RRB NTPC CBT-I Official Paper (Held On: 8 Feb 2021 Shift 2) (Previous Year Paper)

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

Take this paper as a timed mock test

Practise under exam conditions, then review your answers after you submit.

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

Q1. If the base of a cylinder is the same as that of a cone, and the height of the cylinder is also the same as that of the cone, then find the ratio of the volumes of the cylinder and the cone.

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

Q2. The ratio of A's salary to that B was 4 : 5. A's salary got increased by 10% and B's salary got increased by 20%. What is the ratio of A's salary to that of B now?

(a) 14 : 11
(b) 11 : 14
(c) 15 : 14
(d) 11 : 15

Q3. _____ is the first synthetic fibre made by man.

(a) Spandex
(b) Nylon
(c) Acrylic
(d) Silicon

Q4. Which of the following is a government initiated insurance scheme, administered by LIC, for rural landless households?

(a) Janashree Bima Yojana
(b) Aam Aadmi Bima Yojana
(c) Rashtriya Swasthya Bima Yojana
(d) Jeevan Umang Bima Yojana

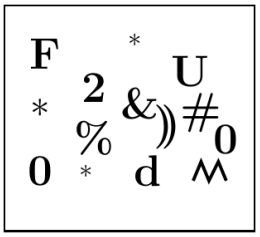
Q5. A alone can complete a work in 12 days and B alone can complete the same work in 18 days. They started working together, but A left after 3 days. In how many days will B alone be able to complete the remaining work?

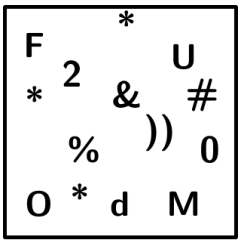
(a) 15
(b) 10.5
(c) 21
(d) 13.5

Q6. Four figures have been given, out of which three are alike in some manner and one is different. Select the odd one.

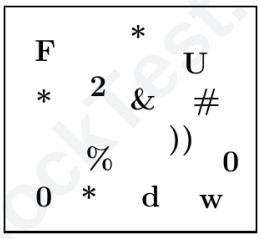
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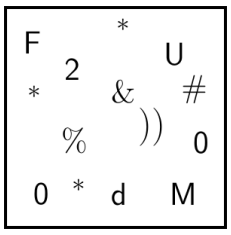
(a)



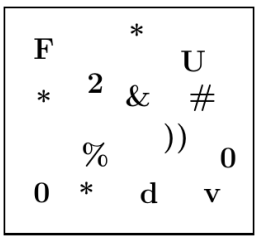


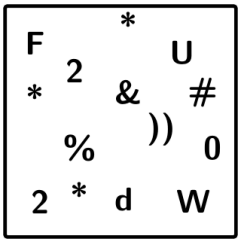
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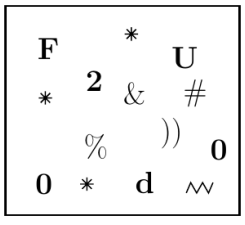


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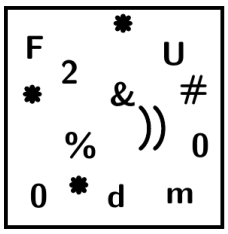




(d)



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Q7. The Government of India Constituted Narcotics Control Bureau in _____.

(a) 1984
(b) 1980
(c) 1986
(d) 1982

Q8. Which of the following was introduced to separate electorates, to widen the gap between Hindus and Muslims?

(a) The Rowlatt Act
(b) The Morely-Minto Reforms
(c) The Ilbert Bill
(d) Diarchy

Q9. A tradesman marks his goods 25% above the cost price and allows his customers a 12% reduction on their bills. What percentage profit does he make?

(a) 14%
(b) 18%
(c) 12.5%
(d) 10%

Q10. Select the most appropriate description about the given set of words.

Pamphlets, Newspapers, Radio

(a) All are means of spreading information.
(b) All are means of print media.
(c) All are means of broadcast media.
(d) All are means of global news.

Q11. If 58 out of 100 students in a school are boys, then express the part of the school that consists of boys in decimals.

(a) 0.85
(b) 0.5
(c) 0.8
(d) 0.58

Q12. There are 20 people in a party. If every person shakes hand with every other person, then what will be the total number of handshakes?

(a) 145
(b) 190
(c) 180
(d) 155

Q13. Fatima has only one sibling. She also has only one daughter Rushna. Rushna and Rameez are married to each other. Their maternal aunts are Maryam and Khadija, respectively. How is Khadija's mother related to Maryam's niece?

(a) Husband's mother's mother
(b) Mother's sister
(c) Mother's mother
(d) Husband's mother

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Q14. A train is travelling at a speed of 45 km/h. Calculate the distance that will be covered by the train in 64 seconds.

(a) 8 km
(b) 0.8 km
(c) 2.94 km
(d) 4 km

Q15. Pushkar Mela is held in Pushkar. Which district does it come under?

(a) Amer
(b) Ajmer
(c) Kota
(d) Bikaner

Q16. If $x \times y = x + y + \sqrt{xy}$, then the value of 6×24 will be:

(a) 42
(b) 43
(c) 41
(d) 44

Q17. The largest number of four digits that is divisible by 12, 15 and 18 is:

(a) 9000
(b) 9900
(c) 9450
(d) 9750

Q18. In a certain code language, 'WOLVERINE' is written as 'ZIOPHLLHH'. How will 'LOGAN' be written as in that code language?

(a) OIJUQ
(b) FQADH
(c) OIADH
(d) FQJUQ

Q19. Which of the following countries is NOT a member of SAARC?

(a) Pakistan
(b) Afghanistan
(c) Nepal
(d) Malaysia

Q20. In which year was the National Human Rights Commission launched in India?

(a) 1995
(b) 2012
(c) 2002
(d) 1993

Q21. If the length of the tangent from (2, 5) to $x^2 + y^2 - 5x + 4y + k = 0$ is $\sqrt{37}$ units, then the value of k is:

(a) -2
(b) 1
(c) -1
(d) 2

Q22. Choose the correct statement from the given options. The press is a democracy must:

(a) highlight the achievements of the government without criticising its policies
(b) be committed to the policies of the government
(c) criticise the policies of the government
(d) be free and impartial

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Q23. As of October 2020, who is the Union Minister for Road Transport and Highways?

(a) Nitin Jairam Gadkari
(b) Nirmala Sitharaman
(c) Sushma Swaraj
(d) Piyush Goyal

Q24. Which of the following is a type of sedimentary rock?

(a) Lignite
(b) Sandstone
(c) Slate
(d) Granite

Q25. The equation of the line passing through (2, 3) and perpendicular to the line joining (-5, 6) and (-6, 5) is:

(a) x + y - 5 = 0
(b) x - y + 5 = 0
(c) x + y + 5 = 0
(d) x - y - 5 = 0

Q26. The cost price of 120 g of rice is the same as the selling price of 150 g of it. The percentage loss is:

(a) 20% loss
(b) 12.5% loss
(c) 15% loss
(d) 25% loss

Q27. Four animals have been given, out of which three are alike in some manner and one is different. Select the odd one.

(a) Leopard
(b) Lion
(c) Tiger
(d) Fox

Q28. If '+' means 'division', '-' means 'addition', 'x' means 'subtraction' and '÷' means 'multiplication', then what will be the value of the following expression?

(5/2 × 2) + (3 - 1)

(a) 16
(b) 5
(c) 3
(d) 2

Q29. Which two articles of the Constitution of India most clearly express the power of judicial review?

(a) Article 44 and Article 152
(b) Article 21 and Article 446
(c) Article 17 and Article 143
(d) Article 32 and Article 226

Q30. Which of the following is NOT an eye condition/disease?

(a) Dry eye
(b) Cataract
(c) Goiter
(d) Glaucoma

Q31. Simplify the following.

$\sqrt{(2 + \sqrt{(2 + 2\cos 4\theta)})}$

(a) $\sin \theta$
(b) $\cos \theta$
(c) $\cos 2\theta$

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(d) 2cos θ

Q32. In certain code language, 'FEATURE' is written as 'HICXWVG'. How will 'ALMOST' be written as in that code language?

(a) CNQQWX
(b) CPOSWX
(c) CPOSUX
(d) CNOSWX

Q33. Four words have been given, out of which three are alike in some manner and one is different. Select the odd one.

Peacock, Woodpecker, Parrot, Bat

(a) Bat
(b) Parrot
(c) Peacock
(d) Woodpecker

Q34. Under which plan, for the first time, was the private sector given priority over the public sector?

(a) Second Five-Year Plan
(b) Tenth Five-Year Plan
(c) Sixth Five-Year Plan
(d) Seventh Five-Year Plan

Q35. Who is the father of binomial nomenclature of all species of living things?

(a) Carolus Linnaeus
(b) Charles Darwin
(c) Louis Pasteur
(d) James Watson

Q36. The roots of the equation $x^2 - 7x + 12 = 0$ are:

(a) 5, 6
(b) 3, 4
(c) 2,3
(d) 7, 8

Q37. Ustad Amjad Ali Khan plays which of the following instruments?

(a) Sarod
(b) Santoor
(c) Shehnai
(d) Bansuri

Q38. If a: b = 3 : 4 and d : b = 4 : 3, then find the ratio of a to d.

(a) 16 : 9
(b) 4 : 3
(c) 3 : 4
(d) 9 : 16

Q39. Find the ninth term of an arithmetic progression with the first term as 5 and the common difference as 4.

(a) 35
(b) 37
(c) 39
(d) 41

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Q40. Find the value of x if √(1 + x/144) = 13/12.

(a) 20
(b) 16
(c) 30
(d) 25

Q41. Who formulated the Equation $E = mc^2$?

(a) Albert Einstein
(b) Isaac Newton
(c) Stephen Hawking
(d) Marie Curie

Q42. Where is the Red Panda Winter Carnival celebrated?

(a) Rajasthan
(b) Tamil Nadu
(c) Nagaland
(d) Sikkim

Q43. From the given options, select the developer of 'PARAM 10000', a supercomputer of Indian origin.

(a) TATA
(b) IIT Kharagpur
(c) IIT Kanpur
(d) C-DAC, Pune

Q44. The 'Seven Sisters of India' does NOT include which of the following states?

(a) Sikkim
(b) Arunachal Pradesh
(c) Nagaland
(d) Meghalaya

Q45. Who was the first Secretary-General of the United Nations Organization (UNO)?

(a) Dag Hammarskjold
(b) Kurt Waldheim
(c) Trygve Lie
(d) U Thant

Q46. Which equation would become correct if we interchange the signs '×' and '÷' as well as the digits '2' and '4'?

(a) 12 × 4 ÷ 42 = 168
(b) 2 ÷ 4 × 14 = 60
(c) 12 ÷ 42 × 4 = 160
(d) 42 × 12 ÷ 2 = 20

Q47. From the given options, which is India's first indigenously built nuclear-armed submarine?

(a) INS Arihant
(b) INS Chakra
(c) INS Kalvari
(d) INS Khukhri

Q48. From the given options, which dynasty developed shipping ventures in Southeast Asia?

(a) The Chera Dynasty
(b) The Chola Dynasty
(c) The Chalukya Dynasty
(d) The Gupta Dynasty

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Q49. The United Nations has _____ principal organs.

(a) 8
(b) 6
(c) 4
(d) 3

Q50. Simplify the following.

105 ÷ 5 × 3 + 39 - 46

(a) 56
(b) 10
(c) 65
(d) 0

Q51. A shopkeeper buys calculators in bulk for Rs.550 and sells them for Rs.580 each. What is the approximate percentage profit?

