RRB NTPC CBT 2 (Level-2) Official Paper (Held On: 13 June 2022 Shift 2) (Previous Year Paper)

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

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FULL TEST

Q1. Rahul left his school and walked 20 m straight towards the north, turned left and walked straight for another 20 m. He took a final left turn again and walked straight for 20 m to reach home. What is the shortest distance between the school and his home? (All turns are 90° turns only)

(a) 25 m
(b) 40 m
(c) 20 m
(d) 30 m

Q2. The National Unity Day is celebrated in India on the birth anniversary of _____.

(a) Dr BR Ambedkar
(b) Indira Gandhi
(c) Sardar Vallabhbhai Patel
(d) Mother Teresa

Q3. Lord Dalhousie, was Governor General of India during which period?

(a) 1813 to 1830
(b) 1723 to 1734
(c) 1848 to 1856
(d) 1757 to 1810

Q4. A, B, C, D, E, and F are six people living in a six-storey building, with each person living on a different floor. The lowermost floor is numbered 1, the floor above it 2, and so on till the topmost floor is numbered 6.

F lives on floor number 3. B and E live on the floors below F's floor. D lives on a floor that is below A's floor but above C's floor. Who among them lives on the topmost floor?

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

Q5. An amount of Rs. 1470 is shared between Anant and Mohan in the ratio 3 : 4. What is the amount received by Mohan?

(a) Rs. 840
(b) Rs. 1650
(c) Rs. 630
(d) Rs. 1050

Q6. The Cherry Blossom Festival 2021 was inaugurated in which of the following cities?

(a) Imphal
(b) Shillong
(c) Kohima

(d) Guwahati

Q7. Find the compound interest on Rs. 32000 for 6 months at 12% per annum compounded quarterly?

(a) Rs. 1947
(b) Rs. 1948
(c) Rs. 1947.80
(d) Rs. 1948.80

Q8. In each of the given number-clusters, the number on the right side of '=' (the equal to sign) is calculated by performing certain mathematical operations on the three numbers on the left of '=' (the equal to sign). All three number-clusters follow the same pattern. Select the number from among the given options that can replace the question mark (?) in the third number-cluster.

4, 3, 2 = 21

5, 6, 3 = 52

5, 8, 4 = ?

(a) 41
(b) 106
(c) 73
(d) 85

Q9. Suresh borrows Rs. 80000 at 24% per annum simple interest and Ramesh borrows Rs. 91000 at 20% per annum simple interest. In how many years will their amounts of debts be equal?

(a) 22
(b) 20
(c) 11
(d) 10

Q10. Read the given statement and courses of action carefully. A course of action is a step or administrative decision to be taken for improvement, follow up or further action in regard to the problem, policy, etc. Assuming that the information given in the statement is true, decide which of the given courses of action logically follow(s) from the statement.

Statement:

Some serious and substantial mistakes were found in the financial account statements of a private limited company.

Courses of Action:

I: A team of experts should be assigned to find the root cause of the mistakes in the accounts of the private limited company and suggest remedial action

II: All the involved employees should be thoroughly investigated.

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

Q11. The value of ((1111/12 × 13/13 ÷ 23/4) ÷ (7/10 ÷ (3/4 × 12/5)))/(1/4 × 2/3 × 22/5) is

(a) 1 1/5
(b) 20
(c) 3 1/5
(d) 10

Q12. Which of the following statements with respect to the law of variable proportions is true?

(a) The marginal product of a factor input initially falls with its employment level, but after reaching a certain level of employment, it starts falling even more, causing depression.
(b) The marginal product of a factor input initially rises with its employment level and remains consistent throughout.
(c) The marginal product of a factor input initially drops with its employment level, but after reaching a certain level of employment, it starts rising.
(d) The marginal product of a factor input initially rises with its employment level, but after reaching a certain level of

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employment, it starts falling.

Q13. Which of the following correctly define the term 'Cash Reserve Ratio'?

(a) Percentage of liquid reserves in the bank.
(b) Percentage of deposits which a bank must keep as cash reserves with the Reserve Bank of India.
(c) Liabilities of the bank which need to be paid for.
(d) Ratio of deposits for the expenses of the firms.

