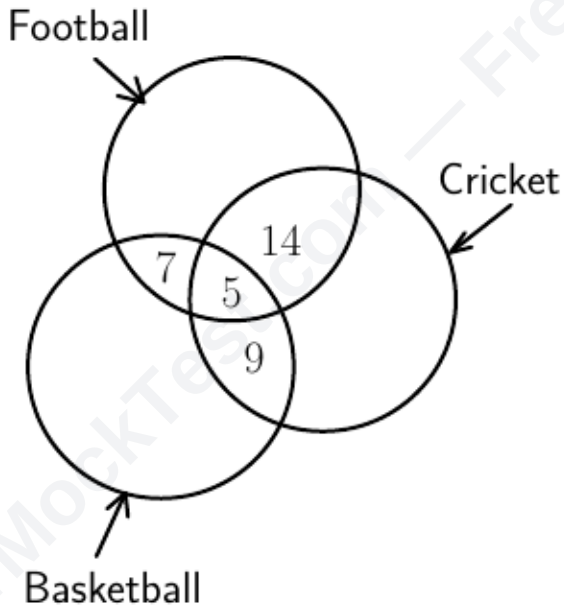
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Q99. Select the option that is related to the third term in the same way as the second term is related to the first term.

India : Tiger :: Nepal : ?

(a) Rhinoceros
(b) Leopard
(c) Cow
(d) Lion

Q100. Observe the given figure and answer question below:



If 50 play football, 40 play cricket and 30 play basketball, then what is the number of players who play football or cricket but not basketball?

(a) 56
(b) 50
(c) 34
(d) 22

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (d) 7

Shortcut Trick

Given: 16 cot A = 12 => cot A = 12/16 = 3/4

Expression to find: (sin A + cos A) ÷ (sin A − cos A)

Divide numerator and denominator by sin A:

=> (1 + cot A) ÷ (1 − cot A)

=> (1 + 3/4) ÷ (1 − 3/4) = (7/4) ÷ (1/4) = 7

Therefore The correct answer is 7.

Alternate Method

Given:

16 cot A = 12 => cot A = 3/4

Formula Used:

Pythagoras Theorem: Hypotenuse² = Base² + Perpendicular²

sin A = Perpendicular ÷ Hypotenuse

cos A = Base ÷ Hypotenuse

Calculations:

=> cot A = Base ÷ Perpendicular = 3/4

=> Let Base = 3x and Perpendicular = 4x

=> Hypotenuse = √((3x)² + (4x)²)

=> Hypotenuse = √(9x² + 16x²) = √(25x²) = 5x

=> sin A = 4x ÷ 5x = 4/5

=> cos A = 3x ÷ 5x = 3/5

Now, substitute the values in the expression: (sin A + cos A) ÷ (sin A − cos A)

=> (4/5 + 3/5) ÷ (4/5 − 3/5)

=> (7/5) ÷ (1/5) = 7

Therefore The correct answer is 7.

Additional Information

Trigonometric Definitions

In a right-angled triangle, tan A = sin A ÷ cos A = Perpendicular ÷ Base, and cot A = cos A ÷ sin A = Base ÷ Perpendicular.

Pythagorean Triples

Common integer sets satisfying Pythagoras theorem include (3, 4, 5), (5, 12, 13), (8, 15, 17) and (7, 24, 25). These combinations save critical calculation time in exams.

Key Trigonometric Identities

Basic square identities are: sin² A + cos² A = 1, 1 + tan² A = sec² A, and 1 + cot² A = cosec² A.

Q2. Answer: (b) Rs. 150

Given:

Time taken by Rajesh to finish a task = 4 days

Time taken by Mahesh to finish a task = 3 days

Payment to be shared between Rajesh and Mahesh = Rs.350

Concept used:

Ratio of payment to be shared = Ratio of one-day efficiency

Calculation:

One day efficiency of Rajesh = 1/4

One day efficiency of Mahesh = 1/3

Ratio of efficiency of Rajesh & Mahesh:

=> Rajesh : Mahesh = 1/4 : 1/3

=> 3 : 4

Therefore The share of Rajesh = Rs.350 × 3/7

=> Rs.150

Q3. Answer: (b) 401

The pattern followed here is -

Hence, “401” is complete in the series.

Q4. Answer: (c) 75√2 m

Given:

Length of the bridge = 150 m

Calculation:

AB = BC, AC = 150 m

In triangle ABC, BC/AC = sin 45°

=> BC/150 = 1/√2

=> BC = 150/√2 × √2/√2

=> BC = 150√2/2

=> BC = 75√2 m

Therefore The width of the river is 75√2 m.

Shortcut TrickBy considering triplets 1, 1 and √2

AC = 150 m

√2 = 150

Therefore 1 = 75√2 m

Q5. Answer: (a) r²

Given:

x = r sin A cos C

y = r sin A sin C

z = r cos A

Formulas used:

sin2θ + cos2θ = 1

Calculation:

$x^2 = r^2 \sin^2 A \cos^2 C$

$y^2 = r^2 \sin^2 A \sin^2 C$

$z^2 = r^2 \cos^2 A$

x2 + y2 + z2 = r2 sin2A cos2C + r2 sin2A sin2C + r2cos2A

=> r2sin2A(sin2C + cos2C) + r2cos2A

=> r2sin2A ×1 + r2cos2A

=> r2 (sin2A + cos2A)

=> r2

Therefore The required result is r2.

Q6. Answer: (d) sunlight

The correct answer is sunlight.

• Sugarcane plants are one of the most efficient convertors of sunlight into chemical energy.

Important Points

• Photosynthesis is the process that green plants use to convert solar energy into chemical energy.

• Photosynthesis relies on the synthesis of sugars from atmospheric CO2 and water from the soil.

• When plants are harvested and processed, the energy stored in the chemical bonds is released and converted to other forms of energy.

• During this process, CO2 is released but unlike the burning of fossil fuels, the use of bio-energy does not contribute to a net emission of CO2, because the carbon was only recently fixed.

• The production of bio-energy, however, does result in CO2 emissions during harvesting, transportation and processing of the feed stocks.

Q7. Answer: (c) 2

Given:

Initial ratio = 5 : 6

Final ratio should be less than 17 : 22

Calculation:

Let the least whole number that is needed to be subtracted be a.

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According to the question,

(5 - a)/(6 - a) < 17/22

=> 5 × 22 - 22a < 17 × 6 - 17a

=> 110 - 22a < 102 - 17a

=> 110 - 102 < - 17a + 22a

=> 8 < 5a

=> 8/5 = 1.6 < a

Therefore The least whole number must be 2.

Q8. Answer: (c) Earth Summit

The correct answer is Earth Summit.

Key Points

• The United Nations Conference on Environment and Development (UNCED) that was held in Brazil in 1992 is known as Earth Summit.

• The global conference was held on the occasion of the 20th anniversary of the first Human Environment Conference in Stockholm, Sweden in 1972.

• The Rio de Janeiro conference highlighted how different social, economic, and environmental factors are interdependent and evolve together, and how success in one sector requires action in other sectors to be sustained over time.

• The primary objective of the Rio 'Earth Summit' was to produce a broad agenda and a new blueprint for international action on environmental and development issues that would help guide international cooperation and development policy in the 21st century.

Additional Information

• Rio Declaration- Principle intended to guide countries in future sustainable development

• Forest Principles- Non-legally binding documents on Conservation and Sustainable development of all types of forest

• Agenda 21- Non-Binding Action plan of the United Nations with regard to sustainable development

Q9. Answer: (d) C Rajagopalachari

The correct answer is C Rajagopalachari.

• C Rajagopalachari was the first recipient of the Bharat Ratna award and the founder of Swatantra Party (1959).

Key Points

• Bharat Ratna is the highest civilian honour, given for exceptional service towards the advancement of Art, Literature and Science, and in recognition of Public Service of the highest order.

• The award was established by the first President of India, Rajendra Prasad on 2 January 1954.

• The award does not carry any monetary grant. The decoration is in the form of a Peepal leaf, about 5.8 cm long, 4.7 cm wide and 3.1 mm thick.

Additional Information

• The Swatantra Party was founded in 1959, which favoured classical liberal principles and free enterprise.

• The Swatantra Party stands for the protection of the individual citizen against the increasing trespasses of the State.

• The Swatantra Party is founded on the claim that individual citizens should be free to hold their property and carry on their professions freely and through binding mutual agreements among themselves.

• C Rajagopalachari was an Indian politician, freedom fighter and member of the Constituent Assembly from Madras.

• He was a senior leader of the Indian National Congress.

• He was the first and last Indian Governor-General of free India.

• He was known for the formulation of the proposal to solve the political deadlock between the All India Muslim League and the Indian National Congress in 1944, popularly known as Rajagopalachari's formula.

• He was the recipient of the Sahitya Akademi Award for the Tamil language for his work retelling of the Ramayana – Chakravarti Thirumagan.