(a) 5.45%
(b) 5.95%
(c) 5.7%
(d) 5%

Q52. Which eminent English writer was awarded the Jnanpith Award in 2018?

(a) Shankha Ghosh
(b) Krishna Sobti
(c) Raghuveer Chaudhary
(d) Amitav Ghosh

Q53. Select the option with the INCORRECT full form for the corresponding acronyms.

(a) CITES : Convention on International Trade in Endangered Species
(b) CCI : Competition Commission of India
(c) C-DAC : Centre for Development of Advanced Computing
(d) CHOGM : Commonwealth Heads of Government Ministries

Q54. Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the odd one.

(a) X S P
(b) N J F
(c) Q M I
(d) W S O

Q55. What is the median for the following series?

2, 5, 4, 1, 8

(a) 4
(b) 4.5
(c) 3.5
(d) 7

Q56. In a certain code language, if 'UVW' is written as 'XYZ', then how will 'TRUE' be written as in that language?

(a) WESH
(b) WUYX
(c) WUZX
(d) WUXH

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Q57. During British rule, the Sharda Act was passed in 1929 for preventing _____.

(a) the practice of sati
(b) Infanticide
(c) Child marriage
(d) Polygamy

Q58. What is 'Bhuvan'

(a) A mini satellite launched by ISRO for promoting distance education in India.
(b) A geo-portal of ISRO with 3D imaging capabilities.
(c) A space telescope developed by India.
(d) The name given to the Moon Impact Probe for Chandrayaan-2.

Q59. How many of the first 100 positive integers are divisible by 3 or 4 without a remainder?

(a) 85
(b) 50
(c) 5
(d) 58

Q60. What is the full form of BHEL, the famous public sector unit of the Government of India?

(a) Bhagalpur Heavy Electricals Limited
(b) Bharat Heavy Equipment Limited
(c) Bharatpur Heavy Engineering Limited
(d) Bharat Heavy Electricals Limited

Q61. If (2, 2) and (5, -2) are two consecutive vertices of a square, then the length of each side of the square will be:

(a) 5/(√2) units
(b) 5 units
(c) 5 √2 units
(d) √5 units

Q62. Which native Indian dynasty issued their own coins with portraits of their rulers on them?

(a) The Pandya Dynasty
(b) The Rashtrakuta Dynasty
(c) The Peshwa Dynasty
(d) The Satavahana Dynasty

Q63. Maddy reads three-fifth of a chapter consisting of 75 pages. How many more pages does he need to read to complete the chapter?

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

Q64. Who was the court poet of King Harshavardhana?

(a) Vallal
(b) Banabhatta
(c) Jayachandra
(d) Ananda Bhatta

Q65. From the given options, which country has the largest deposit of mica in the world?

(a) England
(b) America
(c) India
(d) South Africa

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Q66. Which club won the 2019 FIFA Club World Cup?

(a) Kashima Antlers
(b) Flamengo
(c) Monterrey
(d) Liverpool

Q67. What was the Government of India Act 1935 based on?

(a) The principle of a federation and parliamentary system
(b) The acceptance of the idea of a constituent assembly to draft a constitution
(c) The principle of session of the British India provinces
(d) The acceptance of the independence of India

Q68. A bacterial population increases at the rate of 6% in the first 10 minutes and then 10% in the next 10 minutes. What is the overall percentage increase in the population at the end of 20 minutes?

(a) 16.3%
(b) 16.5%
(c) 16%
(d) 16.6%

Q69. If the ratio of the radii of two spheres is 2 : 3, then the ratio of their surface areas will be:

(a) 8 : 27
(b) 4 : 9
(c) 4 : 3
(d) 2 : 9

Q70. Geeta is decorating the cover of her school magazine. She is allowed to use only three colours from a group of six colours (P, Q, R, S, T and U), based on the following conditions.

I. If P, Q or R is chosen, U cannot be chosen.

II. Either T or U must be chosen.

III. S and Q cannot be chosen together.

If R is chosen, which of the following pairs of colours must also be chosen?

(a) PU
(b) TS
(c) QS
(d) US

Q71. The sum of two numbers is 20 and their product is 96. What is the difference between the two numbers?

(a) 8
(b) 6
(c) 5
(d) 4

Q72. Newton is the unit to measure _____.

(a) pressure
(b) power
(c) force
(d) resistance

Q73. A can finish a work in 15 days and B can finish the same work in 20 days. Working together, in how many days can they finish the same work?

(a) 17.5
(b) 8.57
(c) 12.57
(d) 20

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Q74. Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the odd one.

(a) KQJ
(b) HLG
(c) CIB
(d) RXQ

Q75. Who was the first person to walk on the Moon?

(a) George Tailor
(b) Neil Armstrong
(c) Buzz Aldrin
(d) Katherine Johnson

Q76. Evaluate the following.

cos^(- 1)(1/(√2)) + sec^(- 1)(- √2)

(a) • π/3
(b) 0
(c) π/3
(d) π

Q77. The study of cells is called _____.

(a) serology
(b) etiology
(c) cytology
(d) cytoplasm

Q78. National Handloom day is celebrated every year on _____.

(a) 19 January
(b) 15 August
(c) 19 July
(d) 7 August

Q79. In a certain code language, if 'KANPUR' is written as 'LZOOVQ', then how will 'LUCKNOW' be written as in that language?

(a) MDTJONX
(b) MDTNOXJ
(c) MTDNXOJ
(d) MTDJONX

Q80. What do you call the process of erosion due to the action of snow?

(a) Bio-erosion
(b) Sedimentation
(c) Morine-formation
(d) Nivation

Q81. Four women Geeta, Anita, Monu and Reena are playing carrom. Anita is sitting opposite Monu and Reena is sitting opposite Geeta. If Anita is facing east, then in which direction is Monu facing?

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

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Q82. What does the acronym SMPS stand for?

(a) Single-Mode Power Supply
(b) Store-Mode Power Supply
(c) Switched-Mode Power Supply
(d) Start-Mode Power Supply

Q83. The LCM of two numbers is 96 and their HCF is 8. If one of the two numbers is 32, then what is the other number?

(a) 48
(b) 28
(c) 16
(d) 24

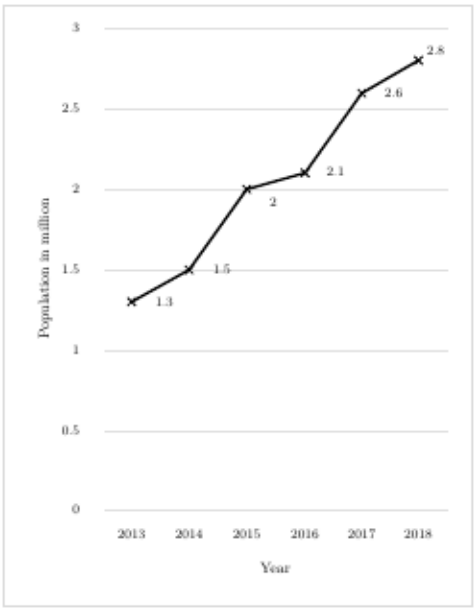
Q84. What will be the compound interest on a sum of Rs.25,000 after 3 years at a rate of 12% per annum, compounded annually?

(a) Rs.9,720
(b) Rs.900.30
(c) Rs.1,048.20
(d) Rs.10,123.20

Q85. Which of the following is NOT the capital of the corresponding country?

(a) New Delhi, India
(b) Sydney, Australia
(c) Ottawa, Canada
(d) Cairo, Egypt

Q86. The following line graph shows the population (in million) of Istanbul over 6 years (from 2013 to 2018).
Answer the given question based on the line graph.

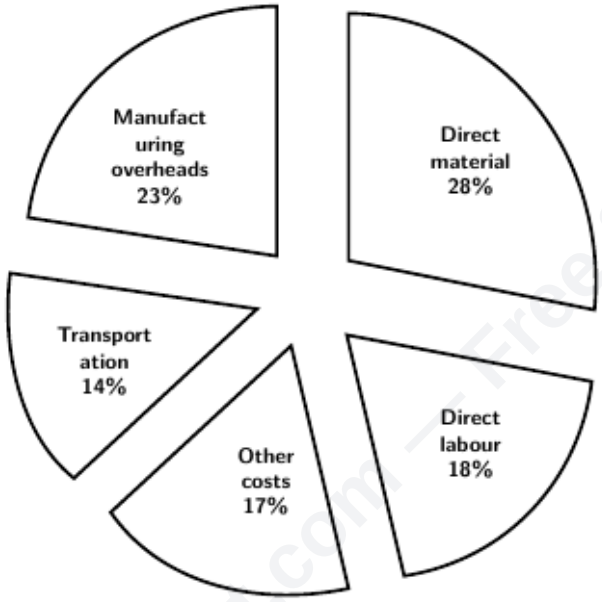


What is the approximate percentage increase in the population of Istanbul from 2013 to 2018?

(a) 120%
(b) 115%
(c) 118%
(d) 130%

Q87. The following pie-chart shows the percentage distribution of the expenditure incurred by a company in manufacturing electric kettles. Answer the given question based on the pie-chart.

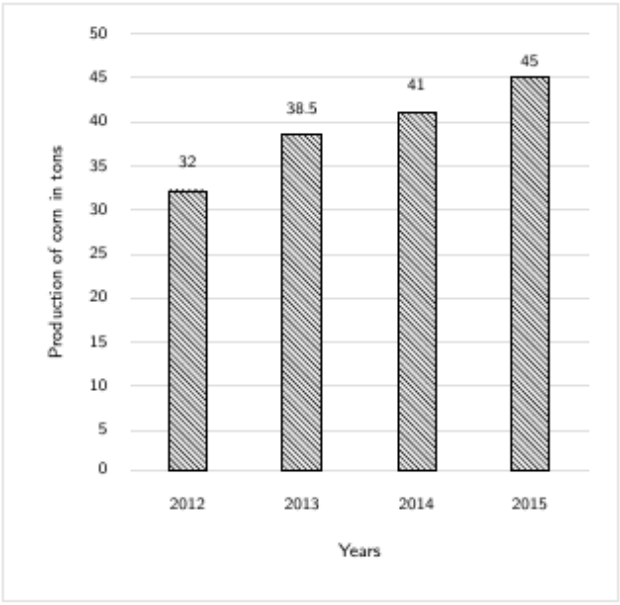
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If for manufacturing a certain quantity of electric kettles, the company has to pay Rs.56,000 towards direct material cost, then how much will be the manufacturing overhead cost?

(a) Rs.50,000
(b) Rs.46,000
(c) Rs.40,000
(d) Rs.35,000

Q88. The following bar graph shows the increase in the production of corn (in tons) over 4 years (from 2012 to 2015). Answer the given question based on the bar graph.



What is the percentage increase (upto two decimal points) in the production of corn in 2015 as compared to the previous year?

(a) 10.10%
(b) 9.26%
(c) 9.75%
(d) 8.58%

Q89. The following line graph shows the quantity of digital watches manufactured by two companies X and Y over 6 years (from 2014 to 2019). Answer the given question based on the line graph.



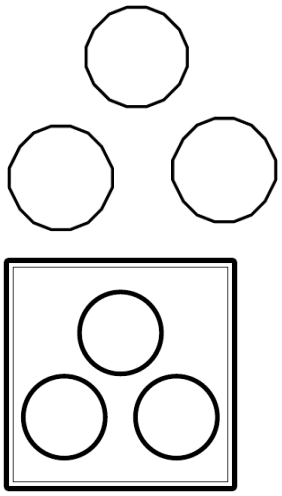
In which year is the absolute difference between the quantity of watches manufactured by company X and company Y the maximum?