Q14. Find the value of $(13)^3 + (-8)^3 + (-5)^3$

(a) -40 × 41
(b) 39 × 40
(c) -39 × 40
(d) 41 × 38

Q15. The female astronaut Noura al-Matroushi is related to which country?

(a) United Arab Emirates
(b) Turkey
(c) Jordon
(d) Lebanon

Q16. If the 7 digit number 504x5y3 is divisible by 11, then one of the values of the sum of x and y is

(a) 7
(b) 11
(c) 5
(d) 17

Q17. In a row of people, Raghav is standing at the 14^(th) position from the extreme left end and Naresh is at the 16^(th) position from the extreme right end. If they interchange their respective positions, Raghav now becomes 23^(rd) from the extreme left end.

What is the position of Naresh from the extreme right end after the interchange?

(a) 24^(th)
(b) 28^(th)
(c) 25^(th)
(d) 22^(nd)

Q18. _____is an inland river port serving the vast hinterland of the Ganga-Brahmaputra Basin.

(a) Tuticorin
(b) Kolkata
(c) Kandla
(d) Kochi

Q19. If an observation 70 is removed from the data 60, 68, 70, 72, 74, 76, 78, 80, then the median is increased by:

(a) 0.5
(b) 1
(c) 1.5
(d) 2

Q20. Which of the following is a popular dance and music combination of Andhra Pradesh that is similar to the stick dance?

(a) Neuleu
(b) Kolannalu
(c) Villu Pattu
(d) Dandiya

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Q21. In a certain code language, 'bitter ash kill' is written as 'pal odd tom', 'very cute doll' is written as 'saw tim toy', and 'doll and kill' is written as 'toy sad tom'. How will 'and' be written in that language?

(a) doll
(b) sad
(c) cute
(d) toy

Q22. There are six boys, Mukul, Rajan, Jayant, Suresh, Prakash and Karan, each having different heights. Mukul is not the tallest among all. Only three boys are taller than Karan and only three boys are shorter than Prakash. Suresh is taller than Rajan but shorter than Karan.

How many boys are shorter than Mukul?

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

Q23. The graphs of the equations 3x - 2y -11 = 0 and x + y = 7 intersect at P (α, β). What is the value of (3α + 5β)?

(a) 11
(b) 23
(c) 25
(d) 13

Q24. On 30 July 2021, Union Minister Jitendra Singh released _____ guidelines for Promotion of Research and Innovation through Data Exchange.

(a) Biotech-REGUIDE
(b) Biotech-PRIDE
(c) Biotech-NOVELD
(d) Biotech-INNOVAT

Q25. Mirabai, the best known woman poet and a devotee of Lord Krishna was a Rajput princess from present day _____.

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

Q26. Arpit's birthday on 10^(th) March 2020 was on a Tuesday. On which day was his wife's birthday on 25^(th) May 2020?

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

Q27. What does 21 stand for in 'Agenda 21', a declaration aiming sustainable development adopted during Earth Summit 1992?

(a) 21 concerns
(b) 21^(st) century
(c) 21 goals
(d) 21 signatory nations

Q28. ABCDEF is a regular hexagon and m(BE) = 14 cm. What is the perimeter of the hexagon?

(a) 48 cm
(b) 30 cm
(c) 42 cm
(d) 36 cm

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Q29. A question is given, followed by two statements labelled I and II. Identify which of the statements is/are sufficient to answer the question.

Question:

How many soldiers are there between William and David in a row of soldiers, all facing north?

Statements:

(I) William is 15^(th) from the extreme left end of the row.

(II) David is exactly in the middle of the row and there are ten soldiers to his right.

(a) II alone is sufficient, while I alone is not sufficient
(b) I alone is sufficient, while II alone is not sufficient
(c) Both I and II together are not sufficient
(d) Both I and II together are sufficient

Q30. What is the default vertical alignment of texts in an Excel worksheet?

(a) Bottom
(b) Justify
(c) Center
(d) Top

Q31. Which of the following is the largest slum area in India?

