RRB NTPC CBT 2 (Level-3) Official Paper (Held On: 17 June 2022 Shift 1) (Previous Year Paper)

RRB NTPC • 2022 • 120 questions • 90 minutes • Answer key and solutions

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FULL TEST

Q1. By way of the Constitution (Eighty-sixth Amendment) Act, 2002, _____ has been included in the list of Fundamental Rights as part of the Right to Freedom.

(a) right to assemble peaceably and without arms
(b) to practise any profession, or to carry on any occupation, trade, or business
(c) right to education
(d) protection against arrest and detention in certain cases

Q2. In which of the following network topologies do the connected components make a closed loop?

(a) Tree topology
(b) Ring topology
(c) Bus topology
(d) Star topology

Q3. The average of 29.75, 18.25 and number N is 23. What is the value of number N?

(a) 19
(b) 23
(c) 17
(d) 21

Q4. What is the sum of LCM and HCF of 28 and 49?

(a) 210
(b) 196
(c) 217
(d) 203

Q5. Ravikirti's Aihole inscription speaks in detail the victory of Pulakesin II over:

(a) Samudragupta
(b) Harsha
(c) Kharavela
(d) Kirtivarman I

Q6. In a certain coding language, MORE is written as LNQD and STOP is written as RSNO. How will TOY be written in that language?

(a) XNS
(b) SNX
(c) NXS
(d) PTU

Q7. Which cultural festival was inscribed on the UNESCO's Representative List of the Intangible Cultural Heritage of Humanity during its 16^(th) session which took place virtually from 13 to 18 December 2021?

(a) Onam
(b) Ganesh Chaturthi
(c) Durga Puja
(d) Pongal

Q8. If

'S # T' means S is the father of T,

'S $ T' means 'S is the mother of T',

'S @ T' means 'S is the husband of T',

'S = T' means 'S is the son of T',

then how is E related to L in the following expression?

L $ Q = B # D @ E $ O

(a) Daughter
(b) Daughter-in-law
(c) Mother
(d) Mother-in-law

Q9. Which of the following countries was NOT among the top four producers of wheat in the world, according to Food and Agricultural Organization, in 2020?

(a) China
(b) India
(c) Canada
(d) The US

Q10. Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the one that is different.

(a) HFM
(b) DBI
(c) SQX
(d) JGO

Q11. Which ancient Greek historian and diplomat is the author of the book 'Indica'?

(a) Dionysius
(b) Megasthenes
(c) Seleucus
(d) Deimachus

Q12. Article _____ of the Constitution of India has a provision that mandates the reservation of seats for the Scheduled Castes and Scheduled Tribes in the House of the People.

(a) 46
(b) 330
(c) 332
(d) 335

Q13. Complete the sentence using the options given below.

The short-run marginal cost curve is 'U'-shaped due to _____.

(a) more supply of products
(b) aggregate demand
(c) the law of fixed proportions
(d) the law of variable proportions

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Q14. The Niagara Falls drains the water from Lake Erie into _____.

(a) Lake Huron
(b) Lake Ontario
(c) Lake Superior
(d) Lake Michigan

Q15. Select the option that is related to the fifth letter-cluster in the same way as the fourth letter-cluster related to the third letter-cluster and second letter-cluster is related to the first letter-cluster.

FTPY : JVTA :: NVZG : RXDI :: MPRE : ?

(a) QSVH
(b) PRUG
(c) QRVG
(d) PSUH

Q16. Which of the following MS-Word features crosses texts out by drawing a line through it?

(a) Subscript
(b) Pagination
(c) Underline
(d) Strikethrough

Q17. What percentage of Defence Research and Development budget has been set aside for start-ups and private entities in the Union Budget 2022-23 for the financial year 2022-23?

(a) 25%
(b) 15%
(c) 10%
(d) 20%

Q18. Jaintia is the name of a tribe as well as a hill range found in the state of _____.

(a) Meghalaya
(b) West Bengal
(c) Karnataka
(d) Tamil Nadu

Q19. Which of the following is the largest river island in India?

(a) Bhavani Island
(b) Quibble Island
(c) Majuli Island
(d) Nongkhnum River Island

Q20. Read the given information carefully and then answer the question that follows.

A, B, C, D and E help themselves to buy some drinks from a stall. Four of them each buy a cup of coffee. B and D do not buy tea as all the others do. In fact, B buys only one drink, which is a cold drink. Cold drink is not bought by others apart from B. Only A and E do not buy ice-tea. Who among the following buys three drinks?

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

Q21. Which space agency launched a first-of-its-kind mission named DART?

(a) NASA
(b) Roscosmos
(c) ISRO
(d) jaxa

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Q22. Devendra Mewari was awarded the Bal Sahitya Puraskar 2021 for his play _____.

(a) Nil Darpan
(b) Natak Natak Me Vigyan
(c) Maya from Madurai
(d) Khwab-e-Hasti

Q23. Which of the following countries is the biggest export partner of India for the period April-November 2021 according to the Economics Survey 2021-22?

(a) UAE
(b) Singapore
(c) China
(d) The US

Q24. Dr. Subbanna Ayyappan has been awarded the Padma Shri in Science and Engineering in January 2022. He is a/an _____.

(a) molecular biologist
(b) nuclear scientist
(c) aquaculture scientist
(d) neuro scientist

Q25. If village A is located to the west of village B, village C is to the south of village A and village D is to the east of village C, then in which direction is village D located with respect to village A?

(a) North-east
(b) North
(c) South-east
(d) East

Q26. If $\tan\theta + 3\cot\theta = 2\sqrt{3}$, $0° < \theta < 90°$, then what is the value of $\text{cosec}^2\theta$?

(a) 2/3
(b) 7/6
(c) 4/3
(d) 1/4

Q27. Which of the following is the world's second-largest language family?

(a) Indo-European
(b) Sino-Tibetan
(c) Niger-Congo
(d) Austronesian

Q28. Five clothes, sweater, jacket, coat, gloves and trousers, are made of different fabrics, wool, fur, velvet, flannel and taffeta, but not necessarily in the same order. Also, each has a different colour, red, orange, black, white and yellow, but not necessarily in the same order.

The jacket and trousers are not made of velvet. The sweater is orange in colour. The coat is made of fur but it is not black or red in colour. The gloves are yellow in colour but are not made of flannel or taffeta. The orange coloured item is made of wool. The jacket is made of flannel and is neither black nor white in colour. The trouser is not white in colour.

Which item is made of velvet?

(a) Trousers
(b) Sweater
(c) Gloves
(d) Coat

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Q29. In a certain code language, 'CUP' is coded as 'DAO' and 'RAN' is coded as "SEM". How will 'BAD' be coded in that language?

(a) COC
(b) CED
(c) CEC
(d) COD

Q30. 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) Some boxes are bags.

b) All pouches are bags.

Conclusions:

I. Some bags are boxes.

II. Some pouches are boxes.

(a) Both conclusions I and II follow.
(b) Only conclusion I follows.
(c) Only conclusion II follows.
(d) Neither conclusion I nor II follows.

Q31. Six friends are sitting in a bench facing east. Falak is third to the right of Charu. There are only two people sitting between Sargun and Karan. Charu is at the North end of the bench. Arav is sitting to the immediate left of Falak. Vaibhav and Karan are sitting immediately next to each other. Who is sitting second from the south end?

(a) Arav
(b) Sargun
(c) Falak
(d) Karan

Q32. Which Indian chess player won the Vergani Cup Chess Tournament in January 2022?

(a) Sankalp Gupta
(b) Mitrabha Guha
(c) MR Lalith Babu
(d) Bharath Subramaniyam

Q33. A certain sum at compound interest amounts to Rs. 3,025 in 2 years and to Rs. 3,327.5 in 3 years, interest compounded annually. The sum and the rate of interest p.a. are, respectively:

(a) Rs. 2,200 and 10%
(b) Rs. 2,000 and 8.5%
(c) Rs. 2,800 and 9%
(d) Rs. 2,500 and 10%

Q34. The radius of the base of a solid right circular cone is 5 cm and its height is 12 cm. What is its total surface area (in cm^2)?

(a) 84π
(b) 70π
(c) 90π
(d) 34π

Q35. Six colleagues, Raj, Shruti, Mayank, Preyesh, Viren and Ojas, study in the same class. Viren is taller than Raj. Ojas has the same height has Preyesh, who is taller than Shruti. Mayank is taller than Viren. Raj is not taller than Shruti. Which of the following options is NOT necessarily correct according to the given information?

(a) Shruti is shorter than Ojas.
(b) Ojas is taller than Raj.
(c) Viren is taller than Shruti.

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(d) Raj is shorter than Mayank.

Q36. Rohit walked towards the West and took a turn at 45° in the clockwise direction. He again turned at 180° in the clockwise direction. Lastly, he turned 270° in the anti-clockwise direction. In which direction was Rohit facing at last?

(a) North-west
(b) South
(c) South-west
(d) West

Q37. Ravi travels from City A to City B and from City B to City A in 4 hours. If the average speed of the total journey is 68.3 km/h, what is the distance between City A and City B?

(a) 273.2 km
(b) 152.7 km
(c) 136.6 km
(d) 197.6 km

Q38. At the Second Battle of Panipat, Bairam Khan defeated _____.

(a) Khan Zaman
(b) Maharana Pratap
(c) Rana Pratap
(d) Hemu

Q39. Who among the following visited India during the reign of Harshavardhana?

(a) Fa Hien
(b) Xuan Zang (Hsuan Tsang)
(c) Marco Polo
(d) Ibn Battuta (Abu Abdullah Muhannad ibn Battutah)

Q40. Which of the following states/union territories has the highest sex ratio in rural areas according to the census of India, 2011?

(a) Kerala
(b) Meghalaya
(c) Andaman & Nicobar Islands
(d) Delhi

Q41. As per the India State of Forest Report (ISFR) 2021, which among the following Union Territories of India has the highest cover with respect to its total geographical area?

(a) Dadra and Nagar Haveli and Daman and Diu
(b) Lakshadweep
(c) Ladakh
(d) Jammu and Kashmir

Q42. Which of the following states was the largest producer of Bauxite in 2018-19 as per the Indian Minerals Yearbook 2019?

(a) Gujarat
(b) Rajasthan
(c) Madhya Pradesh
(d) Odisha

Q43. Select the number from among the given options that can replace the question mark (?) and continue the given series.

67, 71, 79, 91, 107, ?

(a) 127
(b) 131
(c) 119
(d) 123

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Q44. Study the following arrangement of letters and symbols (from Left to Right) and answer the question that follows:

(Left) H S % V ^ E R U : F J # S A U & G * G H @ D C ! I N O ? S (Right)

How many consonants are there in this arrangement which are immediately preceded by a vowel?

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

Q45. A sum of money, when invested at 14.5% p.a. simple interest amounts to Rs. 13,464 after 6 years. What was the sum invested?

(a) Rs. 7,450
(b) Rs. 70,800
(c) Rs. 7,200
(d) Rs. 7,600

Q46. Surajkund Mela, also known as the international crafts fair, is held in _____

(a) Gujarat
(b) Odisha
(c) Haryana
(d) Uttarakhand

Q47. Select the number from among the given options that can replace the question mark (?) in the following series.

23, 33, 49, 73, 109, ?

(a) 123
(b) 119
(c) 135
(d) 163

Q48. In a class of 36 students, there are three people between Rohit and the one who ranked 21^(st) from the bottom. Rohit's rank is below the one whose rank is 21^(st) from the bottom. What is Rohit's rank from the top?

(a) 18^(th)
(b) 22^(nd)
(c) 20^(th)
(d) 19^(th)

Q49. Rakesh secured 92% in a test and Kiran secured 96% in the same test. If the test is conducted out of 375 marks, what is the sum of the marks secured by both Rakesh and Kiran?

(a) 715
(b) 705
(c) 700
(d) 720

Q50. The decision of the _____ will be considered as final in case there is a dispute over the disqualifications of members of either house of the Parliament.

(a) Election Commission
(b) President
(c) Speaker
(d) Deputy Speaker

Q51. Three numbers are in the ratio 17 : 25 : 66 and their HCF is 18. The smallest number among them is:

(a) 378
(b) 306
(c) 360
(d) 342

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Q52. What is the value of 27/5 × 15/81 ÷ {14/77 × 86/72 × 99/43} ?

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

Q53. In a certain code language, 'OBTAIN' is written as 'NATBOI', and 'BEGGER' is written as 'RGGEBE'. How will 'RUGGED' be written in that language?

(a) DGUGRE
(b) DGGUER
(c) GGURED
(d) DGGURE

Q54. Select the option that is related to the fifth letter-cluster in the same way as the fourth letter-cluster related to the third letter-cluster and second letter-cluster is related to the first letter-cluster.

IGRS : NJWV :: BMYF : GPDI :: XQSB : ?

(a) BTWE
(b) CTXE
(c) CUXF
(d) BUWF

Q55. A question is given, followed by two statements labelled 1 and 2. Identify which of the statements is/are sufficient/necessary to answer the question.

Question:

Is Mohita younger or older than Shubham?

Statements:

1. Mohita is, at present, exactly 35 years younger than her father.

2. Mohita's brother, Shubham, who was born in 1954, is exactly 34 years younger than his father.

(a) Either statement 1 or statement 2 is sufficient
(b) Both statements 1 and 2 are necessary
(c) Statement 1 alone is sufficient, while statement 2 alone is not sufficient
(d) Statement 2 alone is sufficient, while statement 1 alone is not sufficient

Q56. If 1 August 2021 was Sunday, then what was the day on 1 November 2021?

(a) Friday
(b) Tuesday
(c) Sunday
(d) Monday

Q57. What is the value of 9/15 × 45/81{49/6 × (16/7 - 2) × 24/5 × 15/16} ?

(a) 7.5
(b) 6.5
(c) 4.5
(d) 3.5

Q58. Six companies, P, Q, R, S, T and U, are situated on different floors of a 6-floored building, but not necessarily in the same order. The lowest floor of the building is numbered 1, the floor above it is numbered as 2 and so on, up to the top floor, which is numbered as 6. Company Q is not situated at floor number 1. Company P has five companies situated below its floor. There are only two companies situated between the floors of companies T and P and also between the companies Q and U. Company S is situated on an odd numbered floor, but not on the lowest floor. Which company is situated on floor number 1?

(a) U
(b) R
(c) P

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(d) T

Q59. In a class of 80 students, 1/10 ^(th) of the class like Chocolate D and 1/20 ^(th) of the class likes Chocolate E. What is the difference between the number of students who like Chocolate D and the number of students who like Chocolate E?

(a) 9
(b) 2
(c) 4
(d) 5

Q60. Which Article of the Indian Constitution is related with protection in respect of conviction for offences?

(a) 18
(b) 21
(c) 19
(d) 20

Q61. _____ is a process associated with increasing openness, growing economic interdependence and deepening economic integration in the world economy.

(a) Privatisation
(b) Nationalisation
(c) Liberalisation
(d) Globalisation

Q62. The lengths of the three sides of a triangle are 12 cm, 15 cm and 21 cm, respectively. Find the area (in cm^2) of the triangle.

(a) $36\sqrt{6}$
(b) $48\sqrt{6}$
(c) $72\sqrt{6}$
(d) $30\sqrt{6}$

Q63. Which of the given numbers is divisible by 45?

(a) 12375
(b) 12365
(c) 12355
(d) 12345

Q64. Where was the first indigenously owned bicycle-manufacturing unit of India, Atlas Cycles, established in the 1950s?