(a) 2017
(b) 2019
(c) 2016
(d) 2018

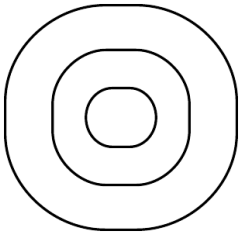
Q90. Select the Venn diagram that best represents the relationship between the following classes.

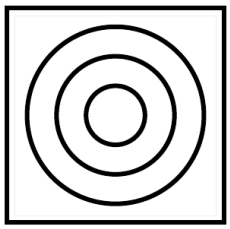
Envy, Fear, Emotion.

(a)

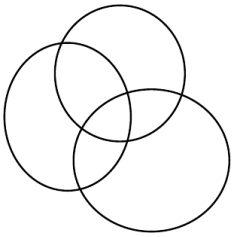


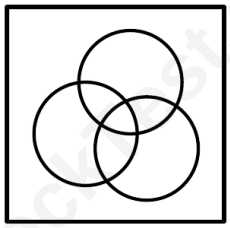
(b)



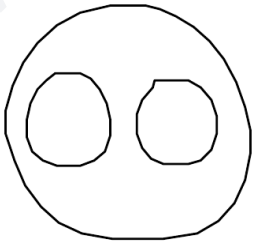


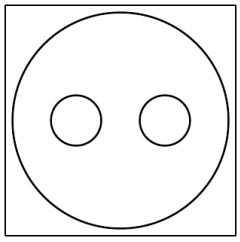
(c)





(d)





Q91. Without assuming anything beyond the information given, select the correct nature of relationship between the two events A and B.

Event A : The teacher gave Zara severe punishment.

Event B : Zara's parents have spoilt her.

(a) Event A is the effect but event B is not its immediate and principal cause.
(b) Event B is the effect but event A is not its immediate and principal cause.
(c) Event A is the effect and event B is its immediate and principal cause.
(d) Event B is the effect and event A is its immediate and principal cause.

Q92. Select the number that can replace the question mark (?) in the following series.

18, 31, 44, 57, 70, ?

(a) 88
(b) 84
(c) 83
(d) 91

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Q93. Without assuming anything beyond the information given, select the correct nature of relationship between the two events A and B.

Event A : Ronit went to the dentist.

Event B : Ronit had a toothache.

(a) Event A is the effect but event B is not its immediate and principal cause.
(b) Event B is the effect and event A is its immediate and principal cause.
(c) Event B is the effect but event A is not its immediate and principal cause.
(d) Event A is the effect and event B is its immediate and principal cause.

Q94. Abie and Jack are father and son, respectively. Jack is the grandson of Paulino. Sabrina and Martha are daughter and mother, respectively. Sabrina is the grand-daughter of Agatha. If Agatha and Paulino are married and have a single child, how is Jack related to Sabrina?

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

Q95. Select the combination of mathematical signs that when sequentially placed in the blanks of the given equation will balance the equation.

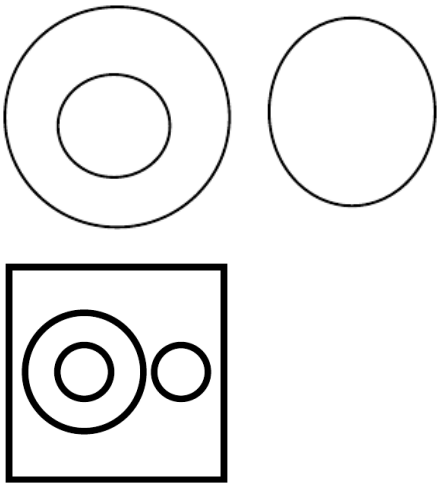
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(a) ÷ + =
(b) × = -
(c) × - =
(d) × = ÷

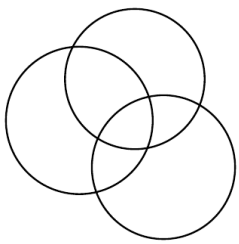
Q96. Select the Venn diagram that best represents the relationship between the following classes.

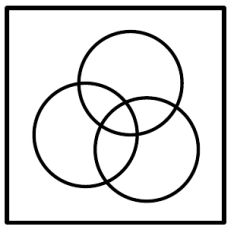
Institution, Hospital, University.

(a)

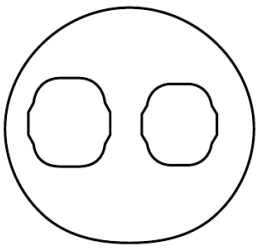


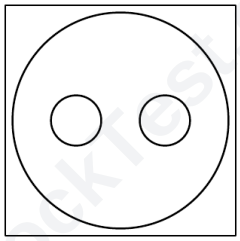
(b)



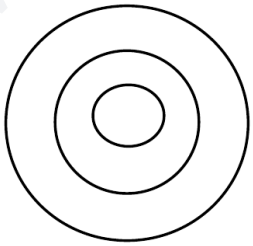


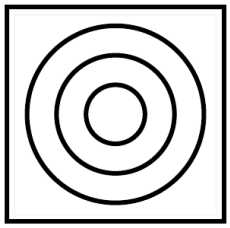
(c)





(d)

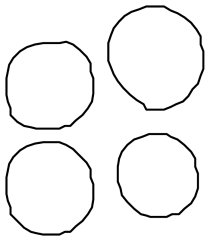




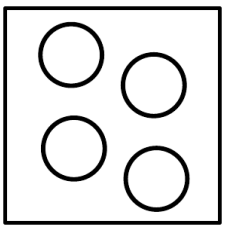
Q97. Select the Venn diagram that best represents the relationship between the following classes.

Books, Textbooks, Novels, Notebooks.

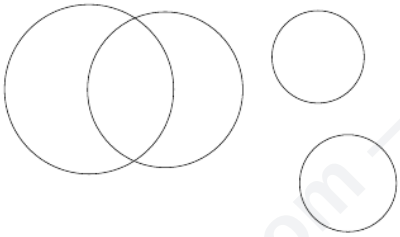
(a)

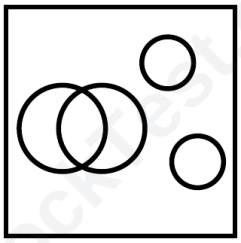


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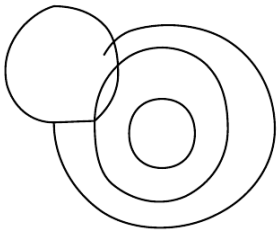


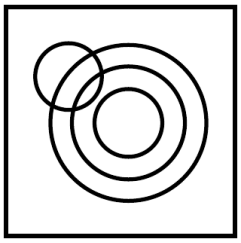
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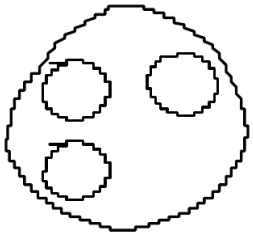


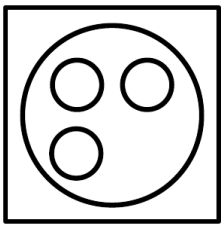
(c)





(d)





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Q98. Rakesh is Maternal grandfather of Radha and Paternal grandfather of Prerna. Rakesh has only two children, Raman and Radha's mother. How is Prerna related to Raman?

(a) Aunt
(b) Daughter
(c) Wife
(d) Niece

Q99. A, B, C, D, F and H are the names of three flowers, one fruit and two animals. A and B are not flowers. D is neither a fruit nor a flower. A is not an animal. Which one among the following is the animal?

(a) F
(b) C
(c) B
(d) H

Q100. Select the alphanumeric-cluster that can replace the question mark (?) in the following series?

S-81, Q-64, ?, M-36, K-25

(a) M-52
(b) K-40
(c) P-42
(d) O-49

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) 3 : 1

GIVEN:
Base of a cylinder = base of a cone
Height of the cylinder = Height of the cone
FORMULA USED:1
Base of a cylinder = πr^2
Base of a cone = πr^2
Volume of the cylinder = $\pi r^2 h$
Volume of the cone = $1/3 \pi r^2 h$
CALCULATION:
Here, let radius of cylinder and radius of cone be r1 and r2 respectively
Also, height of the cylinder and cone be h1 and h2 respectively
As, base of a cylinder = base of a cone
=> $\pi r1^2 = \pi r2^2$ <=> $r1^2 = r2^2$

=> r1 = r2

Also, it is given height is same. So, h1 = h_(2.)

=> Volume of the cylinder = π r1² h1

_(=> Volume of the cone = 1/3 π) r2² h2

=> Ratio of volume of the cylinder and volume of the cone = π r1² h1 : 1/3 π r1² h1 = 1 :1/3 = 3 :1.

Hence, the ratio of volume of the cylinder and volume of the cone = 3 :1.

Q2. Answer: (d) 11 : 15

GIVEN:

Ratio of A's salary to B's salary = 4:5

A"s salary increased by 10%

B's salary increased by 20%

CALCULATION:

Let the salary of A and B be 400 and 500 respectively

Now, as A's salary increased by 10%

=> New salary = 400 + 10 % 400 = (400 + 40) = 440.

Also, B's salary increased by 20%

=> New salary = 500 + 20% of 500 = (500 + 100) = 600.

Ratio of new salary of A : Ratio of new salary of B = 440 : 600 = 11 : 15.

Hence, the Ratio of new salary of A and B is 11 : 15.

Q3. Answer: (b) Nylon

Correct answer is Nylon.

Key Points

• Nylon, the first synthetic fiber in the "fully synthetic" feeling of that word, was developed by Wallace Carothers, an American researcher at the chemical firm DuPont in the 1930s.

• Nylon is a generic designation for a family of synthetic polymers composed of polyamides.

• Nylon is a silk-like thermoplastic, usually made from petroleum, that can be melt-processed into fibers, films, or shapes.

• Nylon is the first fully processed synthetic fibre, made from coal, water and air.

Additional Information

• Spandex is a synthetic fabric that is prized for its elasticity.

• Acrylic fiber fabrics are made from a synthetic polymer called acrylonitrile.

• Silicones are a durable alternative to conventional plastics that preserves our environment.

Q4. Answer: (b) Aam Aadmi Bima Yojana

Correct answer is Aam Aadmi Bima Yojana.

Key Points

• The Aam Aadmi Bima Yojana covers natural death/accidental death, permanent total disability, and partial permanent disability.

• The scheme gives coverage to individuals residing in rural areas and individuals who are below the poverty line.

• “Aam Admi Bima Yojana” has come into effect from 01.01. 2013.

• One member of the family who is the householder is eligible for coverage.

• Additional Information

• Janashree Bima Yojana is a government life insurance scheme that was started together with the LIC.

• Rashtriya Swasthya Bima Yojana has been started by Ministry of Labour and Employment, Government of India to provide health insurance coverage for Below Poverty Line (BPL) families.

• LIC's Jeevan Umang plan offers a combination of income and protection to your family.

Q5. Answer: (b) 10.5

GIVEN:

A alone can complete a work = 12 days

B alone can complete a work = 18 days

FORMULA USED:

Efficiency = Total work / No. of days

CALCULATION:

Let us assume total work done to be 36 unit.

(You can assume any number but for the sake of calculation it is advised to take the L.C.M of the given numbers. Here L.C.M of the given numbers is 36)

Efficiency of A = Total work / No. of days = 36/ 12 = 3 unit /day

Efficiency of B = Total work/ No. of days = 36/18 = 2 unit/day

=> Total Efficiency = (3 + 2) = 5 unit/day.