(a) Antop Hill
(b) Dharavi
(c) Royapuram
(d) Kirti Nagar

Q32. There are two benches A and B and one chair. Three persons can sit on each of these benches and one on the chair. Seven persons, Aman, Bhaskar, Chetan, Dablu, Ekta, Fauzia, and Ganesh, are to be seated on these benches and the chair following certain constraints as given.

(i) Fauzia does not sit on the same bench as Dablu.

(ii) Ekta does not sit on the same bench as Dablu.

(iii) Chetan can sit with Aman but not with Ganesh.

(iv) Aman can sit with Dablu but not with Bhaskar or Ganesh.

(v) Ganesh does not sit on the same bench as Fauzia.

If Fauzia sits on Bench A and Chetan sits on Bench B, then who is sitting in the chair?

(a) Bhaskar
(b) Ekta
(c) Ganesh
(d) Dablu

Q33. Julie can cover a distance of 140 m 18 seconds. At that given speed how much distance can Julie cover in 1 hour?

(a) 25.2 km
(b) 28 km
(c) 31.5 km
(d) 29.4 km

Q34. It was Friday on 2^(nd) February 2007. What was the day of the week on 2^(nd) February 2008?

(a) Thursday
(b) Friday
(c) Saturday
(d) Sunday

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Q35. Vaishali covers a certain distance by car at 50 kmph and returns to the original place through the same route on a bicycle at 10 kmph. If the time taken by her for the whole journey was 2 hours 24 minutes, then what was the total distance that she covered?

(a) 48 km
(b) 40 km
(c) 50 km
(d) 60 km

Q36. She / He gave up dancing and studied the sitar under the noted musician Ustad Allauddin Khan. She / He was also the music director of All-India Radio from 1948 until 1956. Who among the following was that person?

(a) Ravi Shankar
(b) Mamata Shankar
(c) Ananda Shankar
(d) Uday Shankar

Q37. Who among the following won the FIFA Best Men's Player award for the second consecutive year in 2022?

(a) Robert Lewandowski
(b) Lionel Messi
(c) Cristiano Ronaldo
(d) Mohamed Salah

Q38. The Directive Principles of State Policy in the Constitution of India have been adopted from the:

(a) French Constitution
(b) Canadian Constitution
(c) Irish Constitution
(d) US Constitution

Q39. Who among the following Governor Generals introduced the Doctrine of Lapse?

(a) Lord Auckland
(b) Lord Bentinck
(c) Lord Dalhousie
(d) Lord Hardinge

Q40. 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:

All pens are pencils.

Some pens are books.

Conclusions:

I. All books are pens.

II. Some pencils are books.

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

Q41. In the Fixed Exchange Rate system, the _____ fixes the exchange rates at a particular level.

(a) businessperson
(b) trading union
(c) market
(d) government

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Q42. If 11 -digit number 88p554085k6, k ≠ p, is divisible by 72, then what is the value of (3k + 2p)?

(a) 23
(b) 12
(c) 7
(d) 13

Q43. Which singer was honoured with the Icon Award at 2021 Billboard Music Awards in May 2021?

(a) Mariah Carey
(b) Jennifer Lopez
(c) Garth Brooks
(d) Pink

Q44. The High Court's power to issue writs is mentioned under:

(a) Article 233
(b) Article 226
(c) Article 230
(d) Article 225

Q45. The International Conference on Soil and Water Resources Management for Climate was organised in November 2019 in _____ to deliberate upon the various issues and challenges of soil and water conservation.

(a) Ghaziabad
(b) Gurugram
(c) New Delhi
(d) Greater Noida

Q46. An equilateral triangle of side 12 cm is inscribed in a circle. What is the area (in cm^2) of the circle?

(a) 18π
(b) 48π
(c) 24π
(d) 36π

Q47. Which Article of the Indian Constitution deals with the oath or affirmation by the President?

(a) 65
(b) 60
(c) 55
(d) 70

Q48. Which of the following organelle of the eukaryotic cells are also called suicidal bags?

(a) Golgi body
(b) Mitochondria
(c) Lysosomes
(d) Chloroplast

Q49. The provisions contained in the Directive Principles of State Policy:

(a) can be enforced by the High court
(b) cannot be enforced by any court
(c) can be enforced by any court
(d) can be enforced by the Supreme court

Q50. The value of 49 - [35 + {12 ÷ 3 of (6 + 7 - 12) }] is:

(a) -8
(b) -12
(c) 10
(d) 9

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Q51. If Q means '+, J means 'x', T means '–', and K means '÷', then 52 K 4 Q 6 J 12 T 8 = ?