(a) Multan
(b) Amritsar
(c) Lahore
(d) Sonipat

Q65. 484.71 + 285.33 - 827.38 + 73.9 = ?

(a) 36.54
(b) 19.78
(c) 15.78
(d) 16.56

Q66. The role of _____ is to be ready to lend to banks at all times and so it is said to be the lender of last resort.

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

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Q67. If it was Monday on 12 July 1965, then which day of the week was it on 14 August 1966?

(a) Sunday
(b) Monday
(c) Wednesday
(d) Tuesday

Q68. According to Census of India 2011, what was the sex ratio of Daman & Diu?

(a) 748 females per 1000 males
(b) 696 females per 1000 males
(c) 723 females per 1000 males
(d) 618 females per 1000 males

Q69. Select the letter-cluster that can fill in the blank in the following series.

ANDR, DKJL, GHPF, JEVZ, _____, PYHN

(a) MBTI
(b) MBBT
(c) MBCT
(d) MBBS

Q70. A sum of Rs. x is divided among A, B and C such that the ratio of their shares is 2 : 3 : 5. If the positive difference between the shares of B and C is Rs. 5,940, then what is the value of x?

(a) 25,920
(b) 29,700
(c) 22,680
(d) 23,220

Q71. A and B can do a piece of work in 45 and 40 days respectively. They began the work together but A left the work after some days and B alone finished the remaining work in 23 days. After how many days did A leave?

(a) 10 days
(b) 12 days
(c) 9 days
(d) 11 days

Q72. Guru Shikhar Peak is the highest peak of which of the following mountain ranges?

(a) Western Ghats
(b) Aravali Range
(c) Himalaya Mountain
(d) Eastern Ghats

Q73. Who won the BWF Female Para Badminton Player of the Year 2021?

(a) Leani Ratri Oktila
(b) Tai Tzu Ying
(c) Karin Suter-Erath
(d) Helle Sofie Sagoy

Q74. Select the letter-cluster from among the given options that can replace the question mark (?) and continue the given series.

KMI, IKG, GIE, ?

(a) GEC
(b) EGB
(c) GEB
(d) EGC

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Q75. A can do a certain work in 45 days. B is 50% more efficient than A, and C is 3 times as fast as A. They started the work together but C left 7 days before completion of the work. In how many days was the entire work completed?

(a) 12 days
(b) 15 days
(c) 18 days
(d) 10 days

Q76. The length of the hypotenuse of a right-angled triangle is 13 cm and the length of one of the other two sides is 5 cm. What is the area (in cm^2) of the triangle?

(a) 32.5
(b) 29.5
(c) 28
(d) 30

Q77. Karthik and Sneha together can do a work in 25 days. Sneha and Madhuri together can do the same work in 20 days. Madhuri and Karthik together can do the same work in 15 days. How long will they take to complete the work, if all three work together? (Number of days should be rounded off to the nearest integer)

(a) 11 days
(b) 13 days
(c) 17 days
(d) 19 days

Q78. Five friends A, B, C, D and E are sitting in a circle facing towards centre. Their order of sitting must fulfill the following conditions:

1. A and C are immediate neighbours of each other.
2. C is the 2^(nd) person to the right of D.
3. A is not an immediate neighbour of D.
4. B sits 2^(nd) to the left of A.

What will be the position of E with respect to C?

(a) E is second to the left of C
(b) E is third to the right of C
(c) E is second to the right of C
(d) E is to immediate right of C

Q79. A is shorter than E but taller than C. C is taller than D but shorter than B, who is shorter than A. Who among them is the tallest?

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

Q80. Which of the following countries had the highest population density, according to World Bank in the year 2020?

(a) China
(b) Serbia
(c) Monaco
(d) Bangladesh

Q81. The system of separate electorates for Harijans was replaced by reservation of seats for them under the _____

(a) Lucknow Pact
(b) Gandhi-Irwin Pact
(c) Cripps Mission Proposal
(d) Poona Pact

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Q82. {1, 4, 7, 12, 13, 10, 11, 0, 0, 18, 37, 33, 29, 27, 16, 25, 28, 17, 19}

What are the Mean, the Median and the Mode of the above set of data, in the same order, corrected to two decimal places?

(a) 16.16, 16, 0
(b) 0, 16, 16.16
(c) 16, 16.16, 0
(d) 16, 0, 16.16

Q83. According to the Press Information Bureau release on 2^(nd) February 2022, which of the following sites has NOT been identified for the Saffron Bowl project in Meghalaya?

(a) Tura
(b) Shillong
(c) Barapani
(d) Cherrapunji

Q84. What would be the interest payable on a sum of Rs. 15,000 after 2 years if the interest is compounded yearly at 2% per annum?

(a) Rs. 604
(b) Rs. 606
(c) Rs. 608
(d) Rs. 600

Q85. If $(y + z) = 25$ and $(y^2 - z^2) = 225$, what is the value of z?

(a) 9
(b) 10
(c) 7
(d) 8

Q86. If '+' means division, '÷' means subtraction, '-' means multiplication, and '×' means addition, then what is the value of the given expression?

175 - 10 + 2 × 165 ÷ 25 + 5 = ?

(a) 1015
(b) 1035
(c) 1025
(d) 1045

Q87. ABC is an isosceles triangle in which AB = AC and angle BAC = 50°. Side BC is extended to D. Find the measure of angle ACD.

(a) 110°
(b) 115°
(c) 130°
(d) 100°

Q88. The thin wire that gives off light in an electric bulb is called _____.

(a) filament
(b) fuse
(c) relay
(d) resistor

Q89. 'A Nation in Making' a book written by _____.

(a) Surendranath Banerjee
(b) G. K. Gokhale
(c) Vallabhbhai Patel
(d) M. G. Ranade

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Q90. In which country the headquarters of International Rice Research Institute (IRRI) is located?

(a) Philippines
(b) China
(c) Japan
(d) Malaysia

Q91. In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. In three of the four pairs, the same pattern is applied and hence they form a group. Select the number-pair that does NOT belong to this group.

(a) 24, 70
(b) 18, 52
(c) 43, 86
(d) 39, 115

Q92. Find the HCF of

$(a - b)(a + 2b)$, $(a^2 - b^2)(a + 2b)$, $(a + b)(a^2 - b^2)$, where $a > b > 0$

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

Q93. As per Article 6 (b)(i) of the Constitution of India, every person has a right to citizenship of India, if he/she migrated from Pakistan before the _____ and he/she has been ordinarily resident in the territory of India since the date of his/her migration.

(a) 19^(th) of July 1948
(b) 18th of July 1949
(c) 17th of June 1947
(d) 18th of August 1947

Q94. Madhvi started her journey at 9:25 am and covered 24% of the distance by 9:39:24 am. At what time will she reach her destination if she continues at the same speed?

(a) 10:30 am
(b) 10:20 am
(c) 10:25 am
(d) 10:15 am

Q95. P, Q, R, S, T and U are sitting around a circular table, facing the centre. P sits second to the left of U and third to the right of Q. S sits second to the right of U. R sits second to the left of Q. Who is immediate neighbour of Q and T both?

(a) P
(b) R
(c) U
(d) S

Q96. DAY-NRLM observed the 'Agri Nutri Garden Week' from 10th to 17th January 2022 through awareness campaigns and encouraged establishment of 'Agri Nutri Gardens' in the rural households. What is the full form of DAY-NRLM?

(a) Deendayal Antyodaya Yojana - National Rural Level Meet
(b) Deendayal Antyodaya Yojana - National Rural Livelihoods Mission
(c) Deendayal Antyodaya Yojana - National Rural Living Mission
(d) Deendayal Antyodaya Yojana - National Rural Livelihoods Meet

Q97. Eight friends, A, B, C, D, E, F, G and H are sitting around a square table. Four of them are sitting at four corners of the table and are facing the centre. The other four are sitting at the middle of each of the four sides and are facing opposite to the centre. E is facing the centre and is not an immediate neighbour of G. A is facing centre and is sitting at the third position from the right of G. D is sitting to the immediate right of B. B is facing the centre while C is not an immediate neighbour of A. There is only one person sitting between G and H.

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Who among the following sits to the immediate right of F?

(a) G
(b) D
(c) E
(d) A

Q98. In Jammu and Kashmir, Lieutenant Governor Manoj Sinha launched 'Saath', an initiative focusing on _____.

(a) construction workers
(b) lactating mothers
(c) Self Help Group (SHG) women
(d) medical practitioners

Q99. The length of a rectangular plot is twice its breadth and the length of its diagonal is $6\sqrt{5}$ m. The perimeter of the plot is

(a) 54 m
(b) 28 m
(c) 36 m
(d) 48 m

Q100. The average age of 34 boys in a class is 12 years. If the age of teacher is also included, the average age increases by 1 year. What is the age of the teacher?

(a) 44
(b) 47
(c) 45
(d) 42

Q101. As per Article 170 of the Constitution of India, the Legislative Assembly of each State shall consist of not more than _____, and not less than _____, members chosen by direct election from territorial constituencies in the State.

(a) 400, 70
(b) 500, 60
(c) 550, 75
(d) 450, 80

Q102. Which is the sixth of the eighteen books of the Indian epic Mahabharata (written by Vyasa) that contains the widely studied Bhagavad Gita?

(a) Sabha Parva
(b) Virata Parva
(c) Adi Parva
(d) Bhishma Parva

Q103. Which of the following is the Greek letter for wavelength?

(a) Alpha
(b) Beta
(c) Delta
(d) Lambda

Q104. Consider the given statement and decide which of the given assumptions is/are implicit in the statement.

Statement:

Farmers should be given extra 10% of the cost of production with the price for their produce.

Assumptions:

I. There are farmers who need monetary support.

II. Farmers do not need extra money of production cost.

(a) Only assumption II is implicit.
(b) Both assumptions I and II are implicit.

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(c) Neither assumption I nor II is implicit.
(d) Only assumption I is implicit.

Q105. A person sells his goods at 30% profit. If the cost price increases by 25%, and the selling price increases by 10%, then what is his new profit percentage?
(a) 13.5%
(b) 14.4%
(c) 15.6%
(d) 16.4%

Q106. How many pairs of autosomes does a normal human have?
(a) 22
(b) 44
(c) 23
(d) 1

Q107. Changsang dance is performed by the Chang tribe from _____ during Naknyukum festivals.
(a) Nagaland
(b) Jharkhand
(c) Chhattisgarh
(d) Odisha

Q108. In ΔABC, AD is a median of the triangle, intersecting BC at D. The three medians of the triangle meet at a point G. If AG = (7y - 3) cm and DG = 3y cm, then find the length of AD.
(a) 33 cm
(b) 30 cm
(c) 24 cm
(d) 27 cm

Q109. Himani bought a washing machine for Rs. 8,000 and spend Rs. 500 on its repairs. She sold it at 20% profit. With the money she got by selling it, she bought another washing machine and sold it at 10% loss. What is her overall loss/profit?
(a) Profit Rs. 680
(b) Loss Rs. 600
(c) Loss Rs. 640
(d) Profit Rs. 640

Q110. Jack obtained 45% marks in a test and failed by 18 marks. If he obtained 65% marks, he would have got 6 marks more than the minimum marks required to pass the test. How much were the maximum marks one could obtain in that test?
(a) 80
(b) 130
(c) 140
(d) 120

Q111. Which of the following options is the closest approximate value which will come in place of question mark (?) in the following equation?
119.99 ÷ 14.99 × 25.01 - 19.98 × 4.96 = ?
(a) 70
(b) 36
(c) 360
(d) 100

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Q112. As per World Health Organization, keeping salt intake to less than _____ helps to prevent hypertension, and reduces the risk of heart disease and stroke in the adult population.

(a) 10 g per week
(b) 10 g per day
(c) 5 g per day
(d) 5 g per week

Q113. A solid metallic cylindrical rod of radius 1.4 cm and length 24 cm is melted and recast as identical spherical balls of radius 2 mm. How many maximum such balls could be made?

(a) 4580
(b) 4410
(c) 4450
(d) 4500

Q114. The value of $5\sqrt{12} + 6\sqrt{27} - 4\sqrt{75} + \sqrt{192}$ is:

(a) $20\sqrt{3}$
(b) $22\sqrt{3}$
(c) $18\sqrt{3}$
(d) $16\sqrt{3}$

Q115. In a certain code language, if 'CELL' is coded as '32' and 'PHONE' is coded as '58', how will 'BOLD' be coded in that language?

(a) 54
(b) 33
(c) 43
(d) 32

Q116. The Second Five-Year Plan was aimed at laying emphasis on _____.

(a) industrial sector
(b) food import
(c) water scarcity
(d) agricultural sector

Q117. The Mohan Veena, a modified Hawaiian Guitar also known as Hindustani Slide Guitar was created and popularized by _____.

(a) Vishwa Mohan Bhatt
(b) Asad Ali Khan
(c) Anoushka Shankar
(d) Ram Narayan

Q118. 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:

I. All keys are locks.

II. Some locks are doors.

Conclusions:

I. Some doors are keys.

II. Some doors are locks.

(a) Both the conclusions follow
(b) Only conclusion II follows
(c) Neither conclusion I nor II follows
(d) Only conclusion I follows

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Q119. The product of 16 and another number y is 460.8. What will the quotient be when y is divided by 16?

(a) 2.3
(b) 1.8
(c) 2.2
(d) 1.7

Q120. Given is the data on the ages of the students of a class. What is the mean age of all the students taken together?

No. of Students	Age of the Students
8	8
6	8
10	7
9	7
7	5

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

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) right to education

The correct answer is right to education.

Key Points

• Right to Education

• The Eighty-sixth Amendment to the Indian Constitution guarantees the right to early childhood care until the age of six and the right to education for children aged six to fourteen.

• It has replaced Article 45 (Early Childhood Education) of the Directive principles of State policy and has inserted Article 21A (Right to Education as a Fundamental Right) below Article 21.

• It amended Article 51A (Fundamental Duties) to add a new duty of parents to provide education to their child between the ages of six and fourteen years.

• Article 21A states that “The State shall provide free and compulsory education to all children of the age of six to fourteen years in such manner as the State may, by law, determine."

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Additional Information

• However, this right was finally implemented in 2010 after eight years.

• India joined a select group of nations on April 2, 2010, when a historic law declaring every child's right to education went into effect.

• The implementation of this was announced by former Prime Minister Manmohan Singh.

• Article 45 was replaced as “The State shall endeavour to provide early childhood care and education for all children until they complete the age of six years.”

• Article 51A states that “who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between the age of six and fourteen years.”

Q2. Answer: (b) Ring topology

The correct answer is Ring topology.

Key Points

• Ring network topology

• The physical and logical configuration of a network's nodes and links is known as its network topology.

• Devices like switches, routers, and software with switch and router functionality are typically included in nodes.

• A graph is a common way to represent network topologies.

• When two computers are joined to create a ring, the topology is known as a ring topology.

• The nodes are linked together in a closed-loop manner in the ring network topology. T

• The message passing is circular and unidirectional.

• Dual Ring Topology is another way to make it bidirectional by adding two connections between each Network Node.

• This topology primarily utilises a token-based system, and each token moves in a single direction in a loop.

Additional Information

• If a token is available in a ring topology, the node can take it, attach the data, and the destination address, and then leave the token for communication.

• The data is taken out by the receiver when this token reaches the destination node, freeing it up to carry the subsequent data.