According, to the given Question they work together for 3 days

=> Total work done in 3 days = 5 × 3 = 15 unit

=> Remaining work = (36 - 15) = 21 unit.

Also, A left after 3 days.So, B does the remaining work alone

=> No. of days taken by B = 21/2 = 10.5 days.

Hence, B alone takes 10.5 days to complete the work alone.

Q6. Answer: (c) [figure] [figure]

From the given options, when we observe closely we see that three of them are exactly the same but only one have a different character in it,

In option 3) the character is different whereas in other options in that place there is a M placed. So it is the odd one.

Hence the correct answer is option 3)

Q7. Answer: (c) 1986

Correct answer is 1986.

Key Points

• In presence of this provision, the Government of India constituted the NARCOTICS CONTROL BUREAU on the 17th of March, 1986.

• The Narcotics Control Bureau was created in March 1986 in words of Section 4 (3) of the Narcotic Drugs and Psychotropic Substances Act, 1985.

• The Narcotics Control Bureau (abbr. NCB) is an Indian central law enforcement and intelligence agency under the Ministry of Home Affairs, Government of India.

• The Narcotics Control Bureau is an agency incharge for fighting drug trafficking and the abuse of illicit substances.

• Additional Information

• National Crime Investigation Bureau is a name of Crime and Corruption killer team, operating over India with help of good officers and powerful legal team.

• The Department of Revenue is mostly responsible for the following functions: - All matters relating to levy and collection of Direct Taxes.

• The Department of Economic Affairs (DEA), Ministry of Finance, assists the Central Government.

Q8. Answer: (b) The Morely-Minto Reforms

Correct answer is The Morely-Minto Reforms.

Key Points

• The Minto-Morley Reforms of 1909 known for separate Muslim electorates.

• It was instituted to placate the Moderates (Congress) and establish separate electorates on the basis of religions.

• The Indian Councils Act, 1909 establish a few reforms in the legislative councils and the act increased the involvement of Indians in the governance of British India.

• So, Lord Minto came to be called as the Father of Communal Electorate in India.

Additional Information

• The Rowlatt acts allowed certain political cases to be tried without juries and permitted internment of suspects without trial.

• Ilbert Bill, in the history of India, a controversial measure proposed in 1883 that sought to allow senior Indian magistrates to preside over cases involving British subjects in India.

• Diarchy government shared by two rulers, powers, etc.

Q9. Answer: (d) 10%

GIVEN:

M.P. = 25% above the Cost Price

reduction = 12% on their bills

FORMULA USED:

S.P. = (1 - d1/100) × M.P.

Profit = S.P. - C.P.

Profit% =(Profit/ C.P.) × 100

Where, C.P. = Cost Price ,S.P. = Selling Price, M.P = Marked Price d1 = discount%

CALCULATION:

Let the Cost Price be 100

=> M.P. = 100 + 25% × 100 = 100 + 25 = 125.

=> S.P. = (1 - d1/100) × M.P. = (1 - 12/100) × 125

=> S.P. = 22/25 × 125 = 110.

=> Profit = S.P. - C.P. = (110 - 100) = 10

=> Profit% =(Profit/ C.P.) × 100 =(10/100)× 100 = 10%.

Hence, the Profit percentage is 10%.

Q10. Answer: (a) All are means of spreading information.

From the given words:

Pamphlets, Newspapers, Radio

Let's compare each option:

1) All are means of spreading information: Correct.

2) All are means of print media: Incorrect, only pamphlets and newspapers are print media.

3) All are means of broadcast media: Incorrect, only radio is broadcast media.

4) All are means of global news: Incorrect, all of them are local means of news.

So, they all are means of spreading information.

Hence the correct answer is option 1)

Q11. Answer: (d) 0.58

GIVEN:

58 out of 100 students in a school are boys

CALCULATION:

Here, total students = 100

=> No. of boys = 58

=> Part of the school that consists of boys = 58/100

=> Part of the school of boys in decimal = 58/100 = 0.58.

The required value in decimal is 0.58.

Q12. Answer: (b) 190

GIVEN:

The total number of persons in a party = 20.

FORMULA USED:

Number of handshakes possible with various people saying "n"

can be solved by a formula n × (n - 1) over 2

This is because each of the "n" numbers of people can shake hands with " (n - 1)" people and they will not shake their own hands.

The handshake between two people cannot be counted twice.

CALCULATION:

As the total number of people in the party is 20.

=> The total number of handshakes when each one of the persons shakes had with other exactly once

=> 20 × (20 - 1) over 2 = 20 × 19 /2 = 190.

Hence, the total number of handshakes is 190.

Q13. Answer: (a) Husband's mother's mother

Preparing the family tree using the following symbols:

From the given information:

Step 1: Fatima has only one sibling. She also has only one daughter Rushna. Rushna and Rameez are married to each other.

Step 2: Their maternal aunts are Maryam and Khadija, respectively.

Now Khajida's mother will be Rameez's mother's mother and Rushna is married to Rameez.

So, Khajida's mother is husband's mother's mother to Rushna (who is Maryam's niece).

Hence the correct answer is option 1)

Q14. Answer: (b) 0.8 km

GIVEN:

Speed = 45 km/h

FORMULA USED:

Distance = Speed × Time

CALCULATION:

Here, we have Speed = 45 km/h, Time = 64 seconds

=> As, 3600 seconds = 1hour

=> 64 seconds = 0.0177

=> Distance = 45 × 0.0177 = 0.8 k

The distance is 0.8 km.

Q15. Answer: (b) Ajmer

Correct answer is Ajmer.

Key Points

• The Pushkar fair is the largest camel, horse and cattle fair in Ajmer.

• Aside from the trading of livestock, it is an important pilgrimage season for Hindus to the Pushkar lake.

• In 2022, Pushkar Fair will be celebrated from 11th November 2022 to 19th November 2022.

• The Pushkar Camel Fair in Pushkar is celebrated at the beginning of the Hindu month of Kartik.

• Additional Information

• Amer is now part of the Jaipur urban agglomeration.

• The Adventure festival is one of the most fascinating festivals of Rajasthan in Kota.

• Kolayat fair is held in Bikaner, Rajasthan.

Q16. Answer: (a) 42

GIVEN:

x × y = x + y + √(x y)

CALCULATION:

Here, we have x + y = x + y + √(x y)

Now, x = 6, y = 24

=> 6 × 24 = 6 + 24 + √(6 × 24) = 6 + 24 + 12 = 42.

Hence, the required value is 42.

Q17. Answer: (b) 9900

GIVEN:

Numbers are 12, 15 and 18

CONCEPT USED:

Largest four digits number are 9999

CALCULATION:

L.C.M of 12, 15 and 18 = 180

Largest four digit number is 9999

To find the largest 4 digit number exactly divisible by 12,15 and 18, we have to divide the 9999 by 180 and subtract the remainder from 9999.

When we divide the 9999 by 180, the remainder is 99

Required number = 9999 - 99 = 9900.

Hence, the required number is 9900.

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Q18. Answer: (a) OIJUQ

According to the English alphabets and their positional values:

The pattern followed in the given code is:

Alphabets at odd places are increased by 3 positional values.

Alphabets at even places are decreased to 6 positional values.

Similarly,

Hence the correct answer is option 1)

Q19. Answer: (d) Malaysia

Correct answer is Malaysia.

Key Points

• Malaysia is a country in Southeast Asia, it is not the part of SAARC.

• Malaysia is a federation of 13 states and three federal territories in Southeast Asia.

• It consists of two regions split up by the South China Sea and is bordered by Brunei, Indonesia, and Thailand.

• Malaysia has a strategic position along the Strait of Malacca and the southern South China Sea.

Additional Information

• The South Asian Association for Regional Cooperation (SAARC) was established on 8 December 1985.

• SAARC has eight member countries Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri-Lanka.

• SAARC mainly aims to promote welfare of South Asians.

Q20. Answer: (d) 1993

Correct answer is 1993.

Key Points

• The National Human Rights Commission (NHRC) was launched on October 12, 1993.

• Human rights are rights inherent to all human beings, regardless of race, sex, nationality, ethnicity, language, religion, or any other status.

• Human rights cover the right to life and liberty, freedom from slavery and torture, freedom of opinion and expression, the right to work and education e.t.c

• Human rights guarded by the International Covenant on Civil and Political Rights.

Additional Information

• Article 12 to 35 contained in Part III of the Constitution deal with Fundamental Rights.

• Right to equality, including equality before law, prohibition of discrimination on grounds of religion, race, caste, sex or place of birth, and equality of opportunity in matters of employment are fundamental rights.

Q21. Answer: (a) -2

GIVEN:

Length of the tangent from (2,5) is $\sqrt{37}$

FORMULA USED:

If equation of the circle is in the form of $x^2 + y^2 + 2gx + 2fy + c = 0$

Where, center of the circle = (- g, - f) and radius(r) = $\sqrt{(g^2 + f^2 - c)}$

CALCULATION:

Here, we have $x^2 + y^2 - 5x + 4y + k = 0$ which is in the form of $x^2 + y^2 + 2gx + 2fy + c = 0$

Now, g = -5/2, f = 2, c= k

=> Center = (5/2, -2) and radius (r)= $\sqrt{(25/4 + 4 - k)}$

As tangent is perpendicular to the radius, we apply Pythagoras theorem (See the figure)

=> $AO^2 = AP^2 + PO^2$

=> $1/4 + 49 = r^2 + 37$

=> $197/4 = 25/4 + 4 - k + 37$

=> k = -2.

Hence, the value of k is -2.

Q22. Answer: (d) be free and impartial

Correct answer is be free and impartial.

Key Points

• The press in democracy must- · be free and impartial.

• Be perform to the policies of the government.

• Media democracy provides people the right to take part in media.

• The backbone of any democracy is an independent, executive and responsible media.

• Additional Information

• Freedom of press or media mentions to the rights given by the Constitution of India under the freedom and expression of speech in Article 19(1)(a).

• The law of India forbid increasing or publishing fake news through social or mass media, and could guide to imprisonment of a journalist or newspaper ban.

Q23. Answer: (a) Nitin Jairam Gadkari

Correct answer is Nitin Jairam Gadkari.

Key Points

• Current transport minister is Nitin Gadkari.

• He is also famous for his work as the Public Works Department Minister of the State of Maharashtra.

• Nitin Gadkari was born into a Marathi family in Nagpur, India to Jairam Gadkari and Bhanutai Gadkari on 27 May 1957.

• Through his teenage, he worked for the Bharatiya Janata Yuva Morcha and the student union Akhil Bharatiya Vidyarthi Parishad.

• Additional Information

• The current Finance Minister of India is Nirmala Sitharaman.

• Sushma Swaraj was the first female Spokesperson of a national political party in India.

• Piyush Goyal is minister of Consumer Affairs, Food & Public Distribution (2020 – present).

Q24. Answer: (b) Sandstone

Correct answer is Sandstone.

Key Points

• Common sedimentary rocks include sandstone, limestone, and shale.

• These rocks frequently start as sediments carried in rivers and deposited in lakes and oceans.

• When secreted, the sediments lose water and become cemented to form rock.

• Sandstone is a clastic sedimentary rock composed mainly of sand-sized (0.0625 to 2 mm) silicate grains.

• Additional Information

• Lignite, frequently mention to as brown coal, is a soft brown combustible sedimentary rock that is formed from naturally compressed peat.

• Slate is a metamorphic rock of sedimentary origin.