(a) 68
(b) 83
(c) 45
(d) 77

Q52. X and Y can complete a certain work in 18 days and 30 days respectively. Z is 50% more efficient than Y. Z and Y started the work but both had to leave after 4 days. The remaining work was completed by X with the assistance of P in the next 4 days. P alone can complete the original work in

(a) 8 days
(b) 9 days
(c) 12 days
(d) 10 days

Q53. According to the Ministry of Fisheries (2020), India contributes about _____ to the global fish production.

(a) 15.7%
(b) 7.7%
(c) 12.7%
(d) 6.7%

Q54. The arithmetic mean of the first ten prime numbers is _____.

(a) 12.9
(b) 12.8
(c) 15.8
(d) 10.1

Q55. Seven friends A, B, C, D, E, F and G are sitting facing the centre in a circular position. F is sitting to the immediate right of C. C is sitting at the second position to the right of G. E is sitting at the third position to the right of A. B is an immediate neighbour of both D and E. Which of the following statements is FALSE?

(a) C is sitting at the third position to the right of D.
(b) A is sitting to the immediate left of C.
(c) B is sitting to the immediate right of G.
(d) E is sitting at the third position to the left of G.

Q56. Which of the following Indian States is famous for Paika dance?

(a) Kerala
(b) Tamil Nadu
(c) Odisha
(d) Manipur

Q57. One day, Rekha was standing facing the east. She then turned 90 degrees right and then turned 45 degrees in the anti-clockwise direction. She then turned 90 degrees clockwise. Which direction is she facing now?

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

Q58. ΔABC is equilateral triangle with side 12 cm. CD is the bisector of angle C which meets AB at D and E is the mid-point of CD. What is the length of BE?

(a) $3\sqrt{6}$ cm
(b) 8 cm
(c) $3\sqrt{7}$ cm
(d) $6\sqrt{2}$ cm

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Q59. Which minister introduced the Essential Defence Services Bill in Lok Sabha on 22 July 2021?

(a) Nitin Gadkari
(b) Nirmala Sitharaman
(c) Rajnath Singh
(d) Piyush Goyal

Q60. Select the option that is related to the sixth letter-cluster in the same way as the first letter-cluster is related to the second letter-cluster and the third letter-cluster is related to the fourth letter-cluster.

WLX : SHT :: FGJ : BCF :: ? : KPF

(a) PTK
(b) OSK
(c) OTJ
(d) PSQ

Q61. If the length and the height of a cuboid are 18 m and 12 m respectively, and its volume is 3024 m^3, then find its breadth (in m).

(a) 14
(b) 15
(c) 16
(d) 13

Q62. In a class consisting of 67 students, Teena ranked 12^(th) from the top and her friend Rishabh ranked 26^(th) from the bottom. How many students ranked between Teena and Rishabh?

(a) 33
(b) 27
(c) 28
(d) 29

Q63. What is the full form of SJSRY in relation to self-employment programmes implemented by the Government of India in 1997?

(a) Swarna Jayanti Samajik Rozgar Yojana
(b) Swarna Jayanti Shramjeevi Rozgar Yojana
(c) Swarna Jayanti Sarkari Rozgar Yojana
(d) Swarna Jayanti Shahari Rozgar Yojana

Q64. Who assumed additional charge of Secretary, Department of Defence Production on 30^(th) November 2021?

(a) Sushil R. Gaikwad
(b) Ajay Kumar
(c) Ajay Bhatt
(d) Amarendra Tiwari

Q65. Select the number from among the given options that can replace the question mark (?) in the following series.

85, 84, 92, 65, 129, ?

(a) 258
(b) 4
(c) 177
(d) 329

Q66. The time taken by a boat to go 7 km downstream is the same as the time taken by it to go 3 km upstream. It can go 14 km upstream and the same distance downstream in a total time of 6 2/3 hours. How much time (in hours) will it take to go 16.8 km upstream?