• The most common type of ring network is a metro network, which is based on Synchronous Optical Network technology.

• Network topologies explain how networks are set up and where traffic flows are located in relation to one another.

• The diagrams can be used by administrators to decide where each node should be located and the best path for traffic flow.

Q3. Answer: (d) 21

Given:

Average value (A) = 23

Formula used:

Average value = (Sum total number of values)/(Total number of values)

Calculations:

23 = (29.75 + 18.25 + N)/3

=> 69 = 48 + N

=> N = 69 - 48 = 21

Therefore The value of N is 21.

Q4. Answer: (d) 203

Given:

The sum of LCM and HCF of 28 and 49 = ?

Calculations:

2	**28, 49**
2	14, 49
7	7, 49
7	1, 7
	1, 1

=> LCM = 2 × 2 × 7 × 7 = 196

Now, HCF of 28 and 49

2	**28**
2	14
7	7
	1

7	**49**
7	7
	1

=> HCF of 28 = 2 × 2 × 7

=> HCF of 49 = 7 × 7

=> HCF of 28 and 49 is 7.

According to the question,

=> LCM + HCF = 196 + 7 = 203.

Therefore The sum of LCM and HCF of 28 and 49 is 203.

Q5. Answer: (b) Harsha

The correct answer is Harsha.

Key Points

• Aihole inscription

• During Pulakeshi II's rule, poet Ravikirti created the Aihole inscription.

• Aihole, which is in the state of Karnataka, is well known as the birthplace of Indian architecture.

• It served as the Chalukyas' capital.

• This inscription details Pulakesin's achievements, particularly how he fought Harshavardhana.

• Harshavardhana was defeated by Pulakeshin II, the King of the Chalukya dynasty when he attempted to expand his Empire towards the southern peninsula of India.

• On the banks of the River Narmada, Pulakesin II had beaten Harshavardhan in 618 AD.

Additional Information

• In the construction of structure temples, the Chalukyan developed the Deccan or Vesara style in the buildings.

• They mastered the technique for stone construction, which involves joining stones carefully without mortar.

• Aihole provides important details on the early history of the Badami Chalukyas up until 634 AD, as well as the birth and death dates of the poets Kalidasa and Bharavi.

• It is highly commendable to the poet named Ravikirti who wrote the song.

• Its final verse is crucial to the history of Sanskrit literature.

• It states that Ravikirti, the record's author, has achieved the fame of Kalidasa and Bharavi through his poetic talent.

Q6. Answer: (b) SNX

Option 2 is the correct answer.

The pattern followed here is as follows:

MORE is written as LNQD

And,

STOP is written as RSNO

Similarly,

TOY be written as '?'

Hence, the correct answer is "SNX".

Q7. Answer: (c) Durga Puja

The correct answer is Durga Puja.

Key Points

• The Intergovernmental Committee for the Safeguarding of the Intangible Cultural Heritage has inscribed ‘Durga Puja in Kolkata’ on the Representative List of the Intangible Cultural Heritage of Humanity.

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• The decision came during the 16th session, taking place virtually from 13 to 18 December 2021.

• In total, 14 Intangible Cultural Heritage elements from the country have now been inscribed on UNESCO's Representative List.

Additional Information What is Intangible Cultural Heritage?

• According to unesco.org, cultural heritage does not end at monuments and collections of objects.

• It also includes traditions or living expressions inherited from our ancestors and passed on to our descendants, such as oral traditions, performing arts, social practices, rituals, festive events, and knowledge.

• UNESCO intends to enhance the "visibility of communities' cultural practices and know-how", aiming to "safeguard the intangible cultural heritage of communities globally".

Q8. Answer: (b) Daughter-in-law

Let us first decode the given symbols and then draw a family tree.

S is				
Symbol	#	$	@	=
Meaning	Father	Mother	Husband	Son
Of T				

Preparing the family tree using the following symbols :

A possible tree diagram will be :

Given: L $ Q = B # D @ E $ O

Clearly, E is the daughter- in- law of L.

Hence, the correct answer is "Daughter-in-law".

Q9. Answer: (c) Canada

The correct answer is Canada.

Key Points

Wheat production in Canada

• Canada was not among the top four producers of wheat in the world, according to Food and Agricultural Organization, in 2020.

• In 2020, wheat production for Canada was 35,183 thousand tonnes.

• Canada is the fifth largest wheat producer in the world.

Additional Information

Top 4 producers of wheat in the world

• In 2020, wheat production for China was 134,250 thousand tonnes.

• Wheat production in China increased from 32,575 thousand tonnes in 1971 to 134,250 thousand tonnes in 2020.

• It is the first largest wheat producer in the world.

• Wheat production in India is estimated to increase to a record 109.52 million tonnes in 2020-21.

• India is the second largest wheat producer in the world.

• Wheat production in Russia in 2020-21 was put at 84.5 million

• Russia is the third largest wheat producer in the world.

• In 2020, wheat production for the United States of America was 49,691 thousand tonnes.

• US is the fourth largest wheat producer in the world.

Q10. Answer: (d) JGO

EXPLANATION :

The position of letters according to the English alphabet series:

Let us go through the options -

Option 1) HFM

The pattern followed here is:

Option 2) DBI

The pattern followed here is:

The pattern followed here is:

Option 3) SQX

The pattern followed here is:

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Option 4) JGO

The pattern followed in option 4 JGO is different from the others.

Hence, the correct answer is "Option 4".

Q11. Answer: (b) Megasthenes

The correct answer is Megasthenes.

Key Points

• Megasthenes was an ancient Greek historian, diplomat and Indian ethnographer and explorer in the Hellenistic period.

• He described India in his book Indica.

• In the book, he records his impressions of India of the Mauryan period.

• It shows us the rich culture and economy of India.

• It also helps us to understand the administration, diverse culture, and philosophy of Ancient Indian people.

• The book is now lost but has been partially reconstructed from literary fragments found in later authors that quoted his work.

Additional Information

• Indica helps us to know about the geography of India.

• It helps us to construct a map of India.

• Megasthenes' Indica gives the name used by the people of India and by the Greek people.

• Indica gives an account of the region of Gangaridai and the huge for of elephants, which made the Gangaridai unconquered by any foreign king.

Q12. Answer: (b) 330

The correct answer is 330.

Key Points

Article 330

• Article 330 of the Indian Constitution provides for the reservation of seats for Scheduled Castes and Scheduled Tribes in the House of the People.

• Seats shall be reserved in the House of the People for

• the Scheduled Castes.

• the Scheduled Tribes except for the Scheduled Tribes in the autonomous districts of Assam.

• the Scheduled Tribes in the autonomous districts of Assam.

Additional Information

• Article 46 states that "The State shall promote with special care the educational and economic interests of the weaker sections of the people, and, in particular, of the Scheduled Castes and the Scheduled Tribes, and shall protect them from social injustice and all forms of exploitation."

• Article 332 of the Constitution of India provides for reservation of seats for the Scheduled Castes and the Scheduled Tribes in the Legislative Assemblies of the States.

• Article 335 "The claims of the members of the Scheduled Castes and the Scheduled Tribes shall be taken into consideration, consistently with the maintenance of efficiency of administration, in the making of appointments to services and posts in connection with • the affairs of the Union or of a State."

Q13. Answer: (d) the law of variable proportions

The correct answer is the law of variable proportions.

Key Points

• The short-run marginal cost curve is U-shaped in the short-run due to the operation of the "law of variable proportions".

• According to the law, the MC curve initially slopes downward till it reaches its minimum point and thereafter, it starts rising.

• Therefore, it leads to a U-shape of the curve when presented graphically.

Additional Information

• A marginal cost curve is a curve that graphically represents the relation between the marginal cost incurred by a firm in the short-run product of a good or service and the quantity of output produced.

• This curve is constructed to capture the relation between marginal cost and the level of output, holding other variables like technology and resource prices constant.

• Three related curves are the average total cost curve, average variable cost curve, and average fixed cost curve.

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Q14. Answer: (b) Lake Ontario

The correct answer is Lake Ontario.

Key Points

• The Niagara River is a connecting channel between two Great Lakes, Erie and Ontario.

• It drains the water from Lake Erie into Lake Ontario.

• Water from Lake Erie flows uncontrolled* through the Niagara River and Welland Canal into Lake Ontario.

Additional Information

• Niagara Falls is a group of three waterfalls at the southern end of Niagara Gorge.

• The three waterfalls are Horseshoe falls, American falls and Bridal Veil Falls.

• The largest of the three is Horseshoe Falls, which straddles the international border of the two countries.

• It is also known as the Canadian Falls.

• The smaller American Falls and Bridal Veil Falls lie within the United States.

• Bridal Veil Falls is separated from Horseshoe Falls by Goat Island and from American Falls by Luna Island, with both islands situated in New York.

Q15. Answer: (c) QRVG

The position of letters according to the English alphabet series:

EXPLANATION:

The pattern followed here is:

So the sixth letter cluster will be:

Hence, the correct answer is option 3 "QRVG".

Q16. Answer: (d) Strikethrough

The correct answer is Strikethrough.

Key Points

• Strikethrough is a font effect that causes text to appear as though it is crossed out.

• Strikethrough is primarily used to mark text that is mistaken or to be removed.

• To apply Strikethrough:

• Select the text you want to strikethrough.

• Press Ctrl + D. The Font dialogue box appears.

• Press Alt + K to select Strikethrough (note that k is the underlined letter).

• Press Enter.

Additional Information

• A superscript or subscript is a number, figure, symbol, or indicator that is smaller than the normal line of type and is set slightly above it (superscript) or below it.

• Pagination is the process of separating print or digital content into discrete pages.

• An underline is a section of text in a document where the words have a line running beneath them

Q17. Answer: (a) 25%

The correct answer is 25%.

Key Points

• Defence R&D will be opened up for industry, startups and academia with 25% of the defence R&D budget earmarked.

• Private industry will be encouraged to take up the design and development of military platforms and equipment.

• It will be in the collaboration with DRDO and other organizations through the SPV model.

Additional Information

Union Budget 2022-23

• The Budget goals for FY2022-23 aim to further India's aspirations in Amrit Kaal, as it moves towards its 100th-year post-independence.

• Focus on growth and all-inclusive welfare.

• Promoting technology-enabled development, energy transition and climate action.

• Virtuous cycle starts from private investment, crowded in by public capital investment.

• The Union Budget for FY 2022-23 this year aims to strengthen the infrastructure with its focus on four priorities of:

• PM GatiShakti

• Inclusive Development
• Productivity Enhancement & Investment, Sunrise opportunities, Energy Transition, and Climate Action
• Financing of investments

Q18. Answer: (a) Meghalaya

The correct answer is Meghalaya.

Key PointsJaintia

• Jaintia in Meghalaya can be traced in the Jaintia hills.
• It is extended from the east of the Shillong Plateau of present-day Meghalaya to the Barak River valley in Assam.
• Jaintia, like Khasis, belongs to the Proto Autroloid Monkhmer race.
• Jaintia along with Khasis, Wars and Pnars are known as Hynniewtrep.

Additional Information

• The three major tribes found in Meghalaya are the Khasis, Jaintias and Garos.
• Besides, there are also other minor tribes living in the State namely, the Rabhas, Boros, Hajongs and Koches in the plain areas of Garo Hills.
• The Khasis and Garos are the two largest tribal groups constituting 56% and 34% respectively of the scheduled tribes (ST) in Meghalaya.
• The Jaintias are listed as a sub-tribe under the Khasis, and constitute about 1% of the tribal population.

Q19. Answer: (c) Majuli Island

The correct answer is Majuli Island.

Key Points

• Majuli means land in the midst of two rivers.
• Majuli river island is located in the Brahmaputra River in India.
• It is a non-coastal landmass.
• It is recognized by the Guinness Book of World Records as the world's largest inhabited riverine island, at 880 square kilometres.

Additional Information

• Bhavani Island is 133 acres of land expanse located on River Krishna.
• It is one of the largest river islands of the Krishna river.
• Quibble Island is a river island in the city of Chennai, Tamil Nadu, India.
• It is formed by the encirclement of the Adyar River and one of its tributaries.
• Nongkhnum River Island is the biggest river island in Meghalaya and the second biggest river island in Asia.
• It is located at a distance of about 14 Km from the headquarter of the District, Nongstoin.

Q20. Answer: (b) C

EXPLANATION:

1. B buys only one drink, which is a cold drink
2. Four of them each buy a cup of coffee.
3.B and D do not buy tea as all the others do

A	**Coffee, Tea**
B	Cold Drinks
C	coffee, Tea
D	coffee
E	coffee, Tea

4. Only A and E do not buy ice-tea.

A	**Coffee, Tea**
B	Cold Drinks
C	coffee, Tea, ice-tea
D	coffee, ice-tea

E	coffee, Tea

Clearly, C buy the three drinks.

Hence, the correct answer is "C".

Q21. Answer: (a) NASA

The correct answer is NASA

Key Points

• NASA's Double Asteroid Redirection Test (DART), the world's first full-scale mission to test technology for defending Earth against potential asteroid or comet hazards.

• Launched from Space Launch Complex 4 East at Vandenberg Space Force Base in California.

• DART is the first-ever mission dedicated to investigating and demonstrating one method of asteroid deflection by changing an asteroid's motion in space through kinetic impact.

• DART is a joint project between NASA and the Johns Hopkins Applied Physics Laboratory (APL).

Additional Information

• Headquater of Roscosmos - Moscow.

• Its launch facilities include Baikonur Cosmodrome in Kazakhstan, the world's first and largest spaceport, and Vtochny Cosmodrome, which is being built in the Russian Far East in Amur Oblast.

• The launch of Chandrayaan-3 is planned for August 2022.

• On July 22, 2019, Chandrayaan-2's rocket successfully lifted off with the Vikram Lander and Pragyan rover housed in it.

• ISRO built India's first satellite, Aryabhata, which was launched by the Soviet Union in 1975.

• JAXA

• JAXA was formed on 1 October 2003.

• It is responsible for research, technology development, and the launch of a satellite into orbit and is involved in many more advanced missions such as asteroid exploration and possible human exploration of the moon.

Q22. Answer: (b) Natak Natak Me Vigyan

The correct answer is Natak Natak me Vigyan.

Key Points

• The Sahitya Akademi announces 22 winner in this category.

• Hindi writer Devendra Mewari won the award for his play titled "Natak Natak me Vigyan".

• Megha Majumdar won the Yuva Puraskar for her debut novel "A Burning" and Himanshu Vajpai won it for his collection of short stories titled "Kissa Kissa Lucknowa -- Lucknow Ke Awami Kisse".

Additional Information

• It is to be noted that the Yuva Puraskar for Tamil will be declared at a later date and there will be no award in Rajasthani this year.

• Anita Vachharajani has been named as the recipient of the Bal Sahitya Puraskar 2021 for the biography "Amrita Sher-Gil: Rebel with a Paintbrush".

Q23. Answer: (d) The US

The correct answer is The US.

Key Points

• USA followed by UAE and China remained the top export destinations in April-November, 2021, while China, UAE and, the USA were the largest import sources for India.

• The United States was the largest export destination for Indian exports in fiscal the l year 2021, accounting for nearly 17 percent. China followed at over seven percent of India's exports that same year.

Additional Information

• The UAE is one of India's key energy providers and remains committed to meeting India's growing energy demand and is proud to have been the first international partner to invest by way of crude oil in India's Strategic Petroleum Reserves Program.