• Granite is a coarse-grained intrusive igneous rock composed mostly of quartz, alkali feldspar, and plagioclase.

Q25. Answer: (a) x + y - 5 = 0

GIVEN:

Line passes through (2,3)

Line is perpendicular to the line joining (-5,6) and (-6,5)

CONCEPT USED:

The equation of any straight line is y = mx + c

Where m is its slope and c = y - intercept

Slope of the line × Slope of the perpendicular line = -1.

CALCULATION:

Slope of the line joining through points (x1, y1) and (x2, y2) = (y2 - y1) / (x2 - x1)

So, slope of the line joining (-5, 6), (-6, 5) = - 6 + 5 over 5 - 6 = -1/-1 = 1.

Slope of the line perpendicular to this line = -1

So, equation of the required line will be y = -x + c

Since, this line passes through (2,3) in the equation we get

3 = -2 + c

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=> c = 3 + 2 = 5.

Hence, required equation of the line y = -x + 5 or x + y - 5 = 0.

Hence, required equation of the line is x + y - 5 = 0.

Q26. Answer: (a) 20% loss

GIVEN:

Cost price of 120 g = Selling price of 150 g

FORMULA USED:

Loss = C.P. - S.P.

Loss% = (Loss / C.P.) × 100

Where, C.P. = Cost price, S.P. = Selling Price

CALCULATION:

Let the Cost price of 1 g = Rs100

=> Cost price of 120 g = Rs12000.

According to the given Question, Cost Price of 120 g = Selling Price of 150 g

=> Selling Price of 150 g = Rs12000.

=> Selling Price of 120 g = Rs9,600.

=> Loss = C.P. - S.P. = (12000 - 9600) = Rs2,400.

Loss% =(Loss / C.P.) × 100 = (2400 / 12000) × 100 = 0.2 × 100 = 20%.

The percentage of loss is 20%.

Q27. Answer: (d) Fox

Correct answer is Fox.

Key Points

• fox, many members of the dog family (Canidae).

• Look like small to medium-sized bushy-tailed dogs with long fur, pointed ears, and a narrow snout.

• Despite the fact that red foxes are part of the Canidae family along with dogs, they have more in common with cats.

• Here are some similarities: Like cats, red foxes are most active at night.

• Additional Information

• Lion, cat and tiger belong to a common family.

• The lion is a member of the Felidae family, which is a big cat family.

• The leopard is be a member five extant species in the genus Panthera, a member of the cat family, Felidae.

Q28. Answer: (d) 2

From the given information:

Character	Denotation
•	Division
•	Addition
×	Subtraction
÷	Multiplication

Now we substitute the values in the given equation and solving it using BODMAS rule:

(5/2 × 2) + (3 - 1)

(5 × 2 - 2) ÷ (3 + 1)

(10 - 2) ÷ 4

8 ÷ 4

2 = Answer

Hence the correct answer is option 4)

Q29. Answer: (d) Article 32 and Article 226

The correct answer is Article 32 and Article 226.

Key Points

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• Article 32 of the Indian Constitution grants the right to individuals to move the Supreme Court directly in case of any violation of their fundamental rights.
• Article 226 provides the power to High Courts to issue certain writs for the enforcement of Fundamental Rights and for any other purpose.
• Judicial review refers to the power of the judiciary to review and determine the validity of a law or an order.
• Both Articles 32 and 226 play a crucial role in upholding the principle of judicial review in India.

Additional Information

• Judicial Review
• Judicial review is a process under which executive or legislative actions are subject to review by the judiciary.
• It is an essential function in a democracy as it ensures the supremacy of the Constitution.
• Writs Issued Under Articles 32 and 226
• Habeas Corpus: To ensure the release of a person unlawfully detained.
• Mandamus: To direct a public official or body to perform a public duty.
• Prohibition: To prevent a lower court from exceeding its jurisdiction.
• Certiorari: To transfer the matter from a lower court to a higher court for review.
• Quo Warranto: To challenge the legality of a person's claim to a public office.
• Fundamental Rights
• These are a set of rights granted to the citizens of India, which are enshrined in Part III of the Constitution.
• They ensure civil liberties so that all Indians can lead their lives in peace and harmony as citizens of India.
• Supreme Court of India
• It is the highest judicial forum and final court of appeal under the Constitution of India.
• The Supreme Court has extensive jurisdiction and is a guardian of the Constitution.

Q30. Answer: (c) Goiter

Correct answer is Goiter.

Key Points

• A goitre is a lump or swelling at the front of the neck caused by a swollen thyroid.
• The thyroid is a small gland in our neck that makes hormones.
• Goitres are not generally serious but should be checked by a GP.
• The most general cause of goiters worldwide is a absence of iodine in the diet.
• Additional Information
• Dry eye disease is a common condition that occurs when your tears aren't able to provide adequate lubrication for your eyes.
• Cataracts are when the lens, a small transparent disc inside your eye, develops cloudy patches.
• Glaucoma is a group of eye conditions that damage the optic nerve.

Q31. Answer: (d) 2cos θ

Given:

$\sqrt{(2 + \sqrt{(2 + 2\cos 4\theta)})}$

Concept Used:

$\cos 4\theta = 2\cos^2 2\theta - 1$

$\cos 2\theta = 2\cos^2 \theta - 1$

Calculation:

$\Rightarrow \sqrt{(2 + \sqrt{(2 + 2\cos 4\theta)})}$

=> Putting the value in it, we get

$\Rightarrow \sqrt{(2 + \sqrt{(2 + 2(2\cos^2 2\theta - 1))})}$

$\Rightarrow \sqrt{(2 + \sqrt{(2 + 4\cos^2 2\theta - 2)})}$

$\Rightarrow \sqrt{(2 + \sqrt{(4\cos^2 2\theta)})}$

$\Rightarrow \sqrt{(2 + 2\cos 2\theta)}$

=> Again, substituting the value, we get

$\Rightarrow \sqrt{(2 + 2(2\cos^2 \theta - 1))}$

$\Rightarrow \sqrt{(2 + 4\cos^2 \theta - 2)} = \sqrt{(4\cos^2 \theta)} = 2\cos\theta$

Therefore, the simplified value of $\sqrt{(2 + \sqrt{(2 + 2\cos 4\theta)})}$ is $2\cos\theta$.

Q32. Answer: (c) CPOSUX

According to the English alphabets and their positional values:

The pattern followed in the given code is:

Alphabets at odd places are increased by 2 positional values.

Alphabets at even places are increased by 4 positional values.

Similarly,

Hence the correct answer is option 3)

Q33. Answer: (a) Bat

From the given words:

Peacock, Woodpecker, Parrot, Bat

1) Peacock: It is a bird who lay eggs.

2) Woodpecker: It is a bird who lay eggs.

3) Parrot: It is a bird who lay eggs.

4) Bat: It is a flying mammal

So, Bat is the odd one.

Hence the correct answer is option 1)

Q34. Answer: (d) Seventh Five-Year Plan

Correct answer is Seventh Five-Year Plan.

Key Points

• In the Seventh Five Year Plan (1985 - 1990) private sector got the priority over public sector for the first time in the history of economic planning in India.

• Its main aim was poverty eradication and technological self dependency.

• The plan laid stress on improving the productivity level of industries by upgrading technology.

• The Seventh Plan aims at increasing the green revolution to new areas between its emphasis on raising the productivity of rice in the eastern region and in rainfed and dryland agriculture.

Additional Information

• The Second five year Plan focused on the development of the public sector and "rapid Industrialisation".

• Tenth Five-Year Plan was to reduction of poverty rate by 5% by 2007.

• The Sixth Five-Year Plan marked the beginning of economic liberalisation.

Q35. Answer: (a) Carolus Linnaeus

Correct answer is Carolus Linnaeus.

Key Points

• Linnaeus came up with the binomial system of nomenclature, in which each species is recognized by a generic name (genus) and a specific name (species).

• This system amounts to a method for

• Carl Linnaeus is most known for creating a system of naming plants and animals—a system we still use today.

• Carolus Linnaeus was a Swedish botanist, zoologist, taxonomist, and physician.

• Additional Information

• Charles Robert Darwin was an English naturalist, geologist and biologist, best famous for his contributions to evolutionary biology.

• Louis Pasteur was a French chemist and microbiologist.

• James Watson was an American geneticist and biophysicist who played a important role in the discovery of the molecular structure of deoxyribonucleic acid (DNA), the substance that is the basis of heredity.

Q36. Answer: (b) 3, 4

GIVEN:

$x^2 - 7x + 12 = 0$

CALCULATION:

We have, $x^2 - 7x + 12 = 0$

$\Rightarrow x^2 - 4x - 3x + 12 = 0$

$\Rightarrow x(x - 4) - 3(x - 4) = 0$

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=> (x - 3) (x - 4) = 0

=> x- 3 = 0 <=> x = 3.

=> (x - 4) = 0 <=> x = 4.

Hence, roots of the given equation are 3 and 4.

Q37. Answer: (a) Sarod

Correct answer is Sarod.

Key Points

• Ustad Amjad Ali Khan is an Indian classical sarod player, best famous for his clear and fast ekhara taans.

• He was born into a classical musical family and has performed internationally since the 1960s.

• Sarod, stringed musical instrument of the lute family that is normally to the Hindustani music tradition of northern India.

• The modern classical sarod is about 100 cm (39 inches) long and has a slightly waisted wood body with a skin belly.

• Additional Information

• Santoor, also called santouri, stringed instrument of the hammered dulcimer, or struck zither.

• Shehnai, double-reed conical oboe of North India.

• A flute is a musical wind instrument consisting of a long tube with holes in it.

Q38. Answer: (d) 9 : 16

Shortcut Trick

The ratio of a to d can be found directly using the compound ratio multiplication method.

We know that a/d = (a/b) × (b/d).

Given a/b = 3/4 and d/b = 4/3 => b/d = 3/4.

Multiplying both ratios: a/d = (3/4) × (3/4) = 9/16.

Therefore The correct answer is 9 : 16.

Alternate Method

Given:

=> a : b = 3 : 4

=> d : b = 4 : 3

Calculations:

=> To establish a continuous ratio between a, b, and d, the common term 'b' must be made equal in both ratio sets.

=> The LCM of the values representing b (4 and 3) is 12.

=> Multiply the first ratio by 3: a : b = (3 × 3) : (4 × 3) = 9 : 12

=> Multiply the second ratio by 4: d : b = (4 × 4) : (3 × 4) = 16 : 12

=> Reversing the second ratio to match b sequentially, we get b : d = 12 : 16

=> Combining them gives the continuous proportion a : b : d = 9 : 12 : 16

=> Therefore, extracting only a and d yields a : d = 9 : 16

Therefore The correct answer is 9 : 16.

Additional Information

Compound Ratio

When two or more ratios are multiplied term by term, the resulting ratio is called a compound ratio. For a : b and c : d, the compound ratio is ac : bd.

Inverse Ratio (Invertendo)

If the antecedent and consequent of a ratio are interchanged, the new ratio is called its inverse. The inverse of a : b is b : a.

Combining Multiple Ratios

To combine the ratios a : b and b : c into a single continuous ratio a : b : c, you must find the LCM of the numerical values corresponding to the common term 'b' and adjust the other terms proportionally.

Q39. Answer: (b) 37

GIVEN:

First term = 5

Common difference = 4

FORMULA USED:

an = a + (n - 1) d

Where, an = 9th term, a = first term, common difference = d (second term - first term)

CALCULATION:

Here, we have a = 5, d = 4

=> a_(9 =)a + (n - 1) d

=> a9 = 5 + (9 - 1) × 4

=> a_(9 =)5 + 32 = 37.