(a) 4.2
(b) 3.5
(c) 5.6
(d) 7

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Q67. Study the given information carefully and answer the question that follows.

Five friends Komal, Harris, Paul, Daniel and Meghana are standing in a row facing north but not necessarily in the same order. Only Harris is between Komal and Meghana. Paul is to the immediate right of Meghana. Daniel is to the immediate left of Komal.

Which of the following statements is true?

(a) Daniel is third to the left of Meghana.
(b) Harris is to the right of Meghana.
(c) Harris is to the left of Komal.
(d) Komal is third to the left of Harris.

Q68. In each of the given number-clusters, the number on the right side of = (the equal to sign) is calculated by performing certain mathematical operations on the three numbers on the left of = (the equal to sign). All three number-clusters follow the same pattern. Select the number from among the given options that can replace the question mark (?) in the third number-cluster.

36, 58, 21 = 23

41, 39, 20 = 20

39, 52, 34 = ?

(a) 17
(b) 30
(c) 25
(d) 15

Q69. 12.5% of the first number is 37.5% of the second number. If the second number is subtracted from the first number, we get an answer of 1428. Find the sum of the two numbers.

(a) 2846
(b) 2856
(c) 2716
(d) 2936

Q70. In a certain code language. ALMIRAH is written as HRRMUCI and COMPANY is written as JURTDPZ. How will JUNGLEE be written in that language?

(a) QASKOGF
(b) QBSKHFW
(c) QASKPHF
(d) QUREASR

Q71. ‘A & B' means 'A is younger than B'

'A @ B' means 'A is equal to B'

If ‘P & Q @ Y & Z & T', then who is the oldest among all?

(a) Y
(b) T
(c) P
(d) Z

Q72. The initial profit percentage on the sale of an item was 74%. If the cost price of the item went up by 50% but the selling price remained the same, what would be the new profit percentage?

(a) 13%
(b) 24%
(c) 16%
(d) 8%

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Q73. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.

CML, XJK, SGJ, NDI, ?

(a) IBG
(b) IAH
(c) HAI
(d) IBH

Q74. A dealer sells an article for Rs. 123 after offering a discount of 18% on its marked price, If he sells it on the marked price, he gains 25%. What is the cost price in (in Rs.) of the article?

(a) 125
(b) 124
(c) 120
(d) 115

Q75. Three friends A, B and C divide Rs. 5525 amongst them in such a way that if Rs. 50, Rs. 100 and Rs. 75 are removed from the sums that A, B and C received respectively, then the share of the sums that they get would have been in the ratio of 11 : 18 : 24. How much did C initially receive?

(a) Rs. 1150
(b) Rs. 2475
(c) Rs. 1900
(d) Rs. 2325

Q76. In a certain code language, SOFA is written as TQIE and CLOAK is written as DNREP. How will TABLE be written in that language?

(a) UCEQH
(b) UCEPJ
(c) UBDPJ
(d) UCDPJ

Q77. Which of the following statements is TRUE?

(a) Both SRAM and DRAM are random access memory.
(b) SRAM is a non-volatile memory.
(c) DRAM is faster than SRAM.
(d) SRAM requires periodic refreshing.

Q78. Who among the following was selected for 'Guru Gopinath Desiya Natya Puraskaram, 2019' by the State Government of Kerala for popularising Sattriya - the Indian classical dance form of Assam?

(a) Tankeswar Hazarika Borbayan
(b) Ramkrishna Talukdar
(c) Indira P P Bora
(d) Haricharan Bhuyan Borbayan

Q79. Two natural numbers are in the ratio of 6 : 5 and the product of their LCM and HCF is 6750. What is the sum of the numbers?

(a) 165
(b) 180
(c) 160
(d) 145

Q80. Select the option that is related to the sixth letter-cluster in the same way as the first letter-cluster is related to the second letter-cluster and the third letter-cluster is related to the fourth letter-cluster.

LST : MQW :: KOP : LMS :: ? : HNT

(a) EQP
(b) FPQ
(c) GPQ

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(d) FNP

Q81. In which sector is India's maximum population employed, according to the Census of 2011?