• India and Singapore have signed the Comprehensive Economic and Cooperation agreement (CECA) and strategic-relationship agreement in order to increase trade, investments, and economic cooperation, and expanded bilateral cooperation on maritime security training forces, joint naval exercises, developing of military technology and fighting terrorism.

• China has remained a dominant trade partner of India for a long despite the widespread concerns over the ballooning trade deficit every year.

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Q24. Answer: (c) aquaculture scientist

The correct answer is Aquaculture Scientist.

Key Points

• Dr.Subbanna Ayyappan from Karnataka has been conferred the Padma Shri in science and engineering.

• He is an aquaculture scientist who is playing a key role in powering India's Blue revolution.

• He is a former director of the Indian Council of Agricultural Research and the chancellor of the Central Agricultural University in Imphal.

• He has published research papers on fisheries, limnology, and aquatic microbiology.

Additional Information

• Pushpa Mittra Bhargava founded the Centre for cellular and molecular biology a federally funded research institute, in Hyderabad.

• Shivram Baburao Bhoje a distinguished Indian nuclear scientist who worked in the field of fast-breeder nuclear reactor technology for forty years in the design, construction, operation, and research and development.

• Bhimsen Singhal has been selected for the Padma Shri award. Dr. Singhal is one of the most respected and eminent neurologists who has contributed significantly to the growth of neurology in India over the last 60 years

Q25. Answer: (c) South-east

EXPLANATION:

1. village A is located to the west of village B

2. village C is to the south of village A

3. village D is to the east of village C

Hence the correct answer is South-east.

Q26. Answer: (c) 4/3

Shortcut Trick

The equation is in the form $\tan\theta + 3/\tan\theta = 2\sqrt{3}$.

By inspection, if $\tan\theta = \sqrt{3}$, then $\sqrt{3} + 3/\sqrt{3} = \sqrt{3} + \sqrt{3} = 2\sqrt{3}$. This satisfies the equation.

For $\tan\theta = \sqrt{3}$, the angle $\theta = 60°$ (since $0° < \theta < 90°$).

Value of $\text{cosec}2\theta = \text{cosec}2\ 60° = (2/\sqrt{3})2 = 4/3$.

Therefore The correct answer is 4/3.

Alternate Method

Given: $\tan\theta + 3\cot\theta = 2\sqrt{3}$

Formula Used: $\cot\theta = 1/\tan\theta$ | $\text{cosec}2\theta = 1/\sin2\theta$

$\Rightarrow \tan\theta + 3/\tan\theta = 2\sqrt{3}$

$\Rightarrow (\tan2\theta + 3) / \tan\theta = 2\sqrt{3}$

$\Rightarrow \tan2\theta - 2\sqrt{3}\tan\theta + 3 = 0$

$\Rightarrow (\tan\theta - \sqrt{3})2 = 0$

$\Rightarrow \tan\theta = \sqrt{3} \Rightarrow \theta = 60°$

$\Rightarrow \text{cosec}2\theta = \text{cosec}2\ 60°$

$\Rightarrow \text{cosec}2\ 60° = (2/\sqrt{3})2 = 4/3$

Therefore The correct answer is 4/3.

Additional Information

Trigonometric Reciprocals

The fundamental reciprocal identities are $\cot\theta = 1/\tan\theta$, $\sec\theta = 1/\cos\theta$, and $\text{cosec}\theta = 1/\sin\theta$.

Pythagorean Identities

Relationship between trigonometric ratios: $\sin2\theta + \cos2\theta = 1$ and $1 + \cot2\theta = \text{cosec}2\theta$.

Specific Values of θ

For $\theta = 60°$, $\tan 60° = \sqrt{3}$, $\cot 60° = 1/\sqrt{3}$, $\sin 60° = \sqrt{3}/2$, and $\text{cosec}\ 60° = 2/\sqrt{3}$.

Q27. Answer: (b) Sino-Tibetan

The correct answer is Sino-Tibetan.

Key Points

• It is the world's second-largest language family, with more than one billion speakers of its hundreds of different languages.

• It consists of 453 daughter languages and has around 1.268 billion speakers throughout Asia.

• It includes both the Sinitic languages (known as the Chinese dialects) and the Tibeto-Burman languages (such as Tibetan and Burmese).

Additional Information

• The third largest language family in the world and the largest in Africa is the Niger-Congo. It consists of 1,524 daughter languages and has around 437 million speakers throughout Africa.

• The Indo-European languages are a language family native to the overwhelming majority of Europe, the Iranian plateau, and the northern Indian subcontinent.

• The Austronesian peoples, sometimes referred to as Austronesian-speaking peoples, are a large group of peoples in Taiwan, Maritime Southeast Asia, Micronesia, coastal New Guinea, Island Melanesia, Polynesia, and Madagascar that speak Austronesian languages.

Q28. Answer: (c) Gloves

EXPLANATION:

1.The sweater is orange in colour. The orange coloured item is made of wool

2. The coat is made of fur.

3.The gloves are yellow in colour.

Jacket		
sweater	wool	orange
coat	Fur	
Gloves		yellow
Trousers		

3. The jacket is made of flannel and is neither black nor white in colour.

(It means the colour of jacket is red)

4.The gloves are are not made of flannel or taffeta.

(It means it is made up of Velvet)

Jacket	**Flannel**	**red**
sweater	wool	orange
coat	Fur	white
Gloves	velvet	yellow
Trousers	taffeta	black

Hence, the correct answer is "Gloves".

Q29. Answer: (c) CEC

The position of letters according to the English alphabet series:

EXPLANATION:

1st letter is increasing by + 1.

Code for vowel (2nd letter) = next vowel.

For example, code for A = E, code for E = I, code for I = O, and so on. So, code for U = A.

3rd letter is decreasing by - 1.

Now,

1) 'CUP' is coded as 'DAO'

• C + 1 = D

• Code for U = A

• P - 1 = O

2) 'RAN' is coded as "SEM"

• R + 1 = S

• Code for A = E

• N - 1 = M

So BAD will be coded as

• B + 1 = C

• Code for A = E

• D - 1 = C

Hence the correct answer is option3. CEC.

Q30. Answer: (b) Only conclusion I follows.

Statements:

a) Some boxes are bags.

b) All pouches are bags.

Venn diagram:

Conclusions:

I. Some bags are boxes. → True (because some bags are boxes)

II. Some pouches are boxes → False (it is possible but not definite)

Hence, “Only conclusion I follows”.

Q31. Answer: (d) Karan

Given:

Six Friends: Falak, Charu, Sargun, Karan, Arav and Vaibhav

1.Falak is third to the right of Charu.

2. Charu is at the North end of the bench.

3.Arav is sitting to the immediate left of Falak.

Case 1:

Case 2:

4.Vaibhav and Karan are sitting immediately next to each other.

5.There are only two people sitting between Sargun and Karan.

so case 1.1, 2.1 and 2.2 gets cancelled.

Hence. Karan is the correct answer.

Q32. Answer: (c) MR Lalith Babu

The correct answer is MR Lalith Babu.

Key Points

• Indian Grandmaster MR lalith babu won the Vergani cup chess tournament on the basis of better tie break score after he was tied with three others, including top seed Anton Korobov.

• His other wins came against Indian Woman GM Mary Ann Gomes, Max Hess (Germany), GM Lorenzo Lodici (Italy) and Amin Tabatatabaei (Iran).

• International Master Moksh Amit Doshi was the next best Indian after Lalith Babu and Bharath Subramaniyam, taking 17th place.

Additional Information

• About Vergani cup January 2022

• Organizer - Grandischacchi

• Federation - Italy (ITA)

• Number of Rounds - 9

• Tournament type - Swiss-System

• Tournament Director - G M Pier Luigi Basso

Q33. Answer: (d) Rs. 2,500 and 10%

Shortcut Trick

In compound interest, the interest for the 3^(rd) year is the interest on the amount at the end of the 2^(nd) year.

Rate of Interest (R) = [(Amount in 3 years − Amount in 2 years) / Amount in 2 years] × 100

R = [(3327.5 − 3025) / 3025] × 100 = (302.5 / 3025) × 100 = 10%

Sum (P) = Amount / $(1 + R/100)^n$ = 3025 / $(1.1)^2$ = 3025 / 1.21 = Rs. 2,500

Therefore The correct answer is Rs. 2,500 and 10%.

Alternate Method

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Given:
Amount after 2 years (A2) = Rs. 3,025
Amount after 3 years (A3) = Rs. 3,327.5
Time period (n) = 2 and 3 years respectively.
Formula Used:
Amount (A) = $P(1 + r/100)^n$
Calculations:
=> Interest for the 3^(rd) year = A3 − A2
=> Interest = 3327.5 − 3025 = Rs. 302.5
=> Rate of interest (r) = (Interest / Principal for that year) × 100
=> r = (302.5 / 3025) × 100 = 10%
=> Now, for A2: $3025 = P(1 + 10/100)^2$
=> $3025 = P(11/10)^2$
=> $3025 = P \times (121/100)$
=> $P = (3025 \times 100) / 121$
=> $P = 25 \times 100$ = Rs. 2,500
Therefore The correct answer is Rs. 2,500 and 10%.
Additional Information
Compound Interest Definition
Interest calculated on the initial principal and also on the accumulated interest of previous periods.
Successive Amounts Ratio
The ratio of amounts in successive years is constant: A_(n+1) / A_n = (1 + r/100).
Difference between CI and SI
For 2 years: Difference = $P(r/100)^2$ | For 3 years: Difference = $P(r/100)^2 \times (3 + r/100)$.

Q34. Answer: (c) 90π

Given:
Radius (r) = 5 cm
Height (h) = 12 cm
Formula used:
Total Surface area of cone (T.S.A.) = π × r (l + r)
Where l → Slant height and r → Radius of the base
Concept used
Pythagorean Theorem = $(\text{Hypotenuse})^2 = (\text{Perpendicular})^2 + (\text{Base})^2$
Where l → Hypotenuse, r → Base, and h → Perpendicular
Calculation:
By Pythagorean Theorem:
$(l)^2 = (5)^2 + (12)^2$
=> $(l)^2 = 25 + 144$
=> L = √169 = 13 cm
Now T.S.A.:
T.S.A. = π × 5 × (13 + 5)
=> T.S.A. = π × 5 × 18
=> T.S.A. = 90π.
Therefore The T.S.A. of the cone is 90π.

Q35. Answer: (c) Viren is taller than Shruti.

EXPLANATION:
Six colleagues: Raj, Shruti, Mayank, Preyesh, Viren and Ojas
1. Viren is taller than Raj.
Viren > Raj.
2. Mayank is taller than Viren.

Mayank > Viren > Raj.
3. Raj is not taller than Shruti.
Shruti > Raj.
4. Ojas has the same height has Preyesh, who is taller than Shruti.
Ojas = Preyesh > Shruti.
From the above statement, we can say
option 1. Shruti is shorter than Ojas is True. [Ojas = Preyesh > Shruti.]
Option 2. Ojas is taller than Raj is True. [Ojas = Preyesh > Shruti.
Shruti > Raj.]
Option 4. Raj is shorter than Mayank is True. [Mayank > Viren > Raj.]
Option 3. Viren is taller than Shruti is not True. [cannot be determined]
Hence, Viren is taller than Shruti is the correct answer.

Q36. Answer: (c) South-west

Given that :
• .Rohit walked towards the West and took a turn at 45° in the clockwise direction.
• He again turned at 180° in the clockwise direction.
• .Lastly, he turned 270° in the anti-clockwise direction.
The diagram is given below:
Rohit is facing South-west direction at last.
Hence, "option 3" is the correct answer.

Q37. Answer: (c) 136.6 km

Shortcut Trick
Average Speed is defined as Total Distance divided by Total Time.
Total Distance (A to B + B to A) = Average Speed × Total Time
=> Total Distance = 68.3 × 4 = 273.2 km
Since the distance between A and B is exactly half of the round-trip distance:
Distance AB = 273.2 ÷ 2 = 136.6 km
Therefore The correct answer is 136.6 km.
Alternate Method
Given:
Average Speed of the journey = 68.3 km/h
Total Time taken for the round trip = 4 hr
Formula Used:
Total Distance = Average Speed × Total Time
Distance (A to B) = Total Distance ÷ 2
Calculations:
=> Total distance covered by Ravi = 68.3 × 4
=> Total distance = 273.2 km
=> Let the distance between City A and City B be 'd'.
=> Total Distance = Distance(A→B) + Distance(B→A) = d + d = 2d
=> 2d = 273.2
=> d = 273.2 ÷ 2
=> d = 136.6 km
Therefore The correct answer is 136.6 km.
Additional Information
Average Speed Formula
Average Speed = (Total Distance) ÷ (Total Time). It is not the simple arithmetic mean of speeds unless times are equal.
Harmonic Mean for Equal Distances
If a person travels equal distances at speeds v1 and v2, the average speed = (2 × v1 × v2) ÷ (v1 + v2).
Basic Relation

Distance = Speed × Time | Time = Distance ÷ Speed.

Q38. Answer: (d) Hemu

Correct answer is Hemu.

Key Points

• The Second Battle of Panipat was fought between the forces of Samrat Hem Chandra Vikramaditya, popularly called Hemu.

• Hemu was hindu king ruling North India from Delhi, and the army of Akbar, on November 5, 1556.

• It was a decisive victory for Akbar's generals Khan Zaman I and Bairam Khan.

• A total of three major wars were fought at Panipat, in the years 1526, 1556 and 1761.

Additional Information

• The first Battle of Panipat, on 21 April 1526, was fought between the invading forces of Babur and the Lodi dynasty.

• The Third Battle of Panipat took place on 14 January 1761 between the Maratha Empire and the invading army of the Durrani Afghan Empire.

Q39. Answer: (b) Xuan Zang (Hsuan Tsang)

Correct answer is Xuan Zang (Hsuan Tsang).

Key Points

• Hiuen-Tsang visited India during Harshavardhana's rules.

• Huen Tsang or Xuanzang was a Chinese Buddhist Traveler who belongs to the early Tang times of China.

• He studied in Nalanda University.

• During his stay in India, he visited various places of northern and southern India.

Additional Information

• Fa Hien visited India in the early fifth century during the reign of Chandragupta II and entered here from the northwest and reached Pataliputra.

• Marco Polo landed on the Coromandel Coast of India in AD 1292 after a two-year trip by sea across the Indian Ocean on his way home from China.

• Ibn Battuta, was a Berber Maghrebi scholar and explorer who travelled extensively in the lands of Afro-Eurasia.

Q40. Answer: (a) Kerala

The correct answer is Kerala.

Key Points

• Kerala has the highest sex ratio of 1084 females per 1000 males as per the census 2011.

• The sex ratio is used to define the number of females per 1000 males.

• Harayana has the lowest sex ratio in India of 877 females per 1000 males.

• Puducherry has the highest sex ratio of 1037 females and Daman and Diu has the lowest sex ratio of 618 females per 1000 males in the Union Territory of India.

Additional Information

• The sex ratio of India as per 2011 census of India.

Q41. Answer: (b) Lakshadweep

The correct answer is Lakshadweep.

Key Points

• The Union Territory of Lakshadweep has the front of the most elevated wood with 90.33%. Among states, Mizoram has the front of the most elevated woods with 85.41%.

• Concerning the level of wood cover: Mizoram (85.41 percent) is the most timberland-rich state.

• The States/Union Territories showed a bigger expansion in backwoods cover in Karnataka followed by Andhra Pradesh, Kerala, and Jammu and Kashmir.