Q10. Answer: (c) 1/9, 2/9, 1/3, 1/3

Given:

Rent of the house = Rs.15000 per month

Share of rent contributed jointly by Krishna and Sumit = Rs.10000

No of days spent by Ajay = 15 days per month

No of days spent by Sunil = 30 days or Whole month

Calculation:

Fraction of rent to be paid equally by Sumit and Krishna over total rent = Rs.10000/Rs.15000 = 2/3

=> Sumit : Krishna = 1/3 : 1/3 .....(1)

Fraction of rent to be paid by Ajay and Sunil over total rent = Rs.5000/Rs.15000 = 1/3

Ratio of days spent by Ajay and Sunil = 15 days : 30 days = 1 : 2

Further, Ajay and Sunil will share their rent on the basis of days spent by them per month, ratio will be (Days spent × Share of rent):

=> Ajay : Sunil = 1/3 × 1/3 : 1/3 × 2/3

=> 1/9 : 2/9 .....(2)

Therefore By (1) and (2), the share of rent paid by Ajay, Sunil, Sumit and Krishna will be:

=> 1/9 : 2/9 : 1/3 : 1/3

Q11. Answer: (d) Statutory Liquidity Ratio

The correct answer is Statutory Liquidity Ratio.

Key Points

• SLR- Statutory Liquidity Ratio

• It is a kind of reserve that the commercial banks need to maintain before crediting their money to the borrowers.

• Regulating the SLR rates is a component of RBI's monetary policy.

• Reserve Bank of India sets the limit for banks (under Banking Regulation Act, 1949) to hold a certain proportion of their assets as SLR.

• The following types of assets can be reserved by banks as SLR:

• Cash or gold (highly liquid assets)

• RBI approved government securities

• Any other asset as specified by RBI

• It is mandatory for all the Scheduled Commercial banks, Central and State cooperative banks, and deposit accepting Non-Banking Financial Companies (NBFCs).

• NBFCs (which do not accept deposits), Primary Agricultural Credit Society (PACS), and Regional Rural Banks (RRBs) don't fall under the mandate of SLR.

Q12. Answer: (c) 25 min

Given:

Distance covered in 20 minutes by the bus = 5 km

Reduction in speed by = 3 km/h

Formula used:

Speed = Distance/Time

Calculation:

Initial speed of the bus = 5 km/ 20 minutes

=> 5 km/ 20 × 60

=> 15 km/h

After reduction in speed,

Time = 5 km/(15 km/h - 3 km/h)

=> 5/12 hours

=> 5/12 × 60 minutes

=> 25 minutes

Therefore The required time is 25 minutes.

Q13. Answer: (b) 8 1/3 years

Given:

Rate of simple interest = 6% p.a.

Formula used:

Amount = Principal + Simple interest

Simple Interest = Principal × Rate/100 × Time

Calculation:

Let the principal be 100p

Amount = 100p + 100p × 6/100 × Time

=> 150p = 100p + 100p × 6/100 × Time

=> 150p - 100p = 6p × Time

=> 50 = 6 × Time

=> Time = 50/6

=> Time = 25/3 years or 8 1/3 years

Therefore The required time is 8 1/3 years.

Q14. Answer: (a) Bhopal

The correct answer is Bhopal.

Key Points

• Sanchi Stupa is situated near the city of Bhopal.

• It is a Buddhist complex, famous for its Great Stupa, on a hilltop at Sanchi Town in Raisen District of the State of Madhya Pradesh.

• It is one of the oldest stone structures in India and was originally commissioned by the emperor Ashoka in the 3rd century BCE.

• Its nucleus was a simple hemispherical brick structure built over the relics of the Buddha.

• It was crowned by the chhatra, a parasol-like structure symbolizing high rank, which was intended to honour and shelter the relics.

• In the 1st century BCE, four elaborately carved toranas (ornamental gateways) and a balustrade encircling the entire structure were added.

• The complex flourished until the 11th century.

• It is also a UNESCO World Heritage site.

Q15. Answer: (b) 2.1 cm

Given:

In triangle ABC, DE||BC

AD/DB = 3/5 and AC = 5.6 cm

Concept used:

Basic Proportionality Theorem (BPT) = If line DE is parallel to side BC of triangle ABC that intersects the other sides into two points, line DE divides sides AB and AC in proportion.

AD/AB = AE/AC

Calculation:

In triangle ABC, AD/DB = 3/5

=> AD/AB = AE/AC = 3/(3 + 5) = 3/8

=> AE/5.6 cm = 3/8

=> AE = 5.6 × 3/8

Therefore AE = 2.1 cm

Q16. Answer: (a) 513

The pattern followed in this series is:

$5^3 + 1 = 125 + 1 = 126$

$6^3 + 1 = 216 + 1 = 217$

$7^3 + 1 = 343 + 1 = 344$

$8^3 + 1 = 512 + 1 = 513$

Hence, "513" will complete the series.

Q17. Answer: (c) 1757

The correct answer is 1757.

• Siraj ud-Daulah, the Nawab of Bengal, was defeated in the battle of Plassey in the year- 1757.

Additional Information

• The battle of Plassey laid the foundation of the British Empire in India.

• This battle was fought between the East India Company headed by Robert Clive and the Nawab of Bengal (Siraj-Ud-Daulah) and his French Troop in 1757.

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• The major reasons behind the Battle of Plassey were the rampant misuse of the trade privileges given to the British by the Nawab of Bengal which is often called "Dastak", non-payment of tax and duty by the workers of the British East India Company.

• Other reason was the fortification of Calcutta by the British without Nawab's permission.

• The outcome of the Battle of Plassey

• Siraj-ud-daula was defeated and Mir Jafar was made the new Nawab.

• Real power passed into the hands of the English.

• Military supremacy of English established in Bengal. Their main rivals, French were ousted.

Q18. Answer: (c) 1957

The correct answer is 1957.

• The International Atomic Energy Agency (IAEA) was established in 1957.

Additional Information

• International Atomic Energy Agency

• The International Atomic Energy Agency is an international organization that seeks to promote the peaceful use of nuclear energy and to inhibit its use for any military purpose, including nuclear weapons.

• It was established as an autonomous organization on July 29, 1957, at the height of the Cold War between the U.S. and the Soviet Union.

• As the pre-eminent nuclear watchdog under the UN, the IAEA is entrusted with the task of upholding the principles of the Nuclear Non-Proliferation Treaty of 1970.

• Though established independently of the UN through its own international treaty, the agency reports to both the UN General Assembly and the UNSC. India is a member of the IAEA.

• The IAEA has its headquarters in Vienna, Austria.

• It has 173 member states as of April 2021.

Q19. Answer: (b) Lord Wellesley

The correct answer is Lord Wellesley.

Key Points

• The Subsidiary Alliance was a non-intervention policy devised by Lord Wellesley in 1798.

• He effectively institutionalized the policy of “non-intervention” which made the Nawab and Nizams subsidiary allies by signing almost 100 such treaties.

Important Points

• Subsidiary Alliance

• It was basically a treaty between the British East India Company and therefore the Indian princely states, by virtue of which the Indian kingdoms lost their sovereignty to the English.

• It was framed by Lord Wellesley, the Governor-General of India.

• The Nawab of Awadh was the first ruler to enter into the subsidiary alliance with the British after the Battle of Buxar.

• The terms of the subsidiary Alliance were-

• Indian princely states would disband their armed forces and accept British forces in their territory. In return, the British would protect the Indian state against any foreign attack or internal revolt.

• Indian princely states would allow the stationing of the British contingent in his Kingdom.

• The ally would have to provide the resources for maintaining the British contingent in the territory.

• They would carry on his administration with the advice of the British president.

• The British promised non-interference in internal affairs of the Indian state but this was rarely kept.

• The permission of the British was needed for the ally to enter into agreements with other rulers or any other foreign power.

Q20. Answer: (a) 9

Given:

The following equations represent coincident lines.

$2x + 3y + 11 = 0$

$6x + ky + 33 = 0$

Concept used:

The equation will represnt coincident lines when they have infinite number of solutions.

$ax1 + by1 + c1 = 0$

$ax2 + by2 + c2 = 0$

Where, a1/a2 = b1/b2 = c1/c2

Calculation:

2/6 = 3/k = 11/33

=> 1/3 = 3/k

Therefore k = 9

Q21. Answer: (d) Dadasaheb Phalke

The correct answer is Dadasaheb Phalke.

Key Points

• Dadasaheb Phalke is known as the 'Father of Indian Cinema'.

• Dadasaheb Phalke is known as “the Father of Indian Cinema” because he introduced the beauty of the cinematic experience in India.

• He was an Indian director, producer screenwriter, editor, and distributor.

• His debut film, Raja Harishchandra, was the first Indian movie released in 1913 and is now known as India's first full-length feature film.

• In a 19-year-career span, he worked on 95 feature films and 27 short films.

• His last film, Gangavataran (1937) was the only film made by Dadasaheb with sound and dialogues.

Additional Information

• The Dada Saheb Phalke Award is India’s highest award in cinema given annually by the Government of India for its lifetime contribution to Indian Cinema.

• It was instituted in 1969.

• Devika Rani was the first winner of the Dadasaheb Phalke Award.

Q22. Answer: (a) outermost

The correct answer is outermost.

• Covalent bonds are formed by the sharing of electrons between two atoms so that both can achieve a completely filled outermost shell.

Additional Information

• Covalent Bond

• When two atoms share one electron pair they are said to be joined by a single covalent bond.

• In many compounds, we have multiple bonds between atoms. The formation of multiple bonds envisages the sharing of more than one electron pair between two atoms.