(a) Secondary
(b) Tertiary
(c) Quaternary
(d) Primary

Q82. Borneo, Java and Sumatra are islands of which of the following archipelagos?

(a) Indonesia
(b) Maldives
(c) Mauritius
(d) Seychelles

Q83. Which of the following is NOT a chemical weathering process?

(a) Carbonation
(b) Hydration
(c) Thermal expansion
(d) Oxidation

Q84. Which two signs and which two numbers should be interchanged to make the following equation correct?

630 + 6 - 5 ÷ 40 × 10 = 295

(a) ÷, + and 5, 10
(b) ÷, - and 10, 6
(c) ÷, × and 5, 6
(d) +. - and 6, 5

Q85. In a certain code, 'go home' is written as 'ta na', and 'nice little home' is written as 'na ja pa'. How is 'go' written in that code?

(a) ta
(b) na
(c) ja
(d) na or pa

Q86. Which of the following is NOT written by Kalidasa?

(a) Abhigyan Shakuntalam
(b) Raghuvamsa
(c) Nitisara
(d) Vikramorvasiyam

Q87. A tent is cylindrical upto a height of 6 m and conical above it. The diameter of the base is 90 m and the height of the conical part is 28 m. What is the area (in m^2) of canvas used in making it?

(a) 2905π
(b) 2895π
(c) 2940π
(d) 2925π

Q88. Paras can complete 40% of the work in 8 days while Deepti & Paras together can complete 10% of the work in a day. Find the time taken by Deepti alone to complete the work.

(a) 21 days
(b) 22 days
(c) 23 days
(d) 20 days

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Q89. The diameter of base of a right circular cone is 20 cm and its slant height is 10.5 cm. What is the curved surface area (in cm^2) of the right circular cone? [Use $\pi = 22/7$]

(a) 495
(b) 660
(c) 330
(d) 165

Q90. Which of the following is NOT a feature of succulent plants?

(a) No leaves
(b) Stem present
(c) roots present
(d) Drought-resistant

Q91. Study the given information carefully and answer the question that follows.

In a school party, six girls are sitting in a circle facing the centre. Pragathi is sitting to the immediate left of Keerthi. Kavya is an immediate neighbour of both Pragathi and Vaishali. Meghana is an immediate neighbour of both Keerthi and Vasantha.

Who is sitting to immediate left of Vaishali?

(a) Meghana
(b) Vasantha
(c) Kavya
(d) Pragathi

Q92. The Panama Canal is located in which of the following regions?

(a) East Europe
(b) Central America
(c) South Asia
(d) Arabian Peninsula

Q93. Which of the following is the factor that causes the winter rain in the north-western part of India?

(a) Western disturbances
(b) High pressure over the Indian Ocean
(c) Monsoon winds
(d) Subtropical easterly jets

Q94. If letters of the English alphabet are written in reverse order then which letter is 5^(th) to the right of 12^(th) letter from the right?

(a) L
(b) G
(c) O
(d) J

Q95. According to the Constitution of India, free and compulsory education for children is mandatory up to the age of:

(a) 10 years
(b) 14 years
(c) 6 years
(d) 18 years

Q96. Premier India off-spinner _____ finished the 2019-21 World Test Championship cycle as the leading wicket-taker with 71 scalps to his credit.

(a) Axar Patel
(b) Ravindra Jadeja
(c) Ravichandran Ashwin
(d) Rahul Chahar

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Q97. Select the combination of letters that when sequentially placed in the blanks of the given series will complete the series.

MNL _ MNLL _ _ LLM _ LL _ NLL _ N

(a) N M N M M L
(b) L N M N M M
(c) L M N N M M
(d) L N N M M M

Q98. In which of the following languages did Kalidasa write his poem Meghaduta?

(a) Prakrit
(b) Sanskrit
(c) Pali
(d) Hindi

Q99. As of January 2022, the Ministry of Textiles has approved how many projects in the field of Specialty Fibres and Geotextiles under the flagship programme National Technical Textiles Mission (NTTM)?

(a) 18
(b) 22
(c) 20
(d) 15

Q100. What is the approximate molecular weight of common salt?