• Andaman and Nicobar island has the most extreme woods cover region among the Union domains in India. it has an 86.93% timberland cover region.

• On Other hand, Lakshadweep has zero percent woods cover region.

• Starting around 2021, the absolute woods cover in India is 713,789 sq km, which is 21.71 percent of the complete geological region.

Additional Information

• Lakshadweep is also known as a union territory of India.

• It is an archipelago of 36 islands in the Arabian sea, located 200 to 440 km (120 to 270 mi) off the Malabar Coast.

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• Lakshadweep, formerly (1956–73) Laccadive, Minicoy, and Amindivi Islands, union territory of India.

Q42. Answer: (d) Odisha

The correct answer is Odisha.

Key Points

• Odisha comes out as the leading producing state accounting for about 65% of the total production throughout 2018-19 (Tables -2 to 5). Mine-head closing stocks of bauxite in 2018-19 were 19,658 thousand tonnes as a contrast to 18,072 thousand tonnes in the foregoing year.

• The chief bauxite belt is in Kalahandi and Koraput districts and expands further into Andhra Pradesh.

• Bauxite is a sedimentary rock with a fairly high aluminium content.

• It is the world's chief origin of aluminium and gallium.

Additional Information

• Gujarat is the big maker of major cash crop like cotton, groundnut, tobacco, cumin, sesamum, etc. in India.

• Rajasthan is the big maker of rapeseed, bajra, mustard and wool in India and the second big maker of oilseeds and spices and milk.

• Madhya Pradesh is the big maker of pulses.it accounts for 22.4% of total manufacture in the country.

Q43. Answer: (a) 127

The pattern followed here is:

67 + 4 = 71

71 + 8 = 79

79 + 12 = 91

91 + 16 = 107

107 + 20 = 127

In the above series, multiple of 4 is added to each number in the increasing order.

Hence, the correct answer is "127".

Q44. Answer: (d) 2

According to the given information,

A consonant should be immediately preceded by a vowel.

Pattern = Vowel → Consonant

The consonants that are immediately preceded by a vowel are as shown below,

(Left) H S % V ^ E R U : F J # S A U & G * G H @ D C ! I N O ? S (Right)

For the following combinations, the condition is satisfied:

[E R], [I N]

Hence, the correct answer is "2".

Q45. Answer: (c) Rs. 7,200

Given:

Rate of interest (R) = 14.5% per annum

Time period (T) = 6 years

Amount (A) = Rs. 13464

Formula used:

A = P (1 + RT/100)

Calculations:

=> 13464 = P (1 + 14.5 × 6/100)

=> 13464 = P (1 + 0.145 × 6)

=> 13464 = P (1.87)

=> 13464/1.87 = P

=> P = Rs. 7200

Therefore The sum invested was Rs. 7200.

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Q46. Answer: (c) Haryana

Additional InformationAdditional InformationThe correct answer is Haryana.

Key Points

• The Surajkund International Crafts Mela is a clasp in the Faridabad district in Haryana, which is just 8km from South Delhi.

• In 2022, the 35th Surajkund International Crafts Mela issue was 'Jammu & Kashmir,'. The state's local outcomes, art, delicacies, and cultural traditions were at the middle stage.

• The earliest Surajkund International Crafts Mela was clasp in the year 1987 through the spring season.

• The Surajkund International Crafts Mela is an impressive celebration that brings together craftsmen, artisans, cultural groups, and artists from all over India.

Additional Information

• The Allahabad Kumbh Mela, also Prayag Kumbh Mela, is a mela, or devout meeting, related to Hinduism and held in the city of Allahabad (also Prayagraj), India.

• The Pushkar Fair, also known as the Pushkar Camel Fair or nearly as Kartik Mela or Pushkar ka Mela is a yearly multi-day livestock fair and cultural fête held in the town of Pushkar near Ajmer city in Ajmer district in (Rajasthan, India).

Q47. Answer: (d) 163

The pattern followed here is:

Hence, the correct answer is "163".

Q48. Answer: (c) 20^(th)

Given that in a class of 36 students, there are three people between Rohit and the one who ranked 21st from the bottom and Rohit's rank is below the one whose rank is 21st from the bottom.

Clearly, Rohit's rank is 17th from bottom.

Rohit's rank from the top :

=>Total number of students - Rohit's rank from bottom + 1

=>36 - 17 + 1

=>20

Hence, the correct answer is "20th".

Q49. Answer: (b) 705

Given :

Rakesh got 92 % and

Kiran got 96 % out of 375 marks

Concept :

X % = X/100

Calculations :

Marks obtained by Rakesh

=> 92% of 375

=> (92/100) × 375

=> 345

Marks obtained by Kiran

=> 96 % of 375

=> (96/100) × 375

=> 360

Now, the sum of marks obtained by Rakesh and Kiran

=> (345 + 360)

=> 705

Therefore The required sum is 705.

Q50. Answer: (b) President

The correct answer is President.

Key Points

• The Constitution of India provides certain disqualifications under which a person shall be disqualified for being elected as a

member of Parliament.

• On the question whether a member is subject to any of the disqualifications provisions, the president's decision is final.

• Prior to giving any decision on any such question, the President shall get the judgement of the Election Commission and shall act according to such opinion.

Additional Information

• Article 101: Vacation of seats of members of Parliament

• Article 102:Provisions for Disqualifications of Members of Parliament.

• Article 103: Decision on questions as to disqualifications of members.

• Article 104: Penalty for sitting and voting before making oath or affirmation under article 99 or when not qualified or when disqualified

Q51. Answer: (b) 306

Shortcut Trick

Ratio of numbers = 17 : 25 : 66

Highest Common Factor (HCF) = 18

Smallest number corresponds to the smallest ratio part (17).

Smallest number = Smallest ratio part × HCF

Smallest number = 17 × 18 = 306

Therefore The correct option is B.

Alternate Method

Given:

Ratio of three numbers = 17 : 25 : 66

HCF of the numbers = 18

Formula Used:

Actual Number = Ratio Part × HCF

1st Number (17x)

2nd Number (25x)

3rd Number (66x)

Common Factor (x) = HCF = 18

Ratio Visualization

Let the three numbers be 17x, 25x, and 66x.

Since HCF is the greatest common divisor for all the numbers, x represents the HCF.

=> x = 18

=> First number = 17 × 18 = 306

=> Second number = 25 × 18 = 450

=> Third number = 66 × 18 = 1188

=> Comparing 306, 450, and 1188, the smallest number is 306.

Therefore The correct option is B.

Additional Information

HCF and Numbers in Ratio

If numbers are in ratio a : b : c and their HCF is h, then the numbers are ah, bh, and ch.

LCM of Numbers in Ratio

LCM of numbers having ratio a : b : c and HCF h is calculated as LCM(a, b, c) × h.

HCF × LCM Property

For two numbers A and B, A × B = HCF(A, B) × LCM(A, B). Note: This is not directly applicable to more than two numbers.

Q52. Answer: (b) 2

Given :

27/5 × 15/81 ÷ {14/77 × 86/72 × 99/43}

Concept Used:

Follow BODMAS rule to solve this question, as per the order given below,

Calculations :

=> 27/5 × 15/81 ÷ {14/77 × 86/72 × 99/43}

=> 27/5 × 15/81 ÷ 1/2

=> 27/5 × 15/81 × 2 = 2

Therefore The simplified value of the above equation will be 2.

Q53. Answer: (d) DGGURE

The pattern followed here is as follows:

1) 'OBTAIN' is written as 'NATBOI'

2) 'BEGGER' is written as 'RGGEBE

Similarly,

3) 'RUGGED' be written '?'

Hence, the correct answer is "DGGURE".

Q54. Answer: (b) CTXE

The position of letters according to English alphabet series:

The pattern followed here is as follows:

1) IGRS : NJWV

2) BMYF : GPDI

Similarly,

3) XQSB : ?

Hence, the correct answer is "CTXE".

Q55. Answer: (b) Both statements 1 and 2 are necessary

Given that -

1. Mohita is, at present, exactly 35 years younger than her father.

2. Mohita's brother, Shubham, who was born in 1954, is exactly 34 years younger than his father.

From both 1 and 2, we find that Mohita is (35 - 34) = 1 year younger than Shubham.

Hence, Both statements 1 and 2 are necessary to answer the question.

Q56. Answer: (d) Monday

Given -

1 August 2021 was Sunday

Total number of days from 2 August to 1 November :

=> August (30) + September (30) + October (31) + November (1)

=> 92 days

Since, It was Sunday on 1 August, every 7th day from 1 August will be Sunday.

So, total number of odd days : 92 ÷ 7 = 1 day

Now, 1 August (Sunday) + 1 odd day = 1 November (Monday)

Hence, 1 November 2021 held on Monday.

Hence, the correct answer is "Monday".

Q57. Answer: (d) 3.5

Given:

9/15 × 45/81{49/6 × (16/7 - 2) × 24/5 × 15/16} ?

Concept used:

Calculation:

9/15 × 45/81 {49/6 × (16/7 - 2) × 24/5 × 15/16}

=> 1/3 {49/6 × (16 - 14)/7 × 9/2}

=> 1/3 {49/6 × 2/7 × 9/2}

=> 1/3 {7/3 × 9/2}

=> 1/3 × 21/2 = 7/2 or 3.5.

Therefore The value of above equation is 3.5.

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Q58. Answer: (a) U

People : P,Q,R,S,T and U

Floors : 1 (lowermost floor) to 6 (topmost floor)

1. Q is not situated at floor number 1.

2. P has five companies situated below its floor. (Hence, P is situated on 6th floor)

3. There are only two companies situated between the floors of companies T and P and also between the companies Q and U.

Case 1.

Floors	Company
6	P
5	Q
4	
3	T
2	U
1	

Case 2.

Floors	Company
6	P
5	U
4	
3	T
2	Q
1	

Case 3.

Floors	Company
6	P
5	
4	Q
3	T
2	
1	U

4. Company S is situated on an odd numbered floor, but not on the lowest floor. (Thus, Case 1 and 2 are eliminated)

Floors	Company
6	P
5	S
4	Q
3	T
2	R
1	U

Therefore, Company U is situated on floor number 1.

Hence, the correct answer is "U".

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Q59. Answer: (c) 4

Given :

Total number of students = 80

Concept :

[(1/M)th of N = N/M)]

Calculation :

No. of students who likes Chocolate D = 1/10×80 = 8

No. of students who likes Chocolate E = 1/20×80 = 4

The difference between the number of students who like Chocolate D and the number of students who like Chocolate E

= (8 - 4)

= 4

Therefore The Required Number is 4.

Q60. Answer: (d) 20

The correct answer is 20.

Key Points

• Article 20-No person shall be prosecuted and punished for the same offence repeatedly.

• No person accused of any offence shall be forced to be an observer against himself.

• No person shall be convicted of any offence except for contravention of the law in force at the time of the commission of the act imposed as an offence, nor be subjected to a penalty greater than that which might have been inflicted under the law in force at the time of the commission of the offence.

Additional Information

• Article 18(1) abolishes all titles. It forbids the State to confer titles on anybody whether a citizen or a non-citizen. Military and academic distinctions are, but, exempted from the prohibition.

• The Right to Protection of Life and personal liberty is the important object of Article 21 and it is a right guaranteed as opposed to State Action as eminent from violation of such right by private individuals.

• Everyone has the right to freedom of opinion under Article 19.

Q61. Answer: (d) Globalisation

The correct answer is Globalisation.

Key Points

• Globalization is the word used to narrate the growing interdependence of the world's economies, arts, and populations, conduct regarding by cross-border trade in goods and services, technology, and flows of investment, people, and details.

• The wide-ranging results of globalization are multiplex and politically charged.

• Countries have to construct economic cooperation to facilitate these movements over many centuries.

Additional Information

• Privatization is the procedure of transferring an enterprise or industry from the public section to the private section.

• Nationalization is the procedure of taking privately-controlled companies, industries, or benefits and putting them under the authority of the government.

• The two important motives of liberalisation in India were: To raise foreign direct investment, industrial production, and technological competitiveness on a global scale.

Q62. Answer: (a) 36√6

Given:

The lengths of the three sides of a triangle are 12 cm, 15 cm, and 21 cm.

Formula used:

Heron's formula

s = (a + b + c)/2

=> √[s (s - a) (s - b) (s - c)]

Where, a, b, and c are the sides of the triangle

Calculation:

According to the question,

Area of a triangle using Heron's formula:

s = (a + b + c)/2

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=> (12 + 15 + 21)/2

=> 48 / 2 = 24.

Now Area:

√[24 × (24 - 12) × (24 - 15) × (24 - 21)]

=> √[24 × 12 × 9 × 3]

=> √7776= 36√6 cm²

Therefore The area (in cm2) of the triangle is 36√6 cm².

Q63. Answer: (a) 12375

Given:

The number from which divisibility is to be checked = 45

Concept:

A Number divisible from a number should must be divisible from all of it's Co -- prime factors.

Calculations:

To find a number divisible by 45 first of all find co – prime pair of 45

(i.e. which has H.C.F = 1)

co – prime pair of 45 = 9 × 5

=> Divisibility by 5 : A number is divisible by 5 if its unit digit is either 0 or 5.

=> Divisibility by 9 : A number is divisible by 9 if the sum of it's all digits is divisible by 9.

From the options which have no digit number 0 or 5 will be eliminated (here, there is not such options available)

=> From the options, if the sum of all digits of any number cannot divisible by 9 then that particular option will be eliminated. (i.e. 12365, 12355 and 12345)

Therefore 12375 is completely divisible by 45.

Q64. Answer: (d) Sonipat

The correct answer is Sonipat.

Key Points

• Atlas Cycles (Haryana) Ltd. formerly known as Atlas Cycle Industries (ACIL) begin with the production of bicycle saddles in 1951 and produced its first bicycle in 1952.

• From a modest starting of 120 cycles per day, the company has come a long way to set off India's second-biggest cycle manufacturer.

• Born in a Tin Shed, Swadeshi 'Atlas' set off as India's Largest Cycle Maker by 1965.

• Atlas Cycles Ltd was accepted by Janki Das Kapur in a small shed in Haryana to make budget cycles.

Additional Information

• Multan is the key maker of mangoes in Punjab and is popular as the Mango City of Pakistan.

• Punjab produces up for about 17% of India's wheat production.

• Lahore _ Textiles are the single main key industry, but there are many rubber factories, as well as iron, steel, and other mills.

Q65. Answer: (d) 16.56

Given :

=> 484.71 + 285.33 - 827.38 + 73.9 = ?

Calculations :

=> 484.71 + 285.33 - 827.38 + 73.9

=> (484.71 + 285.33 + 73.9) - 827.38

=> 843.94 - 827.38

=> 16.56

Therefore The simplified value of [484.71 + 285.33 - 827.38 + 73.9] is 16.56.

Q66. Answer: (d) Reserve Bank of India

The correct answer is Reserve Bank of India,

Key Points

• The Reserve bank of India act as the lender of last resort. Central banks have traditionally clasp this role because they are primarily the ones in control of for ensuring that financial markets function smoothly and the financial system is firm.

• It can come to the rescue of a bank that is solvent but faces temporary liquidity difficulties by supplying it with much needed

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liquidity when no one else is willing to extend credit to that bank.

• The Reserve Bank of India (RBI) is India's central bank, also known as the banker's bank.

• The RBI regulate the monetary and other banking policies of the Indian government.