• If two atoms share two pairs of electrons, the covalent bond between them is called a double bond. For example, in the carbon dioxide molecule, we have two double bonds between the carbon and oxygen atoms. Similarly in the ethene molecule, the two carbon atoms are joined by a double bond.

• When combining atoms share three electron pairs as in the case of two nitrogen atoms in the N2 molecule and the two carbon atoms in the ethyne molecule, a triple bond is formed.

Q23. Answer: (b) Electromagnetic Induction

The correct answer is Electromagnetic Induction.

• The modern electrical generator works on the Electromagnetic Induction principle.

Additional Information

• Faraday’s first law of electromagnetic induction states that whenever a conductor is placed in a varying magnetic field, emf is induced which is called induced emf. If the conductor circuit is closed, the current will also circulate through the circuit and this current is called induced current.

• Faraday's second law of electromagnetic induction states that the magnitude of emf induced in the coil is equal to the rate of change of flux that linkages with the coil. The flux linkage of the coil is the product of a number of turns in the coil and flux associated with the coil.

Important Points

• Electric generator function-

• An Electric generator works on the principle of Faraday's law of Electromagnetic Induction.

• An electric generator uses mechanical energy to generate electricity applying Faraday's law of induction.

• It spins a coil at a constant rate in a magnetic field to induce an oscillating emf.

• A conductor coil (a copper coil tightly wound onto a metal core) is rotated rapidly between the poles of a horseshoe-type magnet. The conductor coil along with its core is known as an armature.

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• The armature is connected to a shaft of a mechanical energy source such as a motor and rotated.

• The mechanical energy required can be provided by engines operating on fuels such as diesel, petrol, natural gas, etc., or via renewable energy sources.

• When the coil rotates, it cuts the magnetic field which lies between the two poles of the magnet.

• The magnetic field will interfere with the electrons in the conductor to induce a flow of electric current inside it.

Q24. Answer: (b) 96

Given:

Numbers are 12, 16, 24, and 32.

Concept used:

Lowest Common Multiple

Calculation:

The least number that is exactly divisible by 12, 16, 24, and 32 will be the LCM.

$12 = 2^2 \times 3$

16 = 2^4

$24 = 2^3 \times 3$

32 = 2^5

Therefore LCM (12, 16, 24, 32) = 25×3

=> 96

Q25. Answer: (a) 2003

The correct answer is 2003.

• The Fiscal Responsibility and Budget Management Act (FRBMA) was introduced in the year 2003.

Important Points

• The Fiscal Responsibility and Budget Management (FRBM) Act is a law enacted by the Government of India in 2003 to ensure fiscal discipline – by setting targets including reduction of fiscal deficits and elimination of revenue deficit.

• The FRBM Bill was introduced by the then finance minister, Yashwant Sinha, in 2000.

• The Bill, approved by the Union Cabinet in 2003, became effective from July 5, 2004.

• The main objectives of the act were:

• Introduce transparent fiscal management systems in the country.

• Introduce a more equitable and manageable distribution of the country's debts over the years.

• Aim for fiscal stability for India in the long run.

• Ensure that public debt does not exceed 50% of the GDP of the year from 2011.

• It had set out three-year rolling targets for four specific fiscal indicators in relation to the gross domestic product (GDP) at market prices —

• Revenue Deficit

• Fiscal Deficit

• Tax to GDP ratio

• Total outstanding Debt at the end of the year

Q26. Answer: (b) Balance of Payments

The correct answer is Balance of Payments.

• A set of accounts that summarises a country's transactions with the rest of the world is known as the Balance of Payments.

Additional Information

• The balance of payment is a record of all monetary transactions made between the residents of one country and the rest of the world.

• These transactions consist of imports and exports of goods, services, and capital, as well as transfer payments, such as foreign aid and remittances.

• A balance of payments deficit means the nation's imports are more than its exports.

• The two components of the Balance of Payments are the current account and the capital account.

• The current account includes transactions in goods, services, investment income, and current transfers. The current account is included in calculations of national output.

• The capital account records all international purchases and sales of assets such as money, stocks, bonds, etc. The capital account includes Foreign Direct Investment, Foreign Portfolio Investment, External Commercial Borrowings, SDR. The capital

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account is included in calculations of national output.

Q27. Answer: (d) Article 263

The correct answer is Article 263.

Key Points

• Article 263:

• Under Article 263 of the Indian Constitution, Inter-State Council had been formed.

• It is a non-permanent, constitutional body set up by the presidential order.

• It was formed under the recommendation of the Sarkaria Commission in the year 1990.

• It is formed to decentralize the powers to the states, formation of policies, deployment of the central armed force, financial issues, and disputes among states.

• The Prime Minister of India is the Chairman of the council.

Additional Information

• Article 352:

• The national emergency could be declared on the basis of "external aggression or war" and "internal disturbance" in the whole of India or a part of its territory.

• Article 19:

• Following are the six fundamental freedom provided under Article 19 of the Constitution of India:

• Freedom of speech and expression.

• Freedom to assemble peacefully without arms.

• Freedom to move freely throughout the territory of India.

• Freedom to form associations or co-operative societies.

• Freedom to reside and settle in any part of the territory of India.

• Freedom to practice any profession or to carry on any trade, business or occupation.

• Article 356:

• It is related to the imposition of the President's rule in states.

• It confers a power upon the President to be exercised only where he is satisfied that a situation has arisen where the government of a State cannot be carried on in accordance with the provisions of the Constitution.

Q28. Answer: (d) connective

The correct answer is connective.

• Blood is a type of connective tissue.

Key Points

• Connective tissue

• This is a kind of biological tissue that supports, connects, or separates different types of tissues and organs of the body.

• Examples- Tendons, ligaments, cartilage, bone, blood.

• Blood has a fluid (liquid) matrix called plasma, in which red blood corpuscles (RBCs), white blood corpuscles (WBCs), and platelets are suspended.

• The plasma contains proteins, salts, and hormones.

• Blood flows and transports gases, digested food, hormones, and waste materials to different parts of the body.

Additional Information

• Epithelial tissue:

• The epithelial tissues are formed by cells that cover the organ surface such as the surface of the skin, the airways, the reproductive tract, and the inner lining of the digestive tract.

• Muscular tissues:

• Muscular tissue is a soft tissue that composes muscles.

• Skeletal muscle (voluntary muscles), cardiac muscle (involuntary muscles) are examples of it.

• Nervous tissue:

• The main components of the nervous system are the brain, spinal cord, and nerves which regulate and control body functions.

• It is made up of neurons that have important functions in the nervous system.

Q29. Answer: (c) Kamala Das

The correct answer is Kamala Das.

• Kamala Das wrote the lyrical poem 'My Mother at Sixty-Six'.

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Additional Information

• Kamala Das-

• She was born in Malabar, Kerala in 1934.

• She is recognized as one of India's foremost poets.

• Her works are known for their originality, versatility and the indigenous flavour of the soil.

• She has published many novels and short stories in English and Malayalam under the name 'Madhavikutty'.

• Some of her works in English include the novel Alphabet of Lust (1977), a collection of short stories Padmavati the Harlot and Other Stories (1992), in addition to five books of poetry.

• She is a sensitive writer who captures the complex subtleties of human relationships in lyrical idiom, My Mother at Sixty-six is an example.

Q30. Answer: (a) 8 and 9

Given:

Sum of two numbers = 17

Sum of the squares of two numbers = 145

Formula used:

$(a - b)^2 = a^2 + b^2 - 2ab$

Calculation:

Let the first number be = a

=> Second number = 17 - a

$a^2 + (17 - a)^2 = 145$

=> $a^2 + 289 + a^2 - 2 \times 17 \times a = 145$

=> $2a^2 - 34a + 144 = 0$

=> a2 - 17a + 72 = 0

=> a2 - 8a - 9a + 72 = 0

=> a(a - 8) - 9(a - 8) = 0

=> (a - 9)(a - 8) = 0

Therefore a = 8, a = 9

=> When first no = 8, Second no = 17 - 8 = 9

=> When first no = 9, Second no = 17 - 9 = 8

Q31. Answer: (a) 0.31

Given:

1/4+1/(4 × 5) + 1/(4 × 5 × 6)

Calculation:

1/4+1/(4 × 5) + 1/(4 × 5 × 6)

=> 1/4 [1 + 1/5 + 1/(5 × 6)]

=> 1/4[1 + 1/5 + 1/5 - 1/6]

=> 1/4[1 + 2/5 - 1/6]

=> 1/4[5/6 + 2/5]

=> 1/4[(25 + 12)/30]

=> 1/4 × 37/30

=> 37/120

=> 0.308

=> 0.31

Therefore The required result is 0.31.

Q32. Answer: (c) ODAO

Table show alphabet serial number –

The pattern for the code is as follows,

BLCM : FHGI

Similarly,

KHWS : ?

Hence, KHWS is coded as “ODAO”.

Q33. Answer: (c) 44%

Given:

A student multiplied a number by 3/4 instead of 4/3.

Calculation:

Let the number to be multiplied = a

The actual answer will be = 4a/3

Wrong answer = 3a/4

Error = Actual answer - Wrong answer

=> 4a/3-3a/4 = (16a - 9a)/12

=> 7a/12

The percentage of error = Error/(4a/3) × 100

=> (7a/12)/(4a/3) ×100

=> 43.75%

Therefore The required result is 44%(approximately).