(a) 14 g/mol
(b) 28 g/mol
(c) 117 g/mol
(d) 58 g/mol

Q101. The length of each of a pair of opposite sides of a parallelogram is 16 cm and the perpendicular distance between these two sides is 10 cm. What is the area (in cm) of the parallelogram?

(a) 80
(b) 40
(c) 160
(d) 320

Q102. What is the HCF of 144, 360 and 504?

(a) 24
(b) 18
(c) 72
(d) 36

Q103. Which country ranks number one in the World Happiness Report 2021?

(a) Denmark
(b) Bhutan
(c) Sweden
(d) Finland

Q104. Which of the following statements is CORRECT?

(a) The process of moving from casual wageworker to self-employment and regular salaried employment is known as casualisation of workforce.
(b) The process of moving from self-employment and regular salaried employment to casual wageworker is known as casualisation of workforce.
(c) The process of remaining in regular salaried employment and self-employment is known as casualisation of workforce.
(d) The process of moving from self-employment and casual wageworker to regular salaried employment is known as casualisation of workforce.

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Q105. Seven friends K, L, M, N, O, P and Q are sitting on a straight bench facing north. M and Q are not sitting at any of the extreme ends. K is sitting exactly at the middle position. Only P is sitting between Q and N. L is sitting third to the right of K. K is sitting to the immediate left of O.

Who is sitting at the extreme left end?

(a) O
(b) Q
(c) N
(d) L

Q106. Which of the following is NOT a SI unit?

(a) Ohm
(b) Ampere
(c) Newton
(d) Calorie

Q107. Anthurium, named after a famous flower, is a major festival of which of the following states?

(a) Nagaland
(b) Mizoram
(c) Manipur
(d) Arunachal Pradesh

Q108. 0.46 × 137.5 = 63.25 What is the value of 460 × 1.375?

(a) 63.25
(b) 6.325
(c) 632.5
(d) 6325

Q109. The maximum weight lifted by 750 participants are recorded and it is found that the Mean and the Median of this distribution are both more than the Mode. If the Mean and the Median are 184 Kg and 178 Kg respectively, then which of the following is the most likely value of the Mode (in kg).

(a) 168
(b) 172
(c) 162
(d) 166

Q110. Slash and burn agriculture is also known as _____ in Madhya Pradesh.

(a) Jhum
(b) Bewar
(c) Kuruwa
(d) Valre

Q111. Solve: (4 + 2) of 9 - 6 × 2 + 5/5

(a) 45
(b) 44
(c) 41
(d) 43

Q112. Which of the following fractions should be added to 5/9 to obtain 11/6 as the sum?

(a) 1 7/18
(b) 1 1/15
(c) 1 5/18
(d) 1 1/3

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Q113. A is the sister of B and C. D is the father of C. E is the mother of A. Considering these facts, which of the following statements CANNOT be verified?

(a) E is the mother of B.
(b) D is the father of A.
(c) B is E's son.
(d) D is E's husband.

Q114. 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 from the statements

Statements:

All ducks are tigers.

All tigers are monkeys.

All monkeys are cows.

Conclusions:

I. All tigers are cows.

II. All monkeys are ducks.

III. All ducks are cows.

IV. All cows are tigers.

(a) Both conclusions I and II follow.
(b) Both conclusions III and IV follow.
(c) Both conclusions I and III follow.
(d) Conclusions I, II and III follow.

Q115. The Sun temple at Konark, is popularly known as the _____.

(a) White Pagoda
(b) Black Pagoda
(c) Golden Pagoda
(d) Bronze Pagoda

Q116. A sum of money was invested at simple interest at r % per annum for 3 years. Had the rate of interest been (r + 2) %, it would have fetched Rs. 84 more. Find the sum invested.

(a) Rs. 1600
(b) Rs. 1500
(c) Rs. 1200
(d) Rs. 1400

Q117. Researchers from SNM College Maliankara, the MS Swaminathan Research Foundation, and the Payyanur College have reported two new plant species, namely Fimbristylis sunilii and Neanotis prabhuii, from the biodiversity-rich Western Ghat regions in _____.