Additional Information

• Consolidation fund of India - the account of the revenue the Government of India collect — via income tax, Customs, central excise and non-tax revenue — and the cost, it makes, keep out exceptional items.

• The World Bank has been censured as promoting affectation and harming economic development.

• State Bank of India (SBI) is an Indian international public sector bank.

Q67. Answer: (a) Sunday

Given: 12 July 1965 was Monday.

Now,

1965 to 1966 = 1 Year (Ordinary Year).

So, 1 Ordinary Year has 1 odd day,

then, 12 July 1966 will be Monday + 1 = Tuesday.

Now, the number of days between 12 July 1966 to 14 August 1966:

= 19 (remaining days of July) + 14 (August) = 33 days.

= 33 days → 33/7 = 4 weeks and 5 odd days.

So, 14 August 1966 will be Tuesday + 5 = Sunday.

Hence, the correct answer is "Sunday".

Q68. Answer: (d) 618 females per 1000 males

The correct answer is 618 females per 1000 males.

Key Points

• The sex Ratio in Daman and Diu is 618 i.e. for every 1000 males, which is beneath national average of 940 as per poll 2011. In 2001, the sex ratio of females was 710 per 1000 males in Daman and Diu.

• As per the Aadhar Statistics the Daman And Diu population in 2021/2022 is 220,084 (0.22 Million) as a contrast to the last poll in 2011 is 242,911.

District	Diu
Population	52,074
Hindu	93.35 %
Muslim	6.13 %
Christian	0.39 %

• For above 450 years, the coastal backyard of Daman (Portuguese: Damão) and Diu on the Arabian Sea coast were part of Portuguese India.

Additional Information

• In 2020, the sex ratio of the entire citizens in India is 108.18 males per 100 females.

• A sex ratio of 100 means there are equal numbers of females and males. Qatar has the highest sex ratio.

• The lowest female-to-male ratio was set down between Russians between zero and four years old, counting at 944 girls per one thousand boys.

Q69. Answer: (b) MBBT

The position of letters according to the English alphabet series:

The arrangement follows the following pattern :

Hence, the correct answer is "MBBT".

Q70. Answer: (b) 29,700

Given:

The ratio of the shares of A, B, and C = 2 : 3 : 5

The difference between the shares of B and C = Rs. 5,940

Calculations:

According to the question,

5x - 3x = 5940
=> 2x = 5940
=> x = 5940/2 = 2970
Now the total sum,
Total sum = 2x + 3x + 5x
=> Total sum = (2 × 2970) + (3 × 2970) + (5 × 2970)
=> Total sum = 5940 + 8910 + 14850 = Rs. 29700
Therefore The Sum of money is Rs. 29700.

Q71. Answer: (c) 9 days

Given:
A do work in 45 days
B do work in 40 days
Concept used:
If a person does work in 'n' days then one day work by a person is (1/n) part of total work.
Calculation:
Let them together work for x days and after x days A left the work
A's one day work = 1/45
B's one day work = 1/40
The total work for one day when they work together = A's one day work + B's one day work
= 1/45 + 1/40
= (8 + 9)/360
= 17/360 part
Then for x days their total work = 17x/360 part
Now remaining work = 1 - 17x/360 part
=> (360 - 17x)/360 ----(i)
But this remaining work is completed by B in 23 days then,
And B's 23 days work = 23/40 ----(ii)
From equation (i) and equation (ii) we get,
(360 - 17x)/360 = 23/40
=> 360 - 17x = (23/40) × 360
=> 360 - 17x = 23 × 9
=> 17x = 360 - 207
=> 17x = 153
=> x = 153/17
=> x = 9 days
Therefore A leave after 9 days.

Q72. Answer: (b) Aravali Range

Correct answer is Aravali Range.
Key Points
• Guru Shikhar, a top in the Arbuda Mountains of Sirohi district in Rajasthan, is the highest point of the Aravalli Range and Rajasthan.
• It stand up to a height of 1,722 metres (5,650 ft).
• The system is split into two segment: the Sambhar-Sirohi ranges, taller and including Guru Peak on Mount Abu.
• Dilwara is the second top peak in Rajasthan, and as Guru Shikhar is located in Mount Abu.
Additional Information
• The Western Ghats are the mountainous criticize and ruined edge of the Deccan Plateau.
• The Himalayas extend over the northeastern portion of India.
• The Eastern Ghats are a intermittent range of mountains through India's eastern coast.

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Q73. Answer: (a) Leani Ratri Oktila

Correct answer is Leani Ratri Oktila.

Key Points

• Leani Ratri Oktila is Indonesian Para badminton player.

• She played each of the three variations of the sport (women's singles, women's doubles, and mixed doubles) at the highest world level.

• Due to disruption caused by COVID-19 over the past two years, the period of consideration for the awards was from November 2019 until 31 October 2021.

Additional InformationComplete List of Winners at Badminton World Federation (BWF) awards.

• Player of the Year: Viktor Axelsen (Male)

• Player of the Year: Tai Tzu Ying (Female)

• Most improved player of the Year: Lee Yang and Wang Chi-Lin

• Pair of the Year: Greysia Polii and Apriyani RahayuEddy Choong

• Most Promising Player: Kunlavut Vitidsarn (Male)

• Para Badminton Player of the Year: Qu Zimo (Female)

• Para Badminton Player of the Year: Leani Ratri Oktila

• Para Badminton Pair of the Year: Lucas Mazur and Faustine Noel

Q74. Answer: (d) EGC

The position of letters according to the English alphabet series:

The pattern followed here is:

K - 2 = I; I - 2 = G; G - 2 = E

M - 2 = K; K - 2 = I; I - 2 = G

I - 2 = G; G - 2 = E; E - 2 = C

Hence the correct answer is EGC.

Q75. Answer: (a) 12 days

Given:

A can do a certain work in 45 days

B is 50% more efficient than

C is 3 times as fast as A

Efficiency Ratio = 2:3:6

Time Ratio = 3:2:1

A= 45 days, B = 30 days, C = 15 days.

Concept used:

Work = Efficiency × Time

Calculations:

According to the question,

=> Efficiency of A = 1/45

=> Efficiency of B = 1/30

=> Efficiency of C = 1/15

=> The efficiency of A and B = 1/45 + 1/30 = (2 + 3)/90= 1/18

=> The efficiency of A, B, and C = 1/45 + 1/30 + 1/15 = (2 + 3 + 6)/90 = 11/90

Both A and B worked for the last 7 days together then,

=> Work = 1/18 × 7 = 7/18

=> Remaining Work = 1 - 7/18 = 11/18

Now Time taken by A, B, and C to complete 11/18 work,

=> Time = (11/18) ÷ (11/90) = 5 days

Total Time = (Time Taken to complete 11/18 work) + (Time Taken to complete 7/18 work)

=> Time = 5 + 7 = 12 days

Therefore The entire work will be completed in 12 days.

Alternate MethodA completes a work in = 45 days

Because B is 50% efficient than A

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Therefore B completes a work in = 30 days
C completes a work in = 15 days
Therefore Total work = LCM(45,30,15)
Total work = 90 units
A 1 day work = 90/45 = 2 units/day
B 1 day work = 90/30 = 3 units/day
C 1 day work = 90/15 = 6 units/day
Let A, B, C completes the work in 'x' days
Therefore according to question
=> 2 × x + 3 × x + 6 × (x -7) = 90
=> 5x + 6x = 90 + 42
=> 11x = 132
=> x = 12 days
Therefore A, B, C completes a work in 12 days.

Q76. Answer: (d) 30

Shortcut Trick
Recognize the Pythagorean triplet: 5, 12, 13.
Given hypotenuse = 13 cm and one side = 5 cm, the other side (height) must be 12 cm.
Area = (1 ÷ 2) × base × height = (1 ÷ 2) × 5 × 12 = 30 cm².
Therefore The correct answer is 30 cm².
Alternate Method
Given: Hypotenuse (h) = 13 cm, Base (b) = 5 cm.
Formula Used: Pythagoras Theorem: $h^2 = b^2 + p^2$ | Area = (1 ÷ 2) × b × p
=> $p^2 = 13^2 - 5^2$
=> $p^2 = 169 - 25 = 144$
=> $p = \sqrt{144} = 12$ cm
=> Area = (1 ÷ 2) × 5 × 12
=> Area = 5 × 6 = 30 cm²
Therefore The correct answer is 30 cm².
Additional Information
Pythagorean Triplets
Common sets of integers that satisfy $a^2 + b^2 = c^2$ include (3, 4, 5), (5, 12, 13), (8, 15, 17), and (7, 24, 25).
Area of Triangle (Heron's Formula)
For any triangle with sides a, b, and c, Area = $\sqrt{[s(s-a)(s-b)(s-c)]}$, where s = (a+b+c) ÷ 2.
Circumradius of Right Triangle
The radius of the circumcircle of a right-angled triangle is always half of the hypotenuse (R = h ÷ 2).

Q77. Answer: (b) 13 days

Given:
Karthik (K) and Sneha (S) together can do the work in 25 days.
Sneha and Madhuri (M) together can do the same work in 20 days.
Madhuri and Karthik together can do the same work in 15 days.
Concept Used:
Work = Efficiency × Time
Calculations:
According to the question,
=> Efficiency of Karthik and Sneha = 1/25 ----(1)
=> Efficiency of Sneha and Madhuri = 1/20 ----(2)
=> Efficiency of Madhuri and Karthik = 1/15 ----(3)
The efficiency of Sneha, Madhuri, and Karthik
Now add (1), (2), and (3)

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2(K + S + M) = 1/25 + 1/20 + 1/15

=> 2(K + S + M) = (12 + 15 + 20)/300

=> 2(K + S + M) = 47/300

=> (K + S + M) = (1/6.38) × (1/2) = 1/12.76

=> (K + S + M) = 12.76 days ~ 13 days

Therefore All three work together they will complete the work in 13 days.

Q78. Answer: (c) E is second to the right of C

SOLUTION:

Step 1: A and C are immediate neighbors of each other.

Step 2: C is the 2nd person to the right of D.

Step 3: A is not an immediate neighbor of D.

Step 4: B sits 2nd to the left of A. Therefore the remaining spot is assigned to E.

With the help of the diagram, we can see that E is second to the right of C.

Q79. Answer: (c) E

The logic followed here is:

Step 1:A is shorter than E but taller than C.

E > A > C

Step 2: C is taller than D but shorter than B, who is shorter than A.

A > B > C > D

Now on combining both the steps, we get:

E > A > B > C > D

Hence, the correct answer is E.

Q80. Answer: (c) Monaco

The correct answer is Monaco.

Key Points

• The European city-state of Monaco is the most densely populated country with a population density of 26,523 people per sq. km (68,696/sq mile), and its population only numbers in thousands.

• Population density is calculated as population divided by total land area.

• The Chinese territory of Macau has the world's 2nd highest population density at 22,020/km².

• Only these two have over 10,000 population per square kilometer.

Additional Information

• World Bank is headquartered in Washington D.C.

• The President of World Bank is David Malpass.

• Monaco currency is Euro.

Q81. Answer: (d) Poona Pact

The correct answer is Poona Pact.

Key Points

• The Poona Pact was an agreement between Mahatma Gandhi and B.R.Ambedkar on behalf of Dalits, depressed class, and upper caste Hindu leaders on the reservation of electoral seats for the depressed classes in the legislature of British India in 1932.

• It was made on 24 September 1932 at Yerawada Central Jail, Poona.

• It was signed by Ambedkar on behalf of the depressed classes and by Madan Mohan Malviya on behalf of Hindus, Faraz Shah, Sana Ejaz and Gandhi.

Additional Information

• The Lucknow Pact was an agreement reached between the Indian National Congress and the Muslim League (AIML) at a joint session of both the parties held in Lucknow in December 1916.

• The Cripps Mission was sent by the British government to India in March 1942 to obtain Indian cooperation for the British war efforts in the 2nd World War.

• Gandhi-Irwin Pact is the name given to a political agreement concluded by Mahatma Gandhi and Lord Irwin, the then Viceroy of India, on 5th March 1931.

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Q82. Answer: (a) 16.16, 16, 0

Formula Used:

Mean = Sum of all observations/Number of observation

Calculation:

Mean:

=> (0 + 0 + 1 + 4 + 7 + 10 + 11 + 12 + 13 + 16 + 17 + 18 + 19 + 25 + 27 + 28 + 29 + 33 + 37)/19

=> 307/19 = 16.16

Median:

Ascending order:

{0, 0, 1, 4, 7, 10, 11, 12, 13, 16, 17, 18, 19, 25, 27, 28, 29, 33, 37}

=> The middle value is 16 so, the median is 16.

Mode:

Only {0} is repeated 2 times

=> 0 is repeating maximum time so, the mode is 0.

Hence, the mean, median and mode are 16.16, 16, 0 respectively.

Q83. Answer: (a) Tura

The correct answer is Tura.

• According to the Press Information Bureau release on 2nd February 2022, sites that has been identified for the Saffron Bowl project in Meghalaya is Shillong, Barapani and Cherrapunji.

Key Points

• North East Centre for Technology Application and Reach (NECTAR) under Saffron Bowl project has identified few locations in Arunachal Pradesh and Meghalaya for saffron cultivation.

• In Meghalaya, sample plantations were grown at Cherrapunji, Mawsmai and Lalingtop sites.

• The total cost of the whole project is Rs. 17.68 lakhs for Arunachal Pradesh and Meghalaya.

• Out of which, a tentative amount of Rs.6.00 lakhs has been earmarked for Barapani (Meghalaya) site.

• This information was given by Minister of State (Independent Charge) of the Ministry of Science and Technology and Earth Sciences, Dr. Jitendra Singh

Additional Information

• Conrad Kongkal Sangma is the Chief minister of Meghalaya.

• Capital of Meghalaya is Shillong.

• Shri. Satyendra Prakash IIS is the chairman of Press Information Bureau.

Q84. Answer: (b) Rs. 606

Shortcut Trick

Effective rate of compound interest for 2 years = R + R + (R × R) ÷ 100

Effective Rate = 2 + 2 + (2 × 2) ÷ 100 = 4.04%

Compound Interest = 4.04% of Principal

CI = (4.04 ÷ 100) × 15000 = 606

Therefore The correct answer is Rs. 606.

Alternate Method

Given:

Principal (P) = Rs. 15000

Rate (R) = 2% per annum

Time (n) = 2 years

Principal

15000

2%

Year 1 CI

• 300

2%

Year 2 CI

• 306

Total CI = Rs. 606

Formula Used:

Amount (A) = $P(1 + R \div 100)^n$

Compound Interest (CI) = A − P

Calculations:

=> Amount = $15000 \times (1 + 2 \div 100)^2$

=> Amount = $15000 \times (102 \div 100)^2$

=> Amount = $15000 \times 1.02 \times 1.02$

=> Amount = 15000×1.0404

=> Amount = Rs. 15606

=> Compound Interest = 15606 − 15000

=> Compound Interest = Rs. 606

Therefore The correct answer is Rs. 606.

Additional Information

Difference between CI and SI (2 years)

For a principal sum P at R% per annum, the difference between Compound Interest and Simple Interest for 2 years is calculated using $D = P \times (R \div 100)^2$.

Effective Rate for 3 Years

The effective compound interest rate for 3 years at R% p.a. can be calculated directly as $3R + 3R^2 \div 100 + R^3 \div 10000$.

Half-Yearly Compounding

When interest is compounded half-yearly, the rate is halved (R ÷ 2) and the time period is doubled (2n) in the standard formula.