Q34. Answer: (c) www.twitter.com

The correct answer is www.twitter.com.

Key Points

• Twitter

• It is an American microblogging and social networking service.

• It was created by Jack Dorsey, Noah Glass, Biz Stone, and Evan Williams in March 2006 and launched in July of that year.

• Registered users can post, like, and retweet tweets, but unregistered users can only read those that are publicly available.

Important Points

• In July 2016 Flipkart acquired Jabong through its unit Myntra for about $70 million.

• In February 2020, Flipkart formally shut down Jabong to shift focus completely on its premium clothing platform Myntra.

• Jabong was an e-shopping website.

• Flipkart and Pepperfry are e-shopping websites too.

Q35. Answer: (a) 4851 cm³

Given:

Side of cube = 21 cm

Formulas used:

Volume of sphere = $4/3\pi r^3$

Calculation:

The largest sphere that can be carved out of a cube of side 21 cm will have the diameter equal to 21 cm.

Radius of sphere = 21/2 cm

Volume of sphere = 4/3 × 22/7 × 21/2 × 21/2 × 21/2

=> 11 × 21 × 21

=> 4851 cm^3

Therefore The required result is 4851 cm3.

Q36. Answer: (a) John Maynard Keynes

The correct answer is John Maynard Keynes.

Key Points

• John Maynard Keynes is known as the founding father of Macroeconomics as a separate discipline.

• He was born on June 5, 1883, in Cambridge.

• He completed his degree in Mathematics and had also joined Civil Services in Britain.

• He represented the British Treasury at the Conference of Versailles but resigned because he was against the heavy fine levied on Germany.

• He expressed his concerns about the fine imposed on Germany in his book 'The Economic Consequences of Peace'.

Important Points

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• Keynesian Economics

• In 1923, he published a book 'A Tract on Monetary Reform'. 'The General Theory of Employment, Interest and Money' published in 1936 made a revolutionary change in economics as a subject.

• The book mainly focussed on two aspects employment and effective demand.

• According to him, increasing employment will lead to more people buying more goods and hence demand will increase leading to economic progress.

• He also stated that without the government's intervention full employment cannot be achieved.

Q37. Answer: (a) North America

The correct answer is North America.

Key Points

• The Great Depression was the greatest and longest economic recession in modern world history.

• It began with the U.S. stock market crash of 1929 and did not end until 1946 after World War II.

• It started in North America.

Important Points

• The American public began a frenzy of investing in the speculative market in the 1920s.

• Trade routes created during WWII remained open and helped the market recover.

• The 1929 market crash wiped out a great deal of nominal wealth for individuals and businesses alike.

• Both USA Presidents Hoover and Roosevelt tried to mitigate the impact of the depression through government policies.

• Neither the government policies nor the beginning of WWII could be single-handedly credited with ending the depression.

• In 1932, the country elected Franklin D. Roosevelt as president.

• He promised to create federal government programs to end the Great Depression.

• Within 100 days, he signed the New Deal into law, creating 42 new agencies throughout its lifetime.

• They were designed to create jobs, allow unionization, and provide unemployment insurance

Q38. Answer: (c) 4

Concept:

Dividend = Divisor × Quotient + Remainder

Calculation:

Let the number be N.

$N = 5 \times Q + 3$

$N^2 = (5Q + 3)^2$

$\Rightarrow 25Q^2 + 9 + 30Q$

On $N^2 \div 5 = 5(5Q^2 + 30Q) + 5 + 4$

$\Rightarrow 5(5Q2 + 30Q + 1) + 4$

Therefore The required remainder is 4.

Q39. Answer: (d) Indo-Saracenic style

The correct answer is Indo-Saracenic style.

Key Points

• The Gateway of India was built in the traditional Indo-Saracenic style to welcome King George V and Queen Mary to India in 1911.

• The structure is an arch made of basalt, 26 meters (85 feet) high.

• The final design of George Wittet was sanctioned in 1914 and the construction of the monument was completed in 1924.

• The Gateway was later used as a symbolic ceremonial entrance to India for the Viceroys and the new Governors of Bombay.

• It served to allow entry and access to India.

• The Gateway of India is located on the waterfront at Apollo Bunder area at the end of Chhatrapati Shivaji Marg in South Mumbai and overlooks the Arabian Sea.

Additional Information

• Indo-Saracenic style of architecture was developed by the British in British India in the late 19th century.

• This style of architecture was the combination of native Indo-Islamic architecture with the Gothic revival style of Victorian Britain.

• The buildings built in India by Indo- Saracenic style of architecture were built according to advanced British structural engineering standards of the 1800s including infrastructures of iron, steel and poured concrete.

• These types of buildings were employed with domes, pointed arch, vaulted roofs, pinnacles, minarets, pierced open arcade and

open pavilions.

Q40. Answer: (a) 95%

Given:

No of students = 370

No of students passed = 352

Formula used:

Pass percentage = No of students passed/Total students × 100

Calculation:

Therefore Pass percentage = 352/370 × 100

=> 95.13%

=> 95% (Approximately)

Q41. Answer: (b) Kesar

The correct answer is Kesar.

Key Points

• Girnar Hills of Junagadh, Gujarat is famous for Kesar Mangoes.

• Kesar mangoes, precisely known as Gir Kesar mangoes, are cultivated at the foothills of Girnar near Junagadh in Gujarat, Western India.

• It is grown in around 20,000 hectares area in districts of Amreli and Junagadh of Saurashtra region of Gujarat.

• The talukas in these districts that grow this mango include Junagadh, Talala, Vanthali, Mendarda, Kodinar, Maliya, Visavadar, and Una areas of Junagadh district and Khambha taluka of Amreli district.

• Talala Gir, which is also called Mango Market Yard, is the biggest market for Gir Kesar mangoes.

• Cultivation of Kesar mangoes begins around October after the monsoon is over. Fruits are ready for harvest in April-May.

Important Points

• In 2011, Gir Kesar mangoes obtained the GI tag through the registry in Chennai.

Q42. Answer: (a) Microprocessor

The correct answer is Microprocessor.

Key Points

• A microprocessor is a single chip-based device that is a complete processor in itself and is capable of performing arithmetic and logical operations.

• It is a controlling unit of a micro-computer, fabricated on a small chip.

• The microprocessor contains millions of tiny components like transistors, registers, and diodes that work together.

Additional Information

• The microprocessor consists of an ALU, register array, and a control unit.

• ALU performs arithmetical and logical operations on the data received from the memory or an input device.

• Register array consists of registers identified by letters like B, C, D, E, H, L and accumulator.

• The control unit controls the flow of data and instructions within the computer.

• The microprocessor follows a sequence: Fetch, Decode, and then Execute.

• Clock Speed determines the number of operations per second the processor can perform.

• It is expressed in megahertz (MHz) or gigahertz (GHz). It is also known as Clock Rate.

Q43. Answer: (a) 6

Given:

Zeros of f(x) = x2 – 5x + k = α and β

α – β = 1

Concept used:

If α and β are the zeros of a polynomial $f(x) = ax^2 + bx + c$ then:

Sum of zeros = - b/a

Product of zeros = c/a

Calculation:

Sum of zeros (α + β) = - (- 5)/1 = 5

Product of zeros (αβ) = k/1 = k

Now, $(\alpha + \beta)^2 - (\alpha - \beta)^2 = 4\alpha\beta$

$\Rightarrow 5^2 - 1^2 = 4k$

$\Rightarrow 25 - 1 = 4k$

$\Rightarrow k = 24/4$

Therefore k = 6

Q44. Answer: (a) Rs. 71,440

Given:

Marked Price = Rs.75200

Discount Percent = 5%

Formula used:

Selling Price = Marked Price × (100 - Discount)%

Calculation:

Therefore Amount to be paid by Darshan in cash = Rs.75200 × (100 - 5)%

=> Rs.75200 × 95/100

=> Rs.71440

Q45. Answer: (d) Rs. 480

Given:

Principal = Rs.12000

Rate = 16% per annum compounded quarterly

Time = 3 months

Formulas used:

Compound Interest = Amount - Principal

Amount = Principal × $(1 + r/100)^n$

Calculation:

Rate per quarter = 16%/4 = 4%

Period = 3 months = 1 quarter

Compound Interest = $12000 \times (1 + 4/100)^1 - 12000$

=> 12000[(1 + 1/25) - 1]

=> 12000 [1 + 1/25 - 1]

=> 12000 × 1/25

=> 480

Therefore The compound interest is Rs.480.

Q46. Answer: (d) November 1930

The correct answer is November 1930.

Key Points

• The First Round Table Conference was started in November 1930.

• The three Round Table Conferences of 1930–1932 were a series of peace conferences organized by the British Government and Indian political personalities to discuss constitutional reforms in India.

Additional Information

• First Round Table Conference (November 1930-January 1931)

• The First Round Table Conference was inaugurated by George V on November 12, 1930, in the Royal Gallery House of Lords in London.

• It was chaired by the British Prime Minister, Ramsay MacDonald.

• It was to discuss the Simon Commission but it was totally boycotted by the Indian National Congress.

• Total 74 delegates attended the First Round Table Conference from India.

• The Indian National Congress had decided not to participate in the conference because many Congress leaders were imprisoned at that time because of participation in Civil Disobedience Movements.

• There were fifty-eight political leaders from British India and sixteen delegates from the princely states.