Hence, the ninth term is 37.

Q40. Answer: (d) 25

GIVEN:

√(1 + x/144)

CALCULATION:

Here, we have

=> √(1 + x/144) = 13/12

Now, on squaring, we have

=> (^(√(1 +x/144)))² = (13/12)²

=> 1 + x/144 = 169/144

=> x/144 = (169/144) - 1

=> x/144 = 25/144

=> x = 25.

Hence, the value of x = 25.

Q41. Answer: (a) Albert Einstein

Correct answer is Albert Einstein.

Key Points

• According to scientific folklore, Albert Einstein formulated this equation in 1905.

• "Energy equals mass times the speed of light squared."

• Albert Einstein was a Theoretical Physicist of German origin.

• He is the one who developed a pillar of modern Physics, the Theory of Relativity.

• Additional Information

• Isaac Newton was an English physicist and mathematician, who was the culminating figure of the Scientific Revolution of the 17th century.

• Stephen Hawking was a famous cosmologist, physicist, and professor.

• Marie Curie was a physicist, chemist and pioneer in the study of radiation.

Q42. Answer: (d) Sikkim

Correct answer is Sikkim.

Key Points

• Every year the northeastern state of Sikkim hosts the Red Panda Festival.

• The winter occasion features parades, live music and draws tourists and locals alike.

• It's a cheerful celebration named for Sikkim's historic state animal.

• It is the biggest tourism festival of the state and motives at promoting communal harmony and 'Unity in Diversity'.

• Additional Information

• The Pushkar Camel Fair (Rajasthan) is one of the largest in India and the only one of its type in the whole world.

• In Tamil, the word "Mattu" means bull and this day of Pongal is for celebration of cattle.

• Hornbill Festival is one of the most popular festivals of Nagaland, celebrated every year from 1st to 10th December.

Q43. Answer: (d) C-DAC, Pune

The Correct answer is C-DAC, Pune.

Key Points

• C-DAC have built multiple generations of the Supercomputer starting from PARAM with 1 GF in 1988 to our latest 54 TF Supercomputer PARAM Yuva in November 2008.

• This began a new chapter of developing Indigenous supercomputer and Professor Vijay Bhatkar developed India's first supercomputer PARAM 8000 which was the second-fastest computer in the world at that time.

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• Param Shivay, the first supercomputer assembled indigenously, was installed in IIT (BHU), followed by Param Shakti and Param Brahma at IIT-Kharagpur and IISER, Pune, respectively.

Additional Information

• PARAM Siddhi-AI. PARAM Siddhi-AI is India's fastest supercomputer as of December 2020.

• A supercomputer is a computer with a high level of performance as compared to a general-purpose computer.

• The Centre for Development of Advanced Computing (C-DAC) and the Indian Institute of Technology, Gandhinagar have jointly unveiled a new supercomputer in phase two of the central government's National Supercomputing Mission (NSM).

Q44. Answer: (a) Sikkim

Correct answer is Sikkim.

Key Points

• Sikkim is a State in Northeast India.

• It is be one of fastest growing, multiethnic and multilingual Indian state.

• It borders Tibet in the north and northeast, Bhutan in the east, Nepal in the west and West Bengal in the south.

• SIkkim is also situated near to India's Siliguri corridor near Bangladesh.

Additional Information

• The Seven Sister States is a famous word for the contiguous states of Arunachal Pradesh, Assam, Meghalaya, Manipur, Mizoram, Nagaland and Tripura.

• Arunachal Pradesh is famous for its pristine beauty and the lush green forests.

• Nagaland is also popularly known as the 'land of festivals.

• Meghalaya, also famous as the Abode of Clouds, falls in one of the richest biodiversity areas in the world.

-

Q45. Answer: (c) Trygve Lie

The correct answer is Trygve Lie

Key Points

• Norwegian lawyer and politician Trygve Lie was the United Nations first Secretary-General.

• He held the post for seven years, from 1946 to 1953, and was a Norwegian politician, labour leader, government official and author.

• The United Nations is an intergovernmental organization whose stated purposes are to maintain international peace and security, develop friendly relations among nations.

Additional Information

• Dag Hammarskjöld was a Swedish economist and diplomat who served as the second Secretary-General of the United Nations.

• U Thant, was a Burmese diplomat and the third secretary-general of the United Nations from 1961 to 1971, the first non-Scandinavian to hold the position.

• Kurt Josef Waldheim was an Austrian politician and diplomat. Waldheim was the fourth Secretary-General of the United Nations.

Q46. Answer: (a) 12 × 4 ÷ 42 = 168

From the information given, we interchange:

• × and ÷

• 2 and 4

Now we consider the options:

1) 12 × 4 ÷ 42 = 168

14 ÷ 2 × 24 = 168

7 × 24 = 168

168 = 168

2) 2 ÷ 4 × 14 = 60

4 × 2 ÷ 12 = 60

4 × 0.1 = 60

0.4 ≠ 60

3) 12 ÷ 42 × 4 = 160

14 × 24 ÷ 2 = 160

14 × 12 = 160

168 ≠ 160

4) 42 × 12 ÷ 2 = 20

24 ÷ 14 × 4 = 20

1.7 × 4 = 20

6.8 ≠ 20

Hence the correct answer is option 1)

Q47. Answer: (a) INS Arihant

The answer is INS Arihant

Key Points

• INS Arihant is the first of the planned five in the class of submarines designed and constructed as a part of the Indian Navy's secretive Advanced Technology Vessel (ATV) project.

• The ATV project was set up in 1984, under Vice Admiral Mihir K. Roy as the first Director General.

Additional Information

• Nerpa(INS Chakra) is a 8,140-tonne Project 971 nuclear-powered attack submarine. The construction of the submarine was started in Russia in 1993.

• INS Khukri was a Type 14 frigate of the Indian Navy. This was the first warship sunk in action by a submarine since World War II.

• NS Kalvari (S21) is the first of the six indigenous Scorpene-class submarines currently in service with the Indian Navy. It is a diesel-electric attack submarine which is designed and was manufactured at Mazagon Dock Limited in Mumbai.

Q48. Answer: (b) The Chola Dynasty

The correct answer is Chola Dynasty

Key Points

• The Chola Dynasty was a Tamil empire of southern India, one of the longest-ruling dynasties in world history.

• Their core area of the rule was the Kaveri delta, later known as Cholamandalam.

• Their capital was Uraiyur (near Tiruchirapalli town) and Puhar or Kaviripattinam was an alternative royal residence and chief port town.

• Tiger was their emblem. The Cholas also maintained an efficient navy.

Additional Information

• The Chaulukya dynasty, also Solanki dynasty, was a dynasty that ruled parts of what are now Gujarat and Rajasthan in north-western India.

• The Gupta Empire was an ancient Indian empire which existed from the early 4th century CE to late 6th century CE, it covered much of the Indian subcontinent.

• The Chera dynasty, IPA, also known as the Keralaputra, was one of the principal lineages in and before the Sangam period history of the state of Kerala and the Kongu Nadu region of Western Tamil Nadu in southern India.

Q49. Answer: (b) 6

The correct answer is 6

Key Points

• The United Nations (UN) has six main organs. They are — the General Assembly, the Security Council, the Economic and Social Council, the Trusteeship Council and the Secretariat — are based at UN Headquarters in New York.

• The United Nations is an international organization founded in 1945.

• The mission and work of the United Nations are guided by the purposes and principles contained in its founding Charter.

• There are six official languages of the UN

Additional Information

• It is currently composed of 193 Member States.

• The United Nations is an intergovernmental organization whose stated purposes are to maintain international peace and security.

• Dvelop friendly relations among nations, achieve international cooperation, and be a centre for harmonizing the actions of nations

Q50. Answer: (a) 56

FORMULA USED:

B	Brackets in order	(), {}, []
O	Of	Of

D	Division	÷
M	Multiplication	×
A	Addition	•
S	Subtraction	•

CALCULATION:

Here, we have 105 ÷ 5 × 3 + 39 - 46

=> 21 × 3 + 39 - 46

=> 63 + 39 - 46

=> 102 - 46 = 56.

Hence, the required value is 56.

Q51. Answer: (a) 5.45%

GIVEN:

Cost price = Rs 550.

Selling price = Rs 580

FORMULA USED:

Profit = S.P. - C.P.

Profit% = (Profit /C.P.) × 100

Where, S.P. = Selling Price, C.P. = Cost Price

CALCULATION:

Here, we have C.P. = Rs550, S.P. = Rs 580

=> Profit = (S.P. - C.P.) = (580 - 550) = Rs 30.

=> Profit% = (30 / 550) × 100 = 5.45%.

Q52. Answer: (d) Amitav Ghosh

The correct answer is Amitav Ghosh

Key Points

• Amitav Ghosh is an Indian writer, best known for his English language historical fiction.

• He won the 54th Jnanpith award in 2018, India’s highest literary honor.

• The Jnanpith Award is the oldest and the highest Indian literary award presented annually by the Bharatiya Jnanpith to an author for their "outstanding contribution towards literature".

Additional Information

• Sankha Ghosh was an Indian poet and literary critic.

• Krishna Sobti was an Indian Hindi-language fiction writer and essayist. She was awarded the Sahitya Akademi Award.

• Raghuveer Chaudhari is a novelist, poet and critic from Gujarat, India. He has also worked as a columnist for numerous newspapers.

Q53. Answer: (d) CHOGM : Commonwealth Heads of Government Ministries

The correct answer is CHOGM : Commonwealth Heads of Government Ministries

Key Points

• Leaders of Commonwealth countries meet every two years for the Commonwealth Heads of Government Meeting (CHOGM).

• Hosted by different member countries on a rotating basis. Since 1971, a total of 25 meetings have been held, with the most recent being in the Rwanda in 2022.

• The Commonwealth is an association of countries across the world.

• Works to strengthen governance, build inclusive institutions and promote justice and human rights.

Additional Information

• CITES is a multilateral treaty to protect endangered plants and animals from the threats of international trade. It was drafted as a result of a resolution adopted in 1963 at a meeting of members of the International Union for Conservation of Nature.

• The Competition Commission of India is the chief national competition regulator in India. It is a statutory body within the Ministry of Corporate Affairs.

• The Centre for Development of Advanced Computing is an Indian autonomous scientific society, operating under the Ministry of Electronics and Information Technology.

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Q54. Answer: (a) X S P

According to the English alphabets and their positional values:

The pattern followed in the given options is:

1)

2)

3)

4)

So, XSP is the odd one.

Hence the correct answer is option 1)

Q55. Answer: (a) 4

GIVEN:

2, 5, 4, 1, 8

CONCEPT USED:

First, we have to arrange the given data as ascending number then we have to see how many number of data (n) are given

If n is odd then, Median = (n +1 /2)^(th) term

If n is even then, Median = [(n/2)^(th) term + {(n/2) + 1}^(th) term] /2

CALCULATION:

First arranging the given data in ascending order we get

1,2,4,5,8.

Hence, total number of data(n) = 5, an odd number

Median = (n+ 1 /2) ^(th)term = (5 +1)/2 = 3^(rd) term

=> Median = 3^(rd) term = 4.

Hence, Median is 4.

Q56. Answer: (d) WUXH

According to the English alphabets and their positional values:

The pattern followed in the given code is:

Alphabets are increased by 3 positional values.

Similarly,

Hence the correct answer is option 4)

Q57. Answer: (c) Child marriage

The correct answer is Child marriage

Key Points

• The Child Marriage Restraint Act 1929, approved by the Imperial Legislative Council of India on September 28, 1929.