Q85. Answer: (d) 8

Given:

(y + z) = 25 .....(1)

(y2 - z2) = 225

Concept used:

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

Calculations:

According to the question,

(y2 - z2) = 225

=> (y + z) × (y - z) = 225

=> (25) × (y - z) = 225

=> (y - z) = 9 .....(2)

Subtracting (2) from (1)

=> (y + z) - (y - z) = 25 - 9

=> 2z = 16

=> z = 8

Therefore The value of z is 8.

Q86. Answer: (b) 1035

The given equation is:

175 - 10 + 2 × 165 ÷ 25 + 5 = ?

Now form the new equation by replacing the mathematical symbols as given in the question.

The new equation will be:

175 × 10 ÷ 2 + 165 - 25 ÷ 5

By using the 'BODMAS' rule solve the above equation.

The 'BODMAS' rule is:

=> 175 × 5 + 165 - 5

=> 875 + 165 - 5

=> 1040 - 5

=> 1035

Hence, the correct answer is 1035.

Q87. Answer: (b) 115°

Shortcut Trick

In an isosceles triangle with AB = AC, base angles angle ABC and angle ACB are equal.

Base angles = (180° − 50°) ÷ 2 = 65°.

The exterior angle angle ACD is equal to the sum of the two opposite interior angles.

angle ACD = angle BAC + angle ABC = 50° + 65° = 115°.

Therefore The correct answer is 115°.

Alternate Method

Given: AB = AC and angle BAC = 50° in triangle ABC.

Formula Used: Sum of angles in a triangle is 180°; Linear pair sum is 180°.

In triangle ABC, since AB = AC:

=> angle ABC = angle ACB (Angles opposite to equal sides are equal)

=> angle BAC + angle ABC + angle ACB = 180°

=> 50° + 2 × angle ACB = 180°

=> 2 × angle ACB = 180° − 50° = 130°

=> angle ACB = 65°

Side BC is extended to D, forming a linear pair at point C:

=> angle ACB + angle ACD = 180°

=> 65° + angle ACD = 180°

=> angle ACD = 180° − 65° = 115°

Therefore The correct answer is 115°.

Additional Information

Exterior Angle Theorem

The exterior angle of a triangle is always equal to the sum of the two opposite interior angles of the triangle.

Isosceles Triangle Property

If two sides of a triangle are equal, then the angles opposite to those sides are also equal.

Angle Sum Property

The sum of all three interior angles of any triangle is always 180°.

Q88. Answer: (a) filament

The correct answer is Filament.

Key Points

• Bulbs turn electricity into light by sending the electric current through filament.

• Filament refers to a thin wire. Moreover, electric filaments comprise mostly of the metal tungsten.

• Most noteworthy, it is the resistance of the filament which actually heats the bulb up.

• Consequently, when the filament gets hot enough, it starts glowing and produces light.

Additional Information

• Fuses are the protectors, these are the safety devices which are used to protect the home appliances like televisions, refrigerators, computers with damage by high voltage.

• A relay is an electrically operated switch. It consists of a set of input terminals for a single or multiple control signals, and a set of operating contact terminals.

• Resistor is a passive two terminals electrical component used for limiting or regulating the flow of electricity in a circuit.

Q89. Answer: (a) Surendranath Banerjee

The correct answer is Surendranath Banerjee.

Key Points

• "A nation in making" was a book written by Surendranath Banerjee in his last days-1925.

• It is the autobiography of one of the earliest political leaders of British rule.

• Surendranath Banerjee often known as Rashtraguru.

• He was Indian nationalist leader during the British Rule.

• He founded a nationalist organization called the India National Association and was one of the founding members of the Indian

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National Congress.

Additional Information

• Gopal Krishna Gokhale was an Indian 'moderate' political leader and a social reformer during the Indian independence movement. Gokhale was a senior leader of the Indian National Congress and the founder of the Servants of India Society.

• Vallabhbhai Jhaverbhai Patel, commonly known as Sardar, was an Indian lawyer, influential political leader, barrister and statesman who served as the first Deputy Prime Minister of India and first Home Minister of India from 1947 to 1950. He is also called the "Unifier of India".

• Rao Bahadur Mahadev Govind Ranade, popularly referred to as Justice Ranade, was an Indian scholar, social reformer, judge and author. He was one of the founding members of the Indian National Congress party and owned several designations as member of the Bombay legislative council, member of the finance committee at the centre, and judge of the Bombay High Court, Maharashtra.

Q90. Answer: (a) Philippines

The correct answer is Philippines.

Key Points

• The headquarters of the International Rice Research Institute (IRRI) is located in Los Banos, Philippines.

• International Rice Research Institute (IRRI) is known for its work in developing rice varieties that contributed to the Green Revolution in the 1960s which preempted the famine in Asia.

• The Institute, established in 1960 aims to reduce poverty and hunger, improve the health of rice farmers and consumers, and ensure environmental sustainability of rice farming.

• It advances its mission through collaborative research, partnerships, and the strengthening of the national agricultural research and extension systems of the countries IRRI works in.

Additional Information

• IRRI is one of 15 agricultural research centres in the world that form the Consortium of International Agricultural Research Centers(CGIAR), a global partnership of organizations engaged in research on food security.

• It is also the largest non-profit agricultural research centre in Asia.

• In 1969, IRRI was awarded the Ramon Magsaysay Award for International Understanding

• Manila is the capital of the Philippines and the Peso is the currency.

• Manila, Philippines is the headquarter of the Asian development bank.

Q91. Answer: (c) 43, 86

The pattern used is (first term × 3) - 2 = Second term

In the first pair, (24, 70)

(first term × 3) - 2 = Second term

(24 × 3) - 2 = 70

(72) - 2 = 70

70 = 70 Correct

In the second pair, (18, 52)

(first term × 3) - 2 = Second term

(18 × 3) - 2 = 52

(54) - 2 = 52

52 = 52 Correct

In the third pair, (43,86)

(first term × 3) - 2 = Second term

(43 × 3) - 2 = 86

129 - 2 = 86

127 = 86 Incorrect

In the fourth pair, (39,115)

(first term × 3) - 2 = Second term

(39 ×3) - 2 = 115

(117) - 2 = 115

115 = 115 Correct

Third pair does not belong to the group.

Hence the correct answer is 43, 86.

Q92. Answer: (b) a - b

Given:

(a - b) (a + 2b), (a2 - b2) (a + 2b), (a + b) (a2 - b2) for HCF

Calculations:

=> HCF of (a - b) (a + 2b),

(a - b)	**(a - b) (a + 2b)**
(a + 2b)	(a + 2b)
	1

=> HCF of (a2 - b2) (a + 2b),

(a - b)	**(a2 - b2) (a + 2b)**
(a + b)	(a + b) (a + 2b)
(a + 2b)	(a + 2b)
	1

=> HCF of (a + b) (a2 - b2)

(a + b)	**(a + b) (a2 - b2)**
(a + b)	(a2 - b2)
(a - b)	(a - b)
	1

=> HCF of (a - b) (a + 2b) = (a - b) × (a + 2b)

=> HCF of (a2 - b2) (a + 2b) = (a - b) × (a + 2b) × (a + b)

=> HCF of (a + b) (a2 - b2) = (a + b) × (a + b) × (a - b)

=> HCF = (a - b)

Therefore HCF of the given equations is (a - b).

Q93. Answer: (a) 19^(th) of July 1948

The correct answer is 19th of July 1948.

Key Points

• According to the Constitution of India, as per Article 6, if a person from Pakistan has migrated before the 19th of July 1948 is considered as the ordinarily resident in the territory of India since the date of migration.

• Rights of citizenship of certain persons who have migrated to India from Pakistan notwithstanding anything in Article 5.

• A person who has migrated to the territory of India from the territory now included in Pakistan shall be deemed to be a citizen of India at the commencement of this Constitution.

• He or either of his parents or any of his grandparents was born in India as defined in the Government of India Act, 1935.

• In the case where such person has migrated before the 19^(th) July 1948, he has been ordinarily resident in the territory of India since the date of his migration, or

• In the case where such a person has migrated on or after the 19^(th) July 1948, he has been registered as a citizen of India.

Additional Information

• A Constitution is a set of rules and regulations guiding the administration of a country.

• The constitution of India is the framework of the political principles, procedures, and powers of the government.

• The Indian constitution is the longest constitution in the world with 395 articles and 12 schedules.

• Dr Bhimrao Ramji Ambedkar is known as the father of the Indian Constitution.

• The Republic is governed in terms of the Constitution of India which was adopted by the Constituent Assembly on 26th November 1949 and came into force on 26th January 1950.

Q94. Answer: (c) 10:25 am

Shortcut Trick

Madhvi completes 24% of the distance in 14 mins and 24 sec

=> (14 × 60) + 24 = 864 sec

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So to cover 1% distance time required = 864 / 24 = 36 sec

According to the question, Madhvi travels at the same speed,

Time required to complete 100% distance = 100 × 36 = 3600 sec

=> 3600 sec = 60 mins = 1 hour

Therefore Madhvi will reach her destination at 10.25 am

Alternate Method

Given:

24% of journey covered in = 14 mins = 864 sec

Formula used:

Speed = Distance/Time

Calculations:

According to the question,

Speed of Madhvi is constant along the journey,

Speed of 24% journey = Speed of whole journey

If the total journey is 100% then

=> Speed of 24% journey = (24)/864 .....(1)

=> Speed of whole journey = 100/t .....(2)

=> t = 100/0.0277

=> t = 3610.10 sec = 60.16 min

Therefore The time taken time by her to reach her destination is 10:25 am.

Q95. Answer: (d) S

Persons: P, Q, R, S, T and U

With the help of the information given in the question, we can draw the arrangement,

Step 1: P sits second to the left of U and third to the right of Q.

Step 2: S sits second to the right of U.

Step 3: R sits second to the left of Q. Therefore the remaining spot is assigned to T.

From the diagram, we can see that the immediate neighbor of both Q and T is S.

Hence the correct answer is S.

Q96. Answer: (b) Deendayal Antyodaya Yojana - National Rural Livelihoods Mission

The correct answer is Deendayal Antyodaya Yojana - National Rural Livelihoods Mission.

Key Points

• DAY-NRLM celebrates Agri Nutri Garden Week as part of Azadi Ka Amrit Mahotsav.

• DAY-NRLM observed the 'Agri Nutri Garden Week' from 10th to 17th January 2022 through awareness campaigns and encouraged establishment of 'Agri Nutri Gardens' in the rural households.

• It is the Mission’s agenda to support every rural poor household to have Agri Nutri Garden to fulfill the need of the family’s nutrition and any excess production can also be sold for income generation.

• A total of 76,664 ‘Agri Nutri Gardens’ were established in this week against the target of 7500.

Additional Information

• Azadi Ka Amrit Mahotsav is an initiative of the Government of India to celebrate and commemorate 75 years of independence and the glorious history of it's people, culture and achievements.

• In the Agri Nutri Garden project organic nutritional gardens are set up at households to make available nutritious vegetables and fruits, prepare them to become self-sufficient in vegetables and thereby create a healthy society

• Shri Giriraj Singh has taken charge as the Union Minister of Rural Development and Panchayati Raj.

Q97. Answer: (c) E

Given: A, B, C, D, E, F, G and H are sitting around a square table. Four of them are sitting at four corners of the table and are facing the centre. The other four are sitting at the middle of each of the four sides and are facing opposite to the centre.

(1): A is facing centre and is sitting at the third position from the right of G.

(2): E is facing the centre and is not an immediate neighbour of G.

(3): There is only one person sitting between G and H. So, there are two possibilities.

Case(I):

Case(II):

(4): D is sitting to the immediate right of B and B is facing the centre. So, case (II) will be eliminated.

Case(I):

(5): C is not an immediate neighbour of A. So, the final arrangement will be

Therefore, E sits immediate right to the F.

Hence, the correct answer is "Option (3)".

Q98. Answer: (c) Self Help Group (SHG) women

The correct answer is Self Help Group (SHG) women ..

Key Points

• In Jammu and Kashmir, Lieutenant Governor Manoj Sinha has launched a Rural Enterprises Acceleration Programme titled ‘Saath’ for Self Help Group (SHG) women.

• The programme aims to transform the lives of women and make them independent and strong in social and financial aspects, by mentoring the women associated with SHGs and create market linkages of products created by these women.

• Jammu and Kashmir already has 48000 SHGs, with around four lakh women connected to these SHGs.

• The J&K administration further aims to create 11000 more SHGs in the coming year.

• This will transform the lives of these women and make them independent and strong in social and financial aspects.

Additional Information

• Shri. Manoj Sinha is Lieutenant Governor of Jammu and Kashmir.

• Jammu and kashmir has two capitals : summer capital - Srinagar & Winter capital : Jammu.

• Shri Giriraj Singh has taken charge as the Union Minister of Rural Development and Panchayati Raj.

• In 1991-92 NABARD started promoting self-help groups on a large scale. And it was the real take-off point for the 'SHG movement'.

Q99. Answer: (c) 36 m

Given:

Length (L) = 2 x [Breadth(B)]

Diagonal (D) = $6\sqrt{5}$

Formula used:

Perimeter = 2 (L + B)

Concept used:

Pythagorean Theorem = $(\text{Hypotenuse})^2 = (\text{Perpendicular})^2 + (\text{Base})^2$

Calculation:

According to the question,

Let the breadth of the rectangle be 'x'

Therefore length will be '2x'

Now,

$(D)^2 = (L)^2 + (B)^2$

$\Rightarrow (6\sqrt{5})^2 = x^2 + (2x)^2$

$\Rightarrow 180 = 5x^2$

$\Rightarrow 36 = x^2$

$\Rightarrow x = 6$ m = Breadth

Length = 2x = 12 m

Perimeter:

$\Rightarrow 2(6 + 12)$

$\Rightarrow 2 \times 18 = 36$ m.

Therefore The perimeter of the plot is 36 m.

Q100. Answer: (b) 47

Given:

The average age of 34 boys in a class is 12 years.

If the age of teacher is also included, the average age increases by 1 year = 12 + 1 = 13 years

Concept Used:

Average Value = (Sum of all the values)/(Total values)

Calculations:

According to the question,

Let the age of teacher be T, then

Average age = (34 × 12 + T)/35

=> 13 = (34 × 12 + T)/35

=> 455 = 408 + T

=> T = 455 - 408 = 47 years

Therefore The age of the teacher is 47 years.

Q101. Answer: (b) 500, 60

The correct answer is 500, 60.

• As per Article 170 of the Constitution of India, the Legislative Assembly of each State shall consist of not more than 500, and not less than 60, members chosen by direct election from territorial constituencies in the State.

Key Points

• Subject to the provisions of Article 333, the Legislative Assembly of each State shall consist of not more than five hundred, and not less than sixty, members chosen by direct election from territorial constituencies in the State.

• For the purposes of clause (1), each State shall be divided into territorial constituencies in such manner that the ratio between the population of each constituency and the number of seats allotted to it shall, so far as practicable, be the same throughout the State Explanation.

• In this clause, the expression population means the population as ascertained at the last preceding census of which the relevant figures have been published.

• Provided that the reference in this Explanation to the last preceding census of which the relevant figures have been published shall, until the relevant figures for the first census taken after the year 2000 have been published, be construed as a reference to the 1971 census.

Additional Information

• The Constitution of India is the supreme law of India.