• In the absence of the Indian National Congress, it was difficult for progress to be made but some advances were made.

• The conference was adjourned to 2 January 1931.

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Q47. Answer: (a) 19%

Shortcut Trick

Use the weighted average formula to directly calculate the net gain.

Total Gain % = (Part1 × Gain1%) + (Part2 × Gain2%)

Total Gain % = (3/4 × 20%) + (1/4 × 15%)

Total Gain % = 15% + 3.75% = 18.75% ≈ 19%

Therefore The correct answer is 19%.

Alternate Method

Given:

Fraction of stock sold at 20% gain = 3/4

Remaining fraction of stock = 1 − 3/4 = 1/4

Gain on the remaining stock = 15%

Formula Used:

Total Net Gain % = (Fraction1 × Gain1) + (Fraction2 × Gain2)

Calculations:

=> Let the total cost price (CP) of the stock be 400 units to make calculations easier.

=> CP of 3/4th of the stock = 3/4 × 400 = 300 units

=> CP of the remaining 1/4th of the stock = 1/4 × 400 = 100 units

=> Profit on the first part = 20% of 300 = (20 ÷ 100) × 300 = 60 units

=> Profit on the second part = 15% of 100 = (15 ÷ 100) × 100 = 15 units

=> Total Profit = 60 + 15 = 75 units

=> Total Gain % = (Total Profit ÷ Total CP) × 100

=> Total Gain % = (75 ÷ 400) × 100

=> Total Gain % = 18.75%

=> Rounding off to the nearest integer, we get 19%.

Therefore The correct answer is 19%.

Additional Information

Overall Profit / Loss on Partial Sales

When items are divided into fractions and sold at different profit or loss percentages, the net percentage is the sum of products of each fraction and its respective profit/loss. Losses must be assigned a negative sign.

Weighted Average Method

Total Average = (n1x1 + n2x2) ÷ (n1 + n2). This is the fastest method to use when quantities (or fractions) are mixed with different average values or percentages.

Alligation Method

If two parts having profit percentages P1 and P2 are mixed to yield an overall profit percentage P, the ratio of the quantities in which they are mixed is (P − P2) : (P1 − P).

Q48. Answer: (d) Access time

The correct answer is Access time.

• In the context of computers, the time taken to receive data from a storage device or to obtain data from a peripheral unit is known as Access time.

Important Points

• Peripheral devices

• A peripheral device is any device that can be connected to a computer.

• This term includes monitors, keyboards, mouse, webcams, drawing pads, joystick, modems, printers, scanners, interactive whiteboards, drive wheel, and so on.

• Computer access time is commonly measured in nanoseconds or milliseconds and the lower the time the, better or faster the computer should perform.

• Ideally, the access time of memory should be fast enough to keep up with the CPU. If not, the CPU will waste a certain number of clock cycles, which makes it slower.

• DRAM (dynamic random access memory) chips for personal computers have access times of 50 to 150 nanoseconds (billionths of a second).

• Static RAM (SRAM) has access times as low as 10 nanoseconds.

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Q49. Answer: (d) Only assumption I is implicit.

The logic followed is:

Assumption 1 → This is implicit, because Indian cricket team is good so The Indian cricket team is chance to win the World Cup in 2019.

Assumption 2 → This is not implicit, because Indians want the Indian cricket team to win the World Cup 2019 it cannot help to win the World Cup in 2019.

Hence, "Only assumption I is implicit".

Additional Information

1. Read the statement with an approach that the assumptions would be true about the statement.

2. Do not go too logical with the statements. Analyze the given information and the assumption must only be made based on the information in the statement. Do not over-complicate it.

3. Common assumptions can always be followed but other than that do not align the statement with General Knowledge or other facts

4. Use the elimination method if you are unable to apprehend the answer. Read the statement and then the assumptions given in the options, you shall notice that a few of them will most definitely not follow. Eliminate them and then choosing from lesser options may prove to be more convenient

5. One thing to note is that the assumption is something that the author believes to be true, so while choosing the correct option, keep this thought in mind. If any option contradicts the statement, then that assumption will not follow.

Q50. Answer: (a) Neeraj Chopra

The correct answer is Neeraj Chopra.

• Neeraj Chopra was the flag bearer at the opening ceremony for India at the 2018 Asian Games.

Additional Information

• About Asian Games 2018

• Asian games 2018 was hosted in Jakarta, Indonesia.

• India competed at the 2018 Asian Games in Jakarta and Palembang, Indonesia, from 18th August to 2nd September.

• Rani Rampal was named as the flag bearer for the closing ceremony.

• India ranked 8th in the 2018 Asian Games Medal Table with 69 medals in total.

• China topped the medal tally with 132 Golds and a total of 289 Medals.

• Japanese swimmer Ikee Rikako was named as the Most Valuable Player (MVP) of the recently-concluded 18th edition of the Asian Games.

• Neeraj Chopra

• He is an Indian track and field athlete competing in the javelin throw.

• He won the gold medal in the 2020 Tokyo Olympics.

• He won a Gold Medal in the 2018 Asian Games with a National record of 88.06 meters.

• He also clinched the gold medal in the 2018 Commonwealth Games.

Q51. Answer: (b) World Bank

The correct answer is World Bank.

Key Points

• On 23 August 2018, World Bank launched the world's first blockchain bond named 'bond-i'.

• The Commonwealth Bank of Australia arranged the blockchain bond issue, which initially raised A$110 million and a subsequent A$50 million during a second tranche offering.

• The CBA Blockchain Centre of Excellence developed and built the bond-i blockchain platform.

• The goal was to assist capital markets in achieving fast, efficient, and secure transactions via distributed ledger technologies.

Additional Information

• The prototype deal dubbed a “Bondi" bond - standing for Blockchain Operated New Debt Instrument as well as a reference to Australia’s most famous beach —was viewed as an initial step in moving bond sales away from manual processes towards faster and cheaper automation.

• The World Bank, whose bonds carry an AAA rating, regularly uses its borrowing power to help develop new bond markets as well as pioneering new means for selling and trading the securities.

• In June 2017, the World Bank launched a Blockchain Innovation Lab to understand the impact of blockchain and other disruptive technologies in areas such as land administration, supply chain management, health, education, cross-border payments, and carbon market trading.

Q52. Answer: (a) 31513141214

Table show alphabet serial number –

Given: LETTER is written as 1252072218 and BLISS is written as 2129198.

The logic followed here is,

1) Given letters in a word convert into alphabets place value.

2) If letters are repeated in a word so we use the opposite alphabet place value of the second repeated letter.

So the LETTER is written as 1252072218

And,

So the BLISS is written as 2129198.

Similarly,

Hence, 'COMMON' is coded as '31513141214'

Q53. Answer: (a) 72900

The pattern is following here,

Option 1 → 72900 → Perfect square of '270'

Option 2 → 43700 → Not a Perfect square of any number.

Option 3 → 34700→ Not a Perfect square of any number.

Option 4 → 51600→ Not a Perfect square of any number.

All options follow the same pattern, except 'Option 1'

Hence, "72900" is the correct answer.

Q54. Answer: (a) 25

Decoding the information,

Sing	•	×	÷
Means	×	•	•

Given:

14 ÷ 2 + 8 × 5

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

14 + 2 × 8 - 5

= 14 + 16 - 5

= 30 - 5

= 25

Hence, "25" is the correct answer.

Q55. Answer: (a) 7.025

Given:

Formula used:

∑ f = N

By Direct Method:

Mean = ∑ fx/N

Calculation:

∑ f = N = 4 + 8 + 14 + 11 + 3 = 40

∑ fx = 20 + 48 + 98 + 88 + 27 = 281

Therefore Mean = 281/40

=> 7.025

Q56. Answer: (c) Jugnu

The correct answer is Jugnu.

Key Points

• The nanosatellite designed and developed by the Indian Institute of Technology, Kanpur for the purpose to provide data for agriculture and disaster monitoring was named Jugnu.

• It was launched from Satish Dhawan Space Center (SHAR), Sriharikota.

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• It was launched on a PSLV-CA rocket with Megha-Tropiques in piggyback to low earth.
• It had a Micro Imaging System, a near-infrared camera used to observe vegetation.
• Its design life was one year.
• It also had a GPS receiver to aid in tracking and was intended to demonstrate a microelectromechanical inertial measurement unit.
• The mission hopes to serve the nation by providing indigenous small-scale technology for future space missions.
• In addition, it aims to provide students with real-life design and development experience of real space systems.

Q57. Answer: (d) Chikankari work

The correct answer is Chikankari work.

Key Points

• Lucknow is famous for Chikankari work traditional art of embroidery.
• The word chikan itself means embroidery.
• It is one of Lucknow's best-known textile decoration styles.
• The technique of the creation of a chikan work is known as the chikankari.
• Chikan is a delicate and artfully done hand embroidery on a variety of textile fabrics like muslin, silk, chiffon, organza, net, etc.
• White thread is embroidered on cool, pastel shades of light muslin and cotton garments.
• GI tag has been accorded to Lucknow Chikankari in 2008.

Important Points

• Uttar Pradesh
• State Animal: Swamp Deer (Barasingha)
• State Bird: Sarus Crane
• State Tree: Ashoka
• State Flower: Brahma Kamal

Q58. Answer: (c) Sofia Kenin

The correct answer is Sofia Kenin.