• The act fixed the marriageable age for girls at 14 years and 18 years for boys.

• It is popularly known as the Sharda Act

Additional Information

• The Indian custom of a wife immolating herself either on the funeral pyre of her dead husband or in some other fashion soon after his death. Although never widely practiced, suttee was the ideal of womanly devotion held by certain Brahman and royal castes.

• Polygamy usually takes the form of polygyny – when a man marries multiple women.

• Infanticide (or infant homicide) is the intentional killing of infants or offsprings.

Q58. Answer: (b) A geo-portal of ISRO with 3D imaging capabilities.

The correct answer is A geo-portal of ISRO with 3D imaging capabilities.

Key Points

• Bhuvan, is the national Geo-portal developed and hosted by ISRO comprising of Geo Spatial Data, Services and Tools for Analysis.

• It has many versatile features, for Example

• Visualization of Satellite Imagery and Maps

• Analysis

• Free Data Download.

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• Download Reports to name a few.

Additional Information

• Bhuvan, is an Indian web based utility which allows users to explore a set of map based content prepared by Indian Space Research Organisation.

• The content which the utility serves is mostly restricted to Indian boundaries and is offered in 4 regional languages.

Q59. Answer: (b) 50

Given:

The first 100 positive integers are divisible by 3 or 4 without a remainder

Concept used:

If a number must be divisible by 3 and 4 both, then it must be divisible by 3 × 4 = 12.

Calculation:

From the first 100 positive integers, the first and the last numbers divisible by 3 are 3 and 99.

Number of numbers divisible by 3 between 3 and 99, including 3 = (99-3)/3+1=33

From the first 100 positive integers, the first and the last numbers divisible by 4 are 4 and 100.

Number of numbers divisible by 4 between 4 and 100, including 4 = (100-4)/4+1=25

From the first 100 positive integers, the first and the last numbers divisible by 12 are 12 and 96.

Number of numbers divisible by 12 between 12 and 96, including 12 = (96-12)/12+1=8

Therefore The number of numbers from the first 100 positive integers which are divisible by 3 or 4 without a remainder is 33 + 25 - 8 = 50.

Q60. Answer: (d) Bharat Heavy Electricals Limited

The correct answer is Bharat Heavy Electricals Limited

Key Points

• Bharat Heavy Electricals Limited is an Indian government owned engineering and manufacturing enterprise based in New Delhi, India.

• It is under the ownership of Ministry of Heavy Industries, Government of India

• It was Established in 1956.

Additional Information

• BHEL is India's largest power generation equipment manufacturer.

• The BHEL is one of the Public Sector Company in India, an Indian government owned engineering and manufacturing enterprise.

Q61. Answer: (b) 5 units

Given:

Formula used:

Calculation:

Distance between the two points = $\sqrt{((2-5)^2+(2-(-2))^2)}=\sqrt{(9+16)}=5$ units

Q62. Answer: (d) The Satavahana Dynasty

The correct answer is The Satavahana Dynasty

Key Points

• The Satavahanas, also referred to as the Andhras in the Puranas, were an ancient Indian dynasty based in the Deccan region.

• Simuka was the founder of the Satavahana Dynasty.

• The Satavahanas were the first native Indian kings to have issued their own coins which had the rulers' portraits on them.

• Gautamiputra Satakarni started this practice which he imbibed from the Western Satraps after vanquishing them.

Additional Information

• Rashtrakuta was a royal Indian dynasty ruling large parts of the Indian subcontinent between the sixth and 10th century.

• The earliest known Rashtrakuta inscription is a 7th-century copper plate grant detailing their rule from Manapura, a city in Central or West India.

• The foundation for the Pandya supremacy in south India was laid by Maravarman Sundara I early in the 13th century.

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Q63. Answer: (d) 30

Given:

Maddy reads three-fifth of a chapter consisting of 75 pages.

Concept used:

(3/5) × 75 = 45 pages

To find out how many more pages Maddy needs to read to complete the chapter, we need to subtract the number of pages he has already read from the total number of pages in the chapter:

Total number of pages in the chapter = 75 pages

Number of pages Maddy has read = 45 pages

Therefore, the number of pages Maddy needs to read to complete the chapter is:

75 - 45 = 30 pages

Maddy needs to read 30 more pages to complete the chapter.

Q64. Answer: (b) Banabhatta

The correct answer is Banabhatta.

Key Points

• India's Banabhatta was a poet and prose writer in Sanskrit during the seventh century. He served as the Asthana Kavi in King Harsha Vardhana's court.

• One of the finest writers in Sanskrit prose, Banabhatta is best known for his chronicle, Harshacharita, which describes the life of the Buddhist ruler Harsha of northern India and his court.

• From 606 until 647 CE, northern India was ruled by the Indian ruler Harshavardhana.

Additional Information

• In India's 12th century, Vallal, a wealthy velir, lived in Puduvai and Thiruvenainallur.

• Jayachandra was a ruler of northern India's Gahadavala dynasty.

• Ananda Bhatta was a Bengali Shaivaite commentator on Vedanta who lived in the 16th or 17th century.

Q65. Answer: (c) India

The correct answer is India.

Key Points

• The distinctive physical property of micas, a type of silicate mineral, is their ease in splitting into incredibly thin elastic plates.

• Mica are dielectric, insulating, and heat-tolerant. They are utilized in electrical equipment as a result of these qualities.

• One of the world's top producers and exporters of mica is India. It is mostly produced in Rajasthan, Andhra Pradesh, Bihar, Jharkhand, and Maharashtra.

Additional Information

• India's major producer of mica is Andhra Pradesh. India had a monopoly on the manufacturing and export of sheet mica around the world for more than a century.

• The two countries that export sheet mica the most internationally are India and Madagascar, with the majority of the mica being mined in unauthorised mines.

• The Andhra Pradesh state's Nellore mica belt is the biggest and most significant producer in the nation.

Q66. Answer: (d) Liverpool

The correct answer is Liverpool.

Key Points

• The 16th iteration of the FIFA Club World Cup took place in 2019.

• A competition between the winners of the six continental confederations and the league champions of the host country, organised by FIFA.

• Liverpool won the FIFA Club World Cup for the first time after defeating Flamengo 1-0 in a thrilling game in Doha, Qatar, thanks to an extra-time goal from Roberto Firmino.

Additional Information

• Sumitomo, like all other clubs, reconstituted as the Kashima Antlers after the J.League's establishment and removed the corporate identity from its moniker.

• Flamengo, a Brazilian team and the current Copa Libertadores champions, represents CONMEBOL.

• With a 2-1 victory against opponents on the road, Monterrey guaranteed their entry into the World Club Cup.

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Q67. Answer: (a) The principle of a federation and parliamentary system

The correct answer is The principle of a federation and parliamentary system.

Key Points

• The 1935 Government of India Act was a piece of legislation modified by the British Parliament. It was first given royal approval in August 1935.

• It called for the creation of an All India federation with units made up of provinces and princely states. Three lists—the federal list, the provincial list, and the concurrent list—were used to distribute the powers between the centre and the units.

• It did away with dyarchy in the provinces and replaced it with "provincial autonomy."

Additional Information

• The 1858 act that constituted the Council of India was repealed. An advisory group was instead given to the secretary of state.

• The act called for the establishment of the Reserve Bank of India, the Federal Public Service Commission, and the Joint Public Service Commission.

• Separate electorates were also made available to the working class, ladies, and the depressed classes.

Q68. Answer: (d) 16.6%

Given:

A bacterial population increases at the rate of 6% in the first 10 minutes and then 10% in the next 10 minutes.

Formula used:

value after x% increase in y = (100+x)/100× y

Calculation:

Let the initial population be 100.

After the first 10 minutes the population is 106.

Then, in next 10 minutes the population is 110/100×106=116.6

Therefore The overall percentage increase in the population at the end of 20 minutes is 16.6%.

Q69. Answer: (b) 4 : 9

Given:

The ratio of the radii of two spheres is 2 : 3.

Formula used:

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

Calculation:

Let the radii of the two spheres be a and b.

Then, a/b=2/3

Ratio of their surface areas = $(4\pi a^2)/(4\pi b^2)= (a/b)^2= (2/3)^2=4/9$

Therefore The ratio of the surface areas of the two spheres is 4 : 9.

Q70. Answer: (b) TS

From the given conditions:

I. If P, Q or R is chosen, U cannot be chosen.

II. Either T or U must be chosen.

III. S and Q cannot be chosen together.

Now if R is chosen:

According to I, we cannot choose U.

According to II, we have to choose between T or U but U can't be chosen so we get T.

According to III, we can choose either S or Q.

In the given options we have to find either TS or TQ:

So, option 2) has TS.

Hence the correct answer is option 2)

Q71. Answer: (d) 4

Given:

The sum of two numbers is 20 and their product is 96.

Formula used:

$(x+y)^2=x^2+ 2xy+y^2$

Calculation:

Let the two numbers be x and y.

Then, xy = 96 and x+y = 20.

Using $(x+y)^2=x^2+ 2xy+y^2$,

$x^2+y^2=20^2-2\times 96=400-192=208$

Using $(x-y)^2=x^2-2xy+y^2$

$(x-y)^2=208-2\times96=16$

$\Rightarrow(x-y)=\sqrt{16}=4$

Therefore The difference between the two numbers is 4.

Q72. Answer: (c) force

The correct answer is Force.

Key Points

• In the International System of Units, the unit of force is the newton. It is described as the force that accelerates a mass of one kilogramme by one metre per second per second, or 1 kg m/s2.

• F=ma, or force is equal to mass times acceleration, is the second of Newton's laws of motion.

• Force is the push or pull that an item experiences that result in a change in velocity.

Additional Information

• The amount of force applied to a certain region is referred to as pressure. Therefore, you can either apply a large force or a force over a limited region to create a large amount of pressure.

• The quantity of energy moved or converted per unit of time is known as power.

• The obstruction to current flow in an electrical circuit is measured by resistance.

Q73. Answer: (b) 8.57

Given:

A can finish a work in 15 days and B can finish the same work in 20 days.

Concept used:

If A and B alone can finish a work in x and y days, respectively, then the reciprocal of the number of days taken by them to finish the work while working together is 1/x+1/y

Calculation:

Let A and B, together can finish the work in x days.

Then, 1/x=1/15+1/20

Solving for x,

$x=15\times20/(15+20)=8.57$

Therefore Working together, A and B can finish the same work in 8.57 days.

Q74. Answer: (b) HLG

According to the English alphabets and their positional values:

The pattern followed in the given options is:

1)

2)

3)

4)

So, HLG is the odd one.

Hence the correct answer is option 2)

Q75. Answer: (b) Neil Armstrong

The correct answer is 'Neil Armstrong'.

Key Points

• American astronaut and aeronautical engineer Neil Alden Armstrong became the first person to set foot on the moon.

• He also went on to become a navy pilot, check pilot, and professor.

• Armstrong was born and raised in Wapakoneta ,Ohio.

• He received numerous honours, including the Congressional Space Medal of Honor in 1978, the Presidential Medal of Freedom in 1969, and the Congressional Gold Medal in 2009.

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Additional Information

• Buzz Aldrin is an American former astronaut, engineer and fighter pilot.

• As the commander of the 1966 Gemini 12 mission, he completed three spacewalks.

• Katherine Johnson was an American Mathematician, as a NASA employee her calculations of orbital mechanics were critical to the success of the first and subsequent U.S. crewed spaceflights.