• The document lays down the framework that demarcates fundamental political code, structure, procedures, powers, and duties of government institutions and sets out fundamental rights, directive principles, and the duties of citizens.

• It was adopted by the Constitution Assembly of India on 26 November 1949 and became effective on 26 January 1950.

Q102. Answer: (d) Bhishma Parva

The correct answer is Bhishma Parva.

Key Points

• Bhishma Parva

• India's ancient holy epic, The Mahabharata, is undoubtedly the most well-known work of Indian literature.

• The epic, attributed to the poet Vyasa, has 18 sections and more than 220,000 lines.

• The sixth of the Mahabharata's eighteen books is the Bhishma Parva, often known as the Book of Bhishma.

• It is the only Parva in the Mahabharata where Bhishma and Krishna, rather than Karna, serve as the main heroes.

• Traditionally, this epic includes 122 chapters and 4 parts.

• The Bhagavad Gita, also known as Gita, The Song of the Lord, or The Celestial Song, is a well-known chapter of the Mahabharata.

• The Mahabharata's battles are the background for the religious literature known as the Bhagavad Gita.

Additional Information

• The Bhagavad Gita, also known as the "Song of God," is a long poem composed of 701 Sanskrit couplets.

• It has chapters that detail Arjuna's reflections on the meaning of life, the purpose of war, and the ultimate effects of warfare.

• Other treatises in the Bhishma Parva discuss tactics and strategy as well as the just war theory of ancient India.

Q103. Answer: (d) Lambda

The correct answer is Lambda.

Key Points

• Wavelength

• The property of a wave in which the distance between the identical points between the two succeeding waves is measured is called the wavelength.

• The Greek letter lambda (λ) is used to represent it.

• Thus, the wavelength is defined as the separation between one wave's crest or trough and the following wave.

• "The distance between the two subsequent crests or troughs of the light wave" is how the wavelength of light is described.

• The wavelength of visible light varies from 400 nanometers to 700 nanometers.

• Wavelength is calculated as the product of a wave train's frequency (f) and speed (v) in a medium and it is represented as: λ = v/f.

Additional Information

• The unit of wavelength is a meter.

Fundamental Quantities	Symbol
Alpha	α
Beta	β
Delta	δ

Q104. Answer: (d) Only assumption I is implicit.

The correct answer is option 4) Only assumption I is implicit.

SOLUTION:

The statement tells that farmers should be given extra 10% of the cost of production with the price for their produce.

• The suggestion that farmers should be given extra 10% would be given only if it is believed that there are farmers who need such monetary support. Therefore, assumption I is implicit.

• Assumption II contradicts assumption I. Since assumption I is implicit, assumption II cannot be implicit.

Therefore only assumption I is implicit.

Hence the correct answer is option 4).

Q105. Answer: (b) 14.4%

Given:

A person sells his goods at 30% profit

The Cost Price (CP) increases by 25%

The Selling Price (SP) increases by 10%

Formula Used:

Profit % = [(SP - CP)/CP] × 100

Calculations:

According to the question

Let the initial Cost Price (CP1) be Rs. 100 then

SP1 = CP1 + P%

=> SP1 = 100 + 30% = Rs.130

Now new Cost Price (CP2) = (CP1) + 25% of (CP1)

(CP2) = (100) + 25% of (100)

=> (CP2) = (100) (1 + 0.25)

=> (CP2) = (100) (1.25)= Rs.125

Now new Selling Price (SP2) = (SP1) + 10% of (SP1)

(SP2) = (130) + 10% of (130)

=> (SP2) = (130) (1 + 0.1)

=> (SP2) = (130) (1.1) = Rs.143

Now new Profit%

Profit% = [(143 - 125)/125] × 100

=> P% = (18/125) × 100 = (18/5) × 4

=> P% = 72/5 = 14.4%

Therefore The new profit percentage will be 14.4%.

Q106. Answer: (a) 22

The correct answer is 22.

Key Points

• No. of Chromosome in Humans

• The nucleus of every cell contains microscopic, thread-like components that make up a chromosome.

• Each chromosome is made up structurally of DNA that is tightly wound around distinct proteins known as histones.

• There are 46 chromosomes in all, divided into 23 pairs in humans.

• These 22 pairs—which are the same for both males and females—are referred to as the autosomes.

• There are differences between the sexes in the 23rd pair of chromosomes, or "allosomes," which is the sex chromosome.

• When compared to females, who have two copies of the "X" chromosome (44A + XX), males only have one "X" and one "Y" chromosome (44A+ XY).

Additional Information

• Except for sex determination, autosomes are primarily linked to the numerous metabolic processes that occur within the cell.

• It occurs half in no. in sex cells (gametes) and in pairs in somatic cells.

• In humans, each parent gives one of their sex chromosomes to the child, dividing the child's chromosomes equally between the mother and the father.

• DNA is stored in a cell's chromosomes, which also have components needed for segregation and replication.

Q107. Answer: (a) Nagaland

The correct answer is Nagaland.

Key Points

• Changsang Dance

• Nagaland, popularly referred to as "The Land of Festivals," is a small, hilly state in India's northeast.

• Various ethnic tribes of Naga refers it as their home.

• Nagas hold annual festivities all year long.

• Naga culture places a strong emphasis on music and dancing.

• The Chang Naga Tribe of Nagaland performs the Changsang dance as a part of the Naknyulüm festival in the month of July.

• Changsang dance is performed to honour the environment and the site where humanity originated.

• During the festival with which the dance is associated, prayers are performed side by side with the dance in order to honour the sky God.

Additional Information

• The Chang Nagas perform dances in colourful clothes and accompany them with matching tunes during the Puanglem/Nknyulum festival time.

• In addition to it, the Phom Nagas perform the Monyu Asho dance, a traditional folk dance, during the Phom Monyu festival, the largest festival of the Phom Naga tribe.

• The festival is celebrated in April.

State	Folk Dance
Jharkhand	Karma Munda, Jhumar, Janani Jhumar, Paika, Sarhul dance
Chhattisgarh	Gaur Maria, Panthi, Raut Nacha
Odisha	Ghumra, Ranappa, Savari,Chadya Dandanata

Q108. Answer: (d) 27 cm

Given:

In ΔABC, AD is a median of the triangle, intersecting BC at D

AG = (7y - 3) cm

DG = 3y cm

Concept used:

AG: GD = 2 : 1

Calculations:

According to the question,

AG/DG = 2/1

=> (7y - 3)/(3y) = 2/1

=> 7y - 3 = 6y

=> y = 3

Now, AD = AG + GD
=> AD = (7y - 3) + (3y)
=> AD = 10y - 3
=> AD = 30 - 3 = 27 cm
Therefore The length of AD is 27 cm.

Q109. Answer: (a) Profit Rs. 680

Given:
Cost Price of first machine (CP1) = 8000 + 500 = Rs.8500
Profit on first machine = 20%
Selling Price of first machine (SP1) = Cost Price of second machine (CP2)
Loss on second machine = 10%
Formula used:
Profit = CP × Profit%
Loss = CP × Loss%
Calculation:
According to the question,
Profit on first machine = Rs.8500 × 20% = 8500 × 0.20 = Rs.1700
=> SP1 = (CP1) + Profit = 8500 + 1700 = Rs.10200
Loss on second machine = CP2× 10% = 10200 × 0.10 = Rs.1020
=> SP2 = (CP2) - Loss = 10200 - 1020 = Rs.9180
Overall Profit of Himani,
=> (SP2) - (CP1) = 9180 - 8500 = Rs. 680
Therefore The overall Profit of Himani is Rs.680.

Q110. Answer: (d) 120

Given:
Jack obtained 45% marks in a test and failed by 18 marks.
If he obtained 65% marks, he got 6 marks more than the minimum marks
Calculations:
Let the passing marks be x and total marks be T
According to the question,
=> x - 45%T = 18 ----(1)
=> 65%T - x = 6 ----(2)
From equation (1) and (2)
=> 20%T = 24
=> 20/100 T = 24
=> T = 2400/20 = 120 marks
Therefore The maximum marks one could obtain in that test is 120.

Q111. Answer: (d) 100

Given,
119.99 ÷ 14.99 × 25.01 - 19.98 × 4.96 = ?
Concept used:
BODMAS rule.
Calculation:
In approx value:
119.99 = 120
14.99 = 15
25.01 = 25
19.98 = 20
4.96 = 5
Now,

120 ÷ 15 × 25 - 20 × 5

=> 8 × 25 - 100

=> 200 - 100 = 100.

Therefore The closest approximate value of the given equation is 100.

Q112. Answer: (c) 5 g per day

The correct answer is 5 g per day.

Key Points

• Salt Intake

• Salt is the main source of sodium in our diet, however sodium glutamate, a condiment used in many cultures, can also include sodium.

• Low potassium intake (less than 3.5 grams/day) and high sodium intake (>2 grams/day, equivalent to 5 g of salt/day) both contribute to high blood pressure and raise the risk of cardiovascular disease and stroke.

• According to the World Health Organization (WHO), persons who consume less than 5 g of salt daily have lower blood pressure and a lower chance of developing heart disease, stroke, and coronary heart attack.

• Cutting less on salt has several advantages, but the main one is a decrease in high blood pressure.

• By 2025, the WHO Member States intend to cut world salt use by a relative 30 %.

Additional Information

• Most people use twice as much salt as is advised—on average, 9 to 12 g per day.

• One of the most economical steps a nation can take to improve population health outcomes has been identified as reducing salt intake.

• If worldwide salt consumption were reduced to the recommended amount then it is predicted that 2.5 million fatalities may be avoided annually.

• According to WHO, the maximum recommended salt consumption for adults should be reduced for children between the ages of two to fifteen based on their proportional energy needs to those of adults.

• Around 75% of the salt consumed daily in many high-income nations comes from processed foods and meals served outside the home.

Q113. Answer: (b) 4410

Given:

Radius of Cylinder (R) = 1.4cm or 14mm

Height of the cylinder (H) = 24cm or 240mm

Radius of spherical balls (r) = 2mm

Formula used:

Volume of Cylinder = π × (radius)² × height

Volume of Sphere = 4/3× π(radius)³

Concept used:

Volume of Cylinder = Volume of Sphere × Number of balls

Calculations:

Let the no. of balls be 'a'

According to the question,

=> π × (R)² × height = 4/3 π(r)3 × a

=> a = 3 × H(R)²/4(r)3

=> a = 3 × 240 × (14)²/ 4×8

=> a = 3 × 30 × 49 = 4410

Therefore Total no. of balls melted from the cylinder is 4410.

Q114. Answer: (d) 16√3

Given:

5√12 + 6√27 - 4√75 + √192

Calculations:

5√12 + 6√27 - 4√75 + √192

=> 5 × 2√3 + 6 × 3√3 - 4 × 5√3 + 8√3

=> 10√3 + 18√3 - 20√3 + 8√3

Taking √3 out because it is common,

=> √3 × (10 + 18 - 20 + 8)

=> 16√3

Therefore The simplified value of the given equation is 16√3.

Q115. Answer: (b) 33

LOGIC: Sum of position value of letter

CELL is coded as:

• C + E + L + L = 3 + 5 + 12 + 12 = 32

And,

PHONE is coded as:

• P + H + O + N + E = 16 + 8 + 15 + 14 + 5 = 58

Similarly,

BOLD can be coded as:

• B + O + L + D = 2 + 15 + 12 + 4 = 33.

Hence the correct answer is 33.

Q116. Answer: (a) industrial sector

The correct answer is industrial sector.

Key Points

• Second Five-Year Plan

• The second five-year plan gave industries, mainly heavy industries a lot of attention.

• In contrast to the First Five Year Plan, which focused mostly on agriculture, the Second Plan encouraged domestic industrial product production, especially in the growth of the public sector.

• The strategy was based on the Mahalanobis model, an economic growth framework created in 1953 by Indian statistician Prasanta Chandra Mahalanobis.

• The strategy sought to identify the best distribution of investments among productive industries in order to maximise long-term economic growth.

• It made use of cutting-edge operations research and optimization approaches as well as creative uses of statistical models created by the Indian Statistical Institute.

Additional Information

• Under the Second Five-Year Plan, the state focused on consumer goods, while the first plan's factories helped boost overall industrial output.

• With assistance from the Soviet Union, Britain (U.K.), and West Germany, hydroelectric power projects and five steel plants were built in Bhilai, Durgapur, and Rourkela, respectively.

• Production of coal increased.

• In the northeast, more railway lines were constructed.

• In total, 48 billion rupees were allotted for the Second Five-Year Plan in India.

• The following sectors received this sum: communications and transportation, miscellaneous, social services, power and irrigation, and other.

• Actual growth was 4.27 per cent compared to the target growth rate of 4.5 per cent.

Q117. Answer: (a) Vishwa Mohan Bhatt

The correct answer is Vishwa Mohan Bhatt.

Key Points

• Mohan Veena

• A Mohan Veena is one of two unique plucked string instruments used in Hindustani classical music, a genre of Indian classical music associated with the country's north.

• First, in 1948, Pandit Radhika Mohan Maitra created a musical instrument that combined the sarod, the veena, and the surbahar.

• In 1949, Thakur Jaidev Singh, the head producer of All India Radio at the time, gave the instrument the name "Mohan veena" in honour of Pt. Maitra.

• The Grammy Award-winning Pandit Vishwa Mohan Bhatt invented and popularised the Mohan Veena, a Hawaiian guitar that has been modified.

• It is employed to perform classical Hindustani Ragas.

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• Vishwa Mohan Bhatt, Salil Bhatt (who later created the Satvik Veena, a variation of his father's Mohan Veena), and Canadian blues singer Harry Manx are a few of the well-known performers

Additional Information

• This instrument, which has 20 strings in total, is actually a modified Archtop guitar.

• It has three to four melody strings, four to five drone strings strung from the peghead, and twelve sympathetic strings strung to tuners positioned on the side of the neck.

• To increase the sustain and resonance of the sound, a gourd (or Tumba) is put into the back of the neck.

• It is played with a bar and held in the lap similarly to a slide guitar.

• It is pulled by more than 500 pounds of strings together, which is a lot of tension.

• The Chaturangui Veena, Hansa Veena, Shankar Veena, and many other famous variations of the Mohan Veena exist in India.

Q118. Answer: (b) Only conclusion II follows

The least possible Venn diagram of given statements can be drawn as follows:

Conclusion:

I. Some doors are keys => Not Follows. Their is a relation given between doors and locks & locks and keys but not for keys and doors so no solid conclusion can be drawn for some doors are keys.

II. Some doors are locks => Follows. Some doors are locks can be also written as some locks are doors which is the statement II.

Hence, Only conclusion II follows.

Q119. Answer: (b) 1.8

Given:

Product of 16 and Y = 460.8

Calculation:

According to the question,

16 × Y = 460.8

=> Y = 460.8/16

=> Y = 28.8

Now the quotient (Q) when Y divided by 16

=> Q = 28.8/16

=> Q = 1.8

Therefore The quotient will be 1.8

Q120. Answer: (d) 7

Given:

No. of Students	Age of the Students
8	8
6	8
10	7
9	7
7	5

Formula used:

Mean age = ∑fixi /∑fi

Calculations:

No. of students (f_i)	Age of students (x_i)	(f_i.x_i)
8	8	64
6	8	48
10	7	70
9	7	63
7	5	35

∑ f_i = 40		∑ f_ix_i = 280

Mean age = 280/40

=> 7 years

Therefore The mean age of all the students taken together is 7 years.

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