Key Points

• Sofia Kenin from USA won the Women's Singles title in the 2020 Australian Open Tennis Tournament.
• She defeated Garbine Muguruza (Spain).

Important Points

• The 2020 Australian Open was a Grand Slam tennis tournament that took place at Melbourne Park from 20 January to 2 February 2020.
• It was the 108th edition of the Australian Open.
• This included tennis competitions for professional players in singles, doubles, and mixed doubles.
• 2020 Australian Open Winners:
• Men's singles winner- Novak Djokovic
• Men's Doubles winner- Rajeev Ram and Joe Salisbury
• Women's Doubles winner- Tímea Babos and Kristina Mladenovic

Additional Information

• The four major grand slams of Tennis include:
• Wimbledon - It started in the year 1877 and is played on the grass court.
• US Open - It started in the year 1882 and is played on the hardcourt.
• French Open - It started in the year 1897 and is played on the clay court.
• Australian Open - It started in the year 1905 and is played on the hardcourt.

Q59. Answer: (a) 9,600 cm²

Given:

Dimensions of metallic cuboid = 50 cm × 40 cm × 32 cm

The metallic cuboid is melted and recast into a cube.

Formulas used:

Volume of cuboid = length × breadth × height

Volume of cube with side 'a' = a^3

Surface area of cube = $6a^2$

Calculation:

Volume of cuboid = Volume of cube

$50\ cm \times 40\ cm \times 32\ cm = a^3$

=> $2 \times 5^2 \times 5 \times 2^3 \times 2\text{^}5 = a3$

=> $64000 = a3$

=> $a = cbrt64000\ cm^3$

=> $a = 40\ cm$

Therefore Surface area of cube = $6 \times 40 \times 40$

=> $9600\ cm^2$

Q60. Answer: (c) August 1948

The correct answer is August 1948.

Key Points

• The Atomic Energy Commission was set up to supervise atomic energy activities in August 1948 in India.

• It was set up under the Department of Scientific Research.

• A resolution passed by the Government of India later replaced the commission by "Atomic Energy Commission of India" on 1 March 1958 under the Department of Atomic Energy with more financial and executive powers.

Important Points

• The functions of the Atomic Energy Commission are-

• Organize research in atomic science in the country

• Train atomic scientists in the country

• Promote nuclear research in the commission's own laboratories in India

• Undertake the prospect of atomic minerals in India and extract such minerals for use on an industrial scale.

• The first Chairman of the Atomic Energy Commission of India was Homi Bhabha.

• The Department of Atomic Energy (DAE) was set up on 3rd August 1954. It is under the direct charge of the Prime Minister of India, through a Presidential Order.

Q61. Answer: (a) 1955

The correct answer is 1955.

• Imperial Bank of India was renamed as State Bank of India after nationalization in the year 1955.

Additional Information

• Imperial Bank of India was established on 27 January 1921.

• It was founded by J. M. Keynes.

• It was done by merging three presidency banks into a single banking entity-

• Bank of Bengal (2 June 1806)

• Bank of Bombay (15 April 1840)

• Bank of Madras (1 July 1843)

• The Imperial Bank was nationalized in 1955 on the recommendation of the Gorewala Committee and renamed as State Bank of India.

Q62. Answer: (a) 30

Given:

$(361 + 362 + 363 + 364)$

Calculation:

$(361 + 362 + 363 + 364)$

=> $3\text{^}(61)(1 + 3 + 3^2 + 3^3)$

=> $361 \times (1 + 3 + 9 + 27)$

=> 361×40

=> $3\text{^}(60) \times 3 \times 4 \times 10$

=> $360 \times 4 \times 30$

Because The above expression has 30 in it. In other words 30 is one of the factors of the given expression.

Therefore 30 will divide $(361 + 362 + 363 + 364)$ completely.

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Q63. Answer: (c) Nilgiri Hills

The correct answer is Nilgiri Hills.

• Nilgiri Hills are known as the Blue Mountains.

Important Points

• Nilgiri hills are a part of the Western Ghats down in the south and Doda Beta is the highest peak here.

• The hills are located at the tri-junction of the states Karnataka, Kerela and Tamil Nadu.

• These mountains are named after the Neelakurunji flowers (purplish-blue flowers) found in the Shola forests of Nilgiri hills.

• The vegetation ranges from the Evergreen forests to the Shola Grasslands and thorny bushes.

• It is the habitat of the endangered species, the Nilgiri Tahr.

• Todas, Kurumbas, Paniyas and Adiyans are the tribes living here.

• The Mudumalai and Waynad wildlife sanctuaries, Bandipore National park, Nagarhole national park, Mukurthi national park and Silent valley national park are a part of Nilgiri Biosphere Reserve.

• Bhavani, Moyar, Kabini, Chaliyar and Punampuzha rivers drain these mountains.

Confusion Points

• The highest peak in the state of Mizoram, Phawngpui, is also known as the Blue Mountain.

But in the question, there is no mention of Phawngpui, nor in the options, so the most appropriate answer is Nilgiri Mountains.

Q64. Answer: (b) 5/3 hours

Given:

The ratio of speed of A and B = 4 : 5

Time taken by A = 20 minutes + Time taken by B

Formula used:

Time = Distance/Speed

Calculation:

Ratio of time taken by A and B = 1/4 : 1/5

=> 5 : 4

Difference between the time taken by A and B:

A - B = 20 minutes

=> 5x - 4x = 20 minutes

Because x = 20 minutes

=> 5x = 20 × 5 minutes

=> 100/60 hours

=> 5/3 hours

Therefore The time taken by A to reach the destination is 5/3 hours.

Q65. Answer: (c) 0.0154

Given:

154/0.154= 15.4/x

Calculation:

154/0.154= 15.4/x

By cross multiplication, we get

154 × x = 15.4 × 0.154

=> x = 15.4 × 0.154/154

=> x = 0.0154

Therefore The required result is 0.0154.

Q66. Answer: (c) 240

Given:

Let the number = x

Two-thirds of x - 70 = One-fourth of x + 30

Formula used:

Basic Algebra

Calculations:

2/3x - 70 = 1/4x + 30

=> 2/3x - 1/4x = 30 + 70

=> (8x - 3x)/12 = 100

=> 5x/12 = 100

=> 5x = 100 × 12)

=> x = 1200/5)

=> x = 240

Therefore The correct answer is option (3).

Q67. Answer: (d) 15

Given:

Mean of the series = 12.58

x:	5	8	10	12	p	20	25
f:	2	5	8	22	7	4	2

Formula used:

By direct method

Mean = ∑ fx/N

Calculation:

x	5	8	10	12	p	20	25
f	2	5	8	22	7	4	2
fx	10	40	80	264	7p	80	50

N = ∑f = 50

∑ fx = 524 + 7p

12.58 = (524 + 7p)/50

=> 12.58 × 50 = 524 + 7p

=> 629 - 524 = 7p

=> p = 105/7

Therefore p = 15

Q68. Answer: (c) accommodation

The correct answer is accommodation.

Key Points

• The ability of the eye to focus on both, near and distant objects, by adjusting its focal length, is called the accommodation of the eye.

• The muscles in our eye can adjust the focus of the lens present in our eye to focus on different objects at different times at different distances.

• Due to this ability, our eye can focus on near as well as far away objects, and this ability is called the power of accommodation.

• The maximum power of accommodation of the eye for a person having normal vision (d = 25 cm) is 4 Dioptre.

Additional Information

• Myopia- The human eye can see a nearby object clearly but cannot see far away object clearly.

• Hypermetropia- The human eye can see distant objects clearly but cannot see nearby objects clearly.

• Presbyopia- In this defect, both near and far objects are not clearly visible. It is an old age disease and it is due to the losing power of accommodation.

• Astigmatism- In this defect, the eye cannot see horizontal and vertical lines clearly, simultaneously. It is due to the imperfect spherical nature of the eye lens.

Q69. Answer: (d) 20922267

Table show alphabet serial number –

The pattern followed here is

So the G is coded as 20.

And,

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So the E is coded as 22.
Similarly,
Hence, GREAT is coded as '20922267'.

Q70. Answer: (a) 5

Given:
Number = 720
Concept used:
Prime Factorization
Calculation:
By prime factorization, 720 can be written as:
$720 = 2^2 \times 2^2 \times 3^2 \times 5$
Therefore 5 must be multiplied by 720 so that the product ($720 \times 5 = 3600$) becomes a perfect square.

Q71. Answer: (b) 2126819181213

Table show alphabet serial number –
The pattern followed here is
So the A is coded as 26
And,
So the H is coded as 19.
Similarly,
Hence, FASHION is coded as '2126819181213'

Q72. Answer: (a) Shyam

According to the given information:
Ram is elder than Shyam.
Ram > Shyam.
Shyam is younger than Abhijeet implies that Abhijeet is elder than Shyam.
Abhijeet > Shyam.
Abhijeet is younger than Sanjeev implies that Sanjeev is elder than Abhijeet.
Sanjeev > Abhijeet.
Sanjeev, Ram and Shyam are brothers and Ram is the eldest among them.
Ram > Sanjeev > Abhijeet > Shyam.
Now we know Abhijeet celebrates his 18^(th) birthday today and Shyam is younger than Abhijeet.
So, Shyam is not legally an adult.
Hence, 'Shyam' is correct answer.