Q76. Answer: (d) π

Given:

cos^(- 1)(1/(√2)) + sec^(- 1)(- √2)

Formula used:

cos^(- 1)(1/x) + sec^(- 1)(x)=π

Calculation:

Using the identity cos^(- 1)(1/x) + sec^(- 1)(x)=π,

cos^(- 1)(1/(√2)) + sec^(- 1)(- √2)=1

Therefore, the value of cos^(- 1)(1/(√2)) + sec^(- 1)(- √2) is 1.

Q77. Answer: (c) cytology

• The correct answer is 'Cytology'.

Key Points

• Cytology is generally used on samples of free cells or tissue fragments, in contrast to histopathology, which studies whole tissues.

• There is also the use of cytology to diagnose medical conditions in other tissues of the body, generally referred to as non-gynaecological or diagnostic cytology.

• Cell is the basic unit of life that is responsible for the living and functioning of organisms.

• It is also called as Cytopathology.

Additional Information

• Serology is used for historically to confirm infections with bacteria, fungi, and viruses that are not easily detected.

• The cause of a disease or abnormal condition is known as 'Etiology'

• Cytoplasm is a thick solution that fills each cell and is enclosed by the cell membrane..

Q78. Answer: (d) 7 August

The correct answer is "7th August".

Key Points

• In 2015, Prime Minister Narendra Modi declared National Handloom Day on 7th of August.

• Handloom industry contributed in the development of socio-economic development and create awareness about the sector.

• The handloom sector is one of the largest economic sectors in the country.

• The theme of National Handloom Day 2022 is “Handloom, an Indian legacy”.

Additional Information

• This movement encourages the Indians to wear the clothes made by handlooms.

• The textile ministry will be celebrating National Handloom day at Dilli Haat which is celebrated from August 1 to August 15.

• On this day in 1905, that the Swadeshi Movement was launched in the Calcutta Town hall to protest against the partition of Bengal by the British Government.

Q79. Answer: (d) MTDJONX

According to the English alphabets and their positional values:

The pattern followed in the given code is:

Alphabets at odd places are increased by 1 positional values.

Alphabets at even places are decreased by 1 positional values.

Similarly,

Hence the correct answer is option 4)

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Q80. Answer: (d) Nivation

The correct answer is "Nivation".

• Hollows form under the emerging glacier as a result of the freeze-thaw cycle and mass wasting is known as Nivation.

• Nivation is the set of geomorphic processes associated with snow patches.

• The primary processes are mass wasting and the freeze and thaw cycle,in which fallen snow gets compacted into firn or névé.

• Nivation now encompasses a number of related subprocesses that relate to snow patches that may be stationary or semi-permanent.

• These sub-processes include weathering, meltwater flow from beneath the snow patch, erosion (if any), and the start of erosion.

Additional Information

• Bio-erosion describes the breakdown of hard ocean substrates – and less often terrestrial substrates – by living organisms.

• Sedimentation is the deposition of sediments. It takes place when particles in suspension settle out of the fluid in which they are entrained and come to rest against a barrier.

• This material is usually soil and rock. Just as rivers carry along all sorts of debris and silt that eventually builds up to form deltas, glaciers transport all sorts of dirt and boulders that build up to form moraines.

• A moraine is material left behind by a moving glacier.

Q81. Answer: (c) West

According to the given information:

• Anita is facing towards east.

• Monu is sitting opposite to Anita.

So, Monu is facing west.

Hence the correct answer is option 3)

Q82. Answer: (c) Switched-Mode Power Supply

The correct answer is "Switched-Mode Power Supply".

Key Points

• Switched-mode power supply (SMPS) is an electronic circuit that converts power using switching devices that are turned on and off at high frequencies, and storage components such as inductors or capacitors to supply power when the switching device is in its non-conduction state.

Additional Information

• The major benefit of the switch mode power supply is its higher efficiency, compared to standard linear regulators,and this is achieved by internally switching a transistor (or power MOSFET) between its “ON” state (saturated) and its “OFF” state (cut-off), both of which produces lower power dissipation.

Q83. Answer: (d) 24

Given:

The LCM of two numbers is 96, their HCF is 8 and one of the two numbers is 32.

Formula used:

LCM × HCF = Product of the two numbers

Calculation:

Let the missing numbers be x.

Using the mentioned formula, 96 × 8 = 32 × x

Solving for x,

$x=(96\times 8)/32=24$

Therefore The second number is 24.

Q84. Answer: (d) Rs.10,123.20

Given:

A sum of Rs.25,000 is compounded annually for 3 years at a rate of 12% per annum,

Formula used:

Compound interest after 'n' years = $P(1+ r/100)^n-P$,

where P is the principal amount and r is the interest rate per annum.

Calculation:

Compound interest after 3 years

= 25000(1+ 12/100)³-2500 =35123.2-25000=10123.2

Therefore The compound interest on a sum of Rs.25,000 after 3 years at a rate of 12% per annum, compounded annually is Rs.10,123.20

Q85. Answer: (b) Sydney, Australia

• The correct answer is option "2".

Key Points

• Canberra is the federal capital of Australia.

• It occupies part of the Australian Capital territory in south eastern Australia and is about 150 miles (240 km) southwest of Sydney.

• It is Australia's largest inland city and the eighth-largest city overall.

• Canberra city was founded and named as Canberra in 1913.

• Canberra city blueprint by American architects Walter Burley Griffin and Marion Mahony Griffin was selected after an international design contest, and construction commenced in 1913.

• It is an entirely planned city.

Additional Information

• In December 1911 King George V of Britain proclaimed that the capital of British India would be moved from Calcutta (which is today called Kolkata) to Delhi.

• In 1857 Queen Victoria of Britain chose Ottawa to be the capital of Canada.

• The name Ottawa comes from the Algonquin word adawe – which means to trade, it's an important business centre.

• Ottawa is the seventh coldest capital in the world.

• Cairo was founded in 2,000 BC and ruled by King Menes who united Upper and Lower Egypt. Cairo was established as the city of Fustat by the Fatimids in the 10th century.

Q86. Answer: (b) 115%

Given:

A line graph showing the population (in million) of Istanbul over 6 years (from 2013 to 2018) is given.

Formula used:

Percentage increase = (new value - old value)/(old value)× 100

Calculation:

Percentage increase = (2.8-1.3)/1.3× 100= 115.38%

Therefore The approximate percentage increase in the population of Istanbul from 2013 to 2018 is 115%.

Q87. Answer: (b) Rs.46,000

Given:

A pie-chart showing the percentage distribution of the expenditure incurred by a company in manufacturing electric kettles is given.

Formula used:

value of x% percent of y = x/100× y

Calculation:

Let the total expenditure be x.

Then, 56000=28/100× x

Solving for x,

x=(56000× 100)/28=200000

Then, the manufacturing overhead cost = 23/100× 200000=46000

Therefore The manufacturing overhead cost is Rs. 46000

Q88. Answer: (c) 9.75%

Given:

A bar graph showing the increase in the production of corn (in tons) over 4 years (from 2012 to 2015) is given.

Formula used:

Percentage increase = (new value - old value)/(old value)× 100

Calculation:

Percentage increase = (45-41)/41× 100 = 9.75%

Therefore The percentage increase in the production of corn in 2015 as compared to the previous year is 9.75%.

Q89. Answer: (a) 2017

Given:

A line graph showing the quantity of digital watches manufactured by two companies X and Y over 6 years (from 2014 to 2019) is given.

Formula used:

Absolute difference = bigger value - smaller value

Calculation:

The absolute difference between the quantity of watches manufactured by company X and company Y, in 2014 = 120 - 105 = 15

In 2015, 108 - 85 = 23

In 2016, 130 - 100 = 30

In 2017, 115 - 80 = 35

In 2018, 125 - 108 = 17

In 2015, 160 - 150 = 10

Therefore The absolute difference between the quantity of watches manufactured by company X and company Y is maximum in 2017.

Q90. Answer: (d) [figure] [figure]

From the given words:

Envy, Fear, Emotion

We know that both envy and fear are types of emotions. But envy and fear are not directly related.

So the Venn diagram will be:

Now the option that matches this diagram is option 4.

Hence the correct answer is option 4)

Q91. Answer: (a) Event A is the effect but event B is not its immediate and principal cause.

The correct answer is option "1".

Key Points

• In event A Zara got punished by their teacher but Zara parent's spolit her is not the reason behind it.

• So Event A is the effect but event B is not its immediate and principal cause.

Q92. Answer: (c) 83

The pattern followed in the given series is:

The difference between the terms is 13.

Hence the correct answer is option 3)

Q93. Answer: (d) Event A is the effect and event B is its immediate and principal cause.

The correct answer is option "4".

Key Points

• Ronit went to dentist because he had a toothache.

• Here it is clear that Ronit went to dentist because he had a toothache.

• So the event A is the effect and event B is its immediate and principal cause.

Q94. Answer: (c) Brother

Preparing the family tree using the following symbols:

From the given information:

Step 1: Abie and Jack are father and son, respectively. Jack is the grandson of Paulino.

Step 2: Sabrina and Martha are daughter and mother, respectively. Sabrina is the grand-daughter of Agatha.

Step 3: If Agatha and Paulino are married and have a single child.

Abie and Martha are represented as single child and therefore Jack and Sabrina will be siblings.

So, Jack will be brother of Sabrina.

Hence the correct answer is option 3)

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Q95. Answer: (c) × - =

We substitute the values from the options in the given equation and solving them using BODMAS rule:

1) ÷ + =

12 ÷ 3 + 12 = 24

4 + 12 = 24

16 ≠ 24

2) × = -

12 × 3 = 12 - 24

36 = 12 - 24

36 ≠ -12

3) × - =

12 × 3 - 12 = 24

36 - 12 = 24

24 = 24

4) × = ÷

12 × 3 = 12 ÷ 24

12 × 3 = 0.5

36 ≠ 0.5

Hence the correct answer is option 3)

Q96. Answer: (c) [figure] [figure]

From the given words:

Institution, Hospital, University

We know that both hospital and university are types of institutions. But hospital and university are not directly related.

So the Venn diagram will be:

Now the option that matches this diagram is option 3.

Hence the correct answer is option 3)

Q97. Answer: (d) [figure] [figure]

From the given words:

Books, Textbooks, Novels, Notebooks

We know that textbooks, novels and notebooks are types of books. But textbooks, novels and notebooks are not directly related.

So the Venn diagram will be:

Now the option that matches this diagram is option 4.

Hence the correct answer is option 4)

Q98. Answer: (b) Daughter

Preparing the family tree using the following symbols:

From the given information:

Step 1: Rakesh is the Maternal grandfather of Radha and Paternal grandfather of Prerna.

Step 2: Rakesh has only two children, Raman and Radha's mother.

From the diagram, we can see that Prerana can be a daughter or son of Raman.

In the options, Son is not given

So, Prerna is the daughter of Raman.

Hence the correct answer is option 2)

Q99. Answer: (c) B

From the given information we can draw the table:

Name	Type
A	Fruit
B	Animal/fruit
C	No information

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D	Animal
F	No information
H	No information

We have no information about C, F and H so we can rule them out.
Out of the remaining we get A is not an animal or a flower, thus it is a fruit;
and D is neither a fruit nor a flower therefore it is an animal.
and B is not a flower so it can be an animal or a fruit.
From the given options, we only have B that can be an animal.
Hence the correct answer is option 3)

Q100. Answer: (d) O-49

According to the English alphabets and their positional values:
The pattern followed in the given code is:
Alphabets are decreased by 2 positional values.
Numbers are decreased by 2 positional values from there previous difference.
Hence the correct answer is option 4)

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