Q73. Answer: (a) H

Table show alphabet serial number –
English alphabet:-
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z.
English alphabet are written in reverse order
Z Y X W V U T S R Q P O N M L K J I H G F E D C B A.
From left the 13^(th) letter is 'N' and the 25^(th) letter is 'B'.
Z Y X W V U T S R Q P O N M L K J I H G F E D C B A.
The middle of the 13^(th) letter and the 25^(th) letter is 'H'
Z Y X W V U T S R Q P O N M L K J I H G F E D C B A.
Hence, 'H' is the correct answer.

Q74. Answer: (c) Capillarity

The correct answer is Capillarity.
• Kerosene oil rises up in a wick of lantern because of Capillarity.
Important Points
• Capillarity-

• The tendency of a liquid in a capillary tube or absorbent material to rise or fall as a result of surface tension.

• One consequence of the pressure difference across a curved liquid-air interface is the well-known effect that water rises up in a narrow tube in spite of gravity.

• The cohesive force between the kerosene and the wick is more compared to the adhesive force of kerosene, so the kerosene rises through the wick due to capillarity.

• For capillary action, the diameter of the tube should be very small.

• The liquid rises in the capillary tube due to surface tension.

Q75. Answer: (a) Either conclusions 1 or 2 follow.

Note - The answer to this question was given wrong in the option, so we have corrected it.

The least possible diagram for the given statements is as follows

Conclusions:

1. No mobile is a TV → False (It is possible but not definite)

2. Some mobiles are TV → False (It is possible but not definite)

When we combining the statement I and II we can say that either I or II follows.

Hence, either conclusions 1 or 2 follows.

Important PointsConditions of Either-or case:

1. The elements should be the same in both statements

2. Individually both the conclusions should be false

3. One conclusion should be positive and one conclusion should be negative (Complementary pair)

The two complementary pairs are:

1) All + Some not

2) No + Some

Additional Information

Q76. Answer: (a) 2/315

Given:

2/3, 4/9, 8/15 and 10/21

Formula used:

HCF of fractions = HCF of numerators/LCM of Denominators

Calculation:

HCF of the given fractions = HCF (2, 4, 8, 10)/LCM(3, 9, 15, 21)

=> 2/($3^2 \times 5 \times 7$)

=> 2/315

Therefore The required result is 2/315.

Q77. Answer: (b) India

The correct answer is India.

• India has been removed from the 'Currency Monitoring List' of major trading partners by the US Treasury Department in 2019.

Important Points

• Switzerland was the other nation that was removed by the US from its currency monitoring list.

• India was removed because it met only one out of three criteria in a significant bilateral surplus with the US for two consecutive reports.

• After purchasing foreign exchange on the net in 2017, the central bank steadily sold reserves for most of 2018, with net sales of foreign exchange reaching 1.7 percent of GDP over the year.

• India maintained ample reserves according to the IMF metrics for reserve adequacy.

• Neither Switzerland nor India met the criteria for having engaged in persistent, one-sided intervention in either the October 2018 report

Q78. Answer: (a) 2000

The correct answer is 2000.

• The states of Chhattisgarh, Uttarakhand and Jharkhand were created in the year 2000.

Additional Information

• Chhattisgarh- 1 November 2000

• It was created out of eastern Madhya Pradesh.
• Chhattisgarh included seven districts of the old state and is rich in mineral wealth and a substantial rice producer.
• The basis for the creation of these states is said to be socio-political and not linguistic.
• Uttarakhand- 9 November 2000
• It was created out of the mountainous districts of northwest Uttar Pradesh.
• The formation of Uttarakhand fulfilled the long-voiced demands of the tribal of Kumaon and Garhwal.
• Uttarakhand was formed out of the 11 hill districts and 2 plains districts.
• Jharkhand- 15 November 2000
• It was carved out of the 18 districts of southern Bihar.
• This state encompasses around 35 percent of Bihar's population.
• It also constitutes 65 percent of the state's revenue generated by the coal mines and steel mills.

Q79. Answer: (d) 141516

The logic followed here is,
In 395 and 727
3 + 7 = 10
9 + 2 = 11
5 + 7 = 12
So, 395 and 727 is represented as 101112.
And,
In 276 and 957
2 + 9 = 11
7 + 5 = 12
6 + 7 = 13
So, 276 and 957 is represented as 111213.
Similarly,
In 689 and 877
6 + 8 = 14
8 + 7 = 15
9 + 7 = 16
Hence, 689 and 877 is represented as '141516'.

Q80. Answer: (a) Institute for Stem Cell Science and Regenerative Medicine

The correct answer is Institute for Stem Cell Science and Regenerative Medicine.
Key Points
• A topical gel to protect the skin of farmers from pesticides is developed by the Institute for Stem Cell Science and Regenerative Medicine.
• The researchers formulated and patented the poly-Oxime gel made of chemically modified chitosan — found in the shells of crustaceans such as lobsters, crabs and shrimps.
• The gel, when applied on animal models, chemically deactivated or neutralized organophosphate-based pesticides on their skin and reduced the inhibition of acetylcholinesterase (AChE) – the most abundant enzyme in the central and peripheral nervous system and critical for controlling nerve signals in the body.
Important Points
• Farmers are exposed to toxic pesticides, through skin contact and inhalation, during the spraying of pesticides.
• This skin gel inhibits the absorption of the most commonly used pesticides that can cause serious ill effects on health.
• The Institute for Stem Cell Biology and Regenerative Medicine (inStem), is a state-of-the-art research institute in Bangalore, India, dedicated to the study of stem cell and regenerative biology.
• An autonomous institute funded by the Dept of Biotechnology, Govt. of India, inStem emphasizes collaborative research in stem cell biology.

Q81. Answer: (a) South Korea

The correct answer is South Korea.
Key Points
• Ban Ki-Moon, the eighth Secretary-General of the UN, is from South Korea.

• He was the Secretary-General of the United Nations from 1 January 2007 to 31 December 2016.

• His first priority has been to rally world leaders behind a series of emerging global concerns, ranging from climate change and economic turmoil to pandemics and rising food, energy, and water pressures.

• He has worked to develop bridges and strengthen the Organization by giving voice to the world's poorest and most vulnerable people.

Important Points

• United Nations (UN)

• It is an intergovernmental organization.

• It aims to maintain international peace and security and develop friendly relations among nations.

• The UN is headquartered in New York City.

• Arabic, Chinese, English, French, Russian, and Spanish are the six official languages of the UN.

• António Guterres is the ninth Secretary-General of the United Nations, took office on 1st January 2017.

Q82. Answer: (a) 2223187181213

Table show alphabet serial number –

The pattern followed here is

So the D = 23

And,

So the T = 7.

Similarly,

Hence, EDITION = 2223187181213.

Q83. Answer: (c) Baba Kalyani

The correct answer is Baba Kalyani.

• The Government of India has constituted a group of eminent persons to study the Special Economic Zone (SEZ) policy of India.

• It will be headed by Baba Kalyani, Chairman, Bharat Forge.

• The group will evaluate the SEZ policy, suggest measures to cater to the needs of exporters in the present economic scenario and make the SEZ policy WTO compatible, suggest course correction in SEZ policy, make a comparative analysis of the SEZ scheme and dovetail the SEZ policy with other similar schemes.

Additional Information

• A Special Economic Zone (SEZ) is an area in which trade and business laws are separate from the rest of the country.

• SEZs are located within the national borders of the country, and their objectives include increasing trade balance, employment, increasing investment, job creation and effective governance.

• To encourage businesses to set up in the area, financial policies are introduced.

• These policies typically include investment, taxation, trade, quotas, customs and labor regulations.

• Additionally, companies may be offered a tax holiday where, upon establishing themselves in a region, they are given a shorter taxation period.

Q84. Answer: (c) Chandran Devanesan

The correct answer is Chandran Devanesan.

Key Points

• Chandran Devanesan made the remark "South Africa was the making of the Mahatma".

• It was in South Africa that Mahatma Gandhi first forged the distinctive techniques of non-violent protest known as satyagraha.

• It was the first time that he promoted harmony between religions and first alerted upper-caste Indians to their discriminatory treatment of low castes and women.

• Chandran Devanesen was the first professor at Madras Christian College.

• He also served as Professor and Head, Department of History, MCC and was the founder Vice-Chancellor of North-Eastern Hill University, Shillong.

Q85. Answer: (d) 10

Given:

$a = (\sqrt{3} + 1)/(\sqrt{3} - 1)$ and $b = (\sqrt{3} - 1)/(\sqrt{3} + 1)$

Formulas used:

$(a + b)^2 = a^2 + b^2 + 2ab$

$(a - b)2 = a2 + b2 - 2ab$

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a2 - b2 = (a - b)(a + b)
Calculation:
By Rationalization
a = (√3 + 1)/(√3 - 1) × (√3 + 1)/(√3 + 1)
=> (√3 + 1)²/(√3² - 1²)
=> (√32 + 1² + 2 × √3 × 1)/(3 - 1)
=> (3 + 1 + 2√3)/2
=> 2 + √3
a² = (2 + √3)²
=> 4 + 3 + 4√3
=> 7 + 4√3 .....(1)
Similarly,
b= (√3 - 1)/(√3 + 1) × (√3 - 1)/ (√3 - 1)
=> (√3 - 1)2/(√32 - 12)
=> (√32 + 12 - 2 × √3 × 1)/(3 - 1)
=> (3 + 1 - 2√3)/2
=> 2 - √3
b2 = (2 - √3)2
=> 4 + 3 - 4√3
=> 7 - 4√3 .....(2)
By (1) and (2)
a2 + b2 – 4
=> 7 + 4√3 + 7 - 4√3 - 4
=> 14 - 4
=> 10
Therefore The required result is 10.

Q86. Answer: (c) D

Given:
Marks of students A, B, C, D and E in 1^(st) semester = 74 + 55 + 40 + 59 + 66 = 294
Formula used:
Average marks of 5 students = Sum of the marks/5
Calculation:
Average marks of A, B, C, D and E in 1st semester = 294/5 = 58.8
Therefore Average marks of all the students is 58.8 that is nearest to the marks of student D (59).

Q87. Answer: (b) 2%

Calculation:
Percentage of marks scored by student A in all the 6 semesters = 74 + 79 + 73 + 78 + 72 + 86 = 462%
Percentage of marks scored by student E in all the 6 semesters = 66 + 76 + 71 + 81 + 89 + 92 = 475%
Therefore The approximate absolute difference between the overall percentage of A and E for 6 semesters = (475% - 462%)/6
=> 13/6 = 2.1%
=> 2%

Q88. Answer: (a) 5^(th)

Calculation:
Number of marks in I^(st) semester = (74 + 55 + 40 + 59 + 66)
=> 294
Average of marks in I^(st) semester = (294/5)
=> 58.8
Number of marks in 2^(nd) semester = (79 + 51 + 43 + 59 + 76)
=> 308
Average of marks in 2ⁿ^d semester = (308/5)

=> 61.6
Improvement in percentage of marks of 2^(nd)to 1^(st) semester
=> (61.6 – 58.8) = 2.8%
Number of marks in 3^(rd) semester = (73 + 68 + 50 + 58 + 71)
=> 320
Average of marks in 3^(rd) semester = (320/5)
=> 64
Improvement in percentage of marks of 3^(rd) to 2^(nd) semester
=> (64 – 61.6) = 2.4%
Number of marks in 4^(th) semester = (78 + 53 + 52 + 57 + 81)
=> 321
Average of marks in 4^(th) semester = (321/5)
=> 64.2
Improvement in percentage of marks of 4^(th) to 3^(rd) semester
=> (64.2 – 64) = 0.2%
Number of marks in 5^(th) semester = (72 + 72 + 60 + 59 + 89)
=> 352
Average of marks in 5^(th) semester = (352/5)
=> 70.4
Improvement in percentage of marks of 5^(th) to 4^(th) semester
=> (70.4 – 64.2) = 6.2%
Number of marks in 6^(th) semester = (86 + 69 + 66 + 57 + 92)
=> 370
Average of marks in 6^(th) semester = (370/5)
=> 74
Improvement in percentage of marks of 6^(th) to 5^(th) semester
=> (74 – 70.4) = 3.6%
Therefore Highest improvement in percentage of marks in 5^(th) semester

Q89. Answer: (c) C

Calculation:
Improvement in marks of student A from 1^(st) to 6^(th) semester = [(86 – 74)/74 × 100]
=> (12/74 × 100)
=> 16.21%
Improvement in marks of student B from 1st to 6th semester = [(69 – 55)/55 × 100]
=> (14/55 × 100)
=> 25.45%
Improvement in marks of student C from 1st to 6th semester = [(66 – 40)/40 × 100]
=> (26/40 × 100)
=> 65%
Improvement in marks of student D from 1st to 6th semester = [(57 – 59)/59 × 100]
=> (-2/59 × 100)
=> -3.38%
Improvement in marks of student E from 1st to 6th semester = [(92 – 66)/66 × 100]
=> (26/66 × 100)
=> 39.39%
Therefore Student C has the highest percentage of improvement from the 1st to 6th semester

Q90. Answer: (b) 9057

The codes have been assigned as follows,
YES →

Letter	Y	E	S

Code	4	3	5

TOP →

Letter	**T**	**O**	**P**
Code	7	0	9

Similarly,

POST →

Letter	**P**	**O**	**S**	**T**
Code	9	0	5	7

Hence, POST is coded as 9057.

Q91. Answer: (a) 1331

The pattern followed here is,

Let (M : N)

$M^3 = N$

Now follow the steps:

9 : 729

$9^3 = 729$

Similarly,

11 : ?

$11^3 = 1331$

Hence, "11 : 1331" is correct answer.

Q92. Answer: (b) Paternal Uncle

Preparing the family tree using the following symbols,

1) A is the paternal grandfather of B.

2) D is the brother of A and E is the son of D.

Hence, E is the “Paternal Uncle” of B.

Q93. Answer: (b) PEACE ROAD DISH EDIT

The logic is here:

L O C K

1 2 3 4

Similarly,

P O S T

1 2 3 4

Now check option (2)

Hence, POST is coded as ‘PEACE ROAD DISH EDIT’

Q94. Answer: (d) 16

The shaded part represents is the number of players who play basketball but not Cricket.

The number of players who play basketball but not Cricket = Number of player who play basketball – (Number of player who play both basketball and cricket + Number of player who play Basketball, cricket and football)

The number of players who play basketball but not Cricket = 30 – (5 + 9)

= 30 – 14 = 16

Hence, ‘16’ players who play basketball but not Cricket.

Q95. Answer: (a) Sentence

The logic followed here is:

Option (1) Sentence → Sentence make by using Noun, Verb and Adjective.

Option (2) Verb → Verb is single word who indicate actions, occurrences, or states of being.

Option (3) Noun → Noun is single word who indicate any name persons, places, things

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Option (4) Adjective → Adjectives describe or modify nouns or pronouns,.

Hence, “Sentence” is an odd one.

Q96. Answer: (b) 0

Given series:

BCNKLJKLMJKLQJKLMNJKLABJKLJKLMNJKLSKTKJLLKJNJKLJLTKLT.

Search JKL in series:

BCNKLJKLMJKLQJKLMNJKLABJKLJKLMNJKLSKTKJLLKJNJKLJLTKLT.

Condition to be checked:

JKL occur in such a way that this sequence is followed by N

JKL → N

Now, see how many JKL is followed by N.

There is not JKL is followed by N.

Hence, “Zero” is correct answer.

Q97. Answer: (a) 3

Given:

Total number of students = 60

Number of male = 65%

Number of female = 30%

Calculation:

According to the question

Number of males = (60 × 65/100)

=> 39

Number of females = (60 × 30/100)

=> 18

Number of genders who have not mentioned their gender = [60 – (39 + 18)]

=> (60 – 57)

=> 3

Therefore Required students who have not mentioned their gender is 3

Q98. Answer: (b) Both assumptions I and II are implicit.

The logic followed is:

According to the given information,

Assumption 1 → This is implicit, because become a terror free country in future first we need a planning and India has declared a zero-tolerance policy.

Assumption 2 → This is implicit, because if India become a terror free country in future so country security is very important and we need to work hard in this field.

Hence, “both 1 and 2” are implicit".

Additional Information

1. Read the statement with an approach that the assumptions would be true about the statement.

2. Do not go too logical with the statements. Analyze the given information and the assumption must only be made based on the information in the statement. Do not over-complicate it.

3. Common assumptions can always be followed but other than that do not align the statement with General Knowledge or other facts

4. Use the elimination method if you are unable to apprehend the answer. Read the statement and then the assumptions given in the options, you shall notice that a few of them will most definitely not follow. Eliminate them and then choosing from lesser options may prove to be more convenient

5. One thing to note is that the assumption is something that the author believes to be true, so while choosing the correct option, keep this thought in mind. If any option contradicts the statement, then that assumption will not follow.

Q99. Answer: (c) Cow

The logic followed here is:

India : Tiger → Tiger is the national animal of India.

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Similarly,

Nepal : Cow → Cow is the national animal of Nepal.

Hence, 'Cow' is the correct answer.

Additional Information

National animal	Country
Tiger	India
Rhinoceros	Lesotho
Leopard	Afghanistan, Iran, Rwanda, Somalia
Cow	Nepal
Lion	Belgium, Bulgaria, England, Netherlands, Singapore, Sri Lanka

Q100. Answer: (b) 50

The shaded part represents is the number of players who play football or cricket but not basketball.

n(A U B) = n(A) + n(B) - n(A?B)

The number of players who play football or cricket but NOT basketball = Number of player who play cricket and football – (Number of player who play both basketball and cricket + Number of player who play both Basketball and football + Number of player who play Basketball, Cricket and football)

And

Number of player who play cricket and football = The number of players who play football + The number of players who play cricket - The number of players who play both football and cricket

Number of player who play cricket and football = 50 + 40 - (14 + 5) = 71

So,

The number of players who play football or cricket but not basketball =

= 71 – (9 + 7 + 5)

= 71 – 21

= 50

Hence, '50' number of players who play football or cricket but NOT basketball.

Additional Information

Players who play only Football = 50 - (14 + 7 + 5) = 24

Players who play only Cricket= 40 - (14 + 9 + 5) = 12

Players who play only Basketball = 30 - (9 + 7 + 5) = 9

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