(a) Thiruvananthapuram and Wayanad districts
(b) Kottayam and Kozhikode districts
(c) Ernakulam and Idukki districts
(d) Alappuzha and Palakkad districts

Q118. x is the smallest six-digit number which, when divided by 20, 21, 22, 24 and 28, the remainder in each case is 5. What will be the quotient when x is divided by 462?

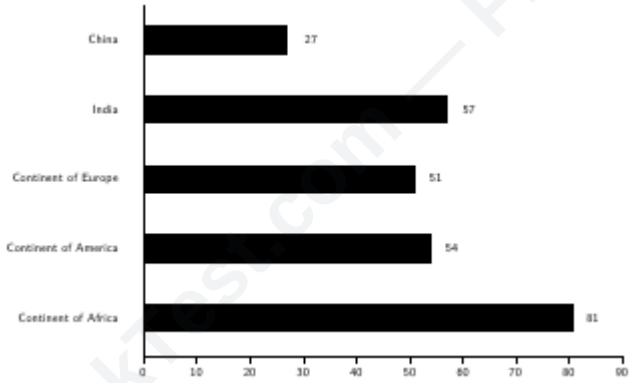
(a) 224
(b) 220
(c) 221
(d) 226

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Q119. In each of the number-pairs, the second number is obtained by performing a certain mathematical operation on the first number. Three of the following pairs follow the same pattern and thus form a group. Select the number-pair that does NOT belong to that group.

(a) 82 - 729
(b) 26 - 125
(c) 50 - 343
(d) 68 - 512

Q120. The following graph represents the number distribution of all the directors in the film industry of country X by their birth origin.



What is the ratio of the number of directors from the continent of America to the total number of directors?

(a) 1 : 6
(b) 1 : 5
(c) 1 : 3
(d) 1 : 4

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) 20 m

Drawing the diagram according to the given information,

1. Rahul left his school and walked 20 m straight towards the north.
2. Then turned left and walked straight for another 20 m.
3. Then left turn again and walked straight for 20 m to reach home.

The shortest distance between the school and his home = 20 m

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Hence, the correct answer is "20 m".

Q2. Answer: (c) Sardar Vallabhbhai Patel

The correct answer is Sardar Vallabhbhai Patel.

Key Points

• National Unity Day:

• The day is also called the Rashtriya Ekta Diwas.

• It was celebrated for the first time on 31st October 2014.

• The is celebrated to commemorate the birth anniversary of Sardar Vallabhbhai Patel.

• The theme for National Unity Day 2020 was Unity in diversity is better than, unity in similarities.

Additional Information

• Sardar Vallabhbhai Patel:

• He was born on 31st October 1875 in Nadiad, Gujarat.

• He is known as the Iron Man of India for playing an important role in the integration and unification of princely states into the Indian union.

• He was the first home minister and deputy prime minister of India.

• He also headed Advisory Committee on Fundamental Rights, Committee on Minorities and Tribal and Excluded Areas and Provincial Constitution Committee in the constituent assembly.

• He was an active part of Kheda Satyagraha in 1918 and Bardoli Satyagraha in 1928.

• He was given the title of Sardar by the Women of Bardoli.

Q3. Answer: (c) 1848 to 1856

The correct answer is 1848 to 1856.

Key Points

• Lord Dalhousie:

• James Andrew Brown-Ramsay also known as Lord Dalhousie.

• He served as governor-general of India from 1848-1856.

• James Outram was made the British Resident of Awadh in place of Sleeman.

• He said that the administration of Awadh is very corrupt and the condition of the people is very contemplative.

• Outram's report was the basis for the annexation of Awadh.

• Lord Dalhousie annexed the Nawab of Awadh, Wajid Ali Shah on February 13, 1856, accusing him of misrule.

• Apart from Awadh, under the principle of Doctrine of Lapse, the merged territories- Satara (1848), Jaitpur and Sambalpur (1849), Udaipur (1852), Jhansi (1853), Nagpur (1854), and Karauli (1855).

• The first attempt towards railway construction in India was made by Lord Dalhousie in 1853 AD.

• It was laid between Bombay to Thane at the time of Dalhousie.

• The last expansion of British Indian territory took place during Dalhousie.

• During his tenure, for the first time, a separate public Works Department was created.

Q4. Answer: (d) A

Given:

1)F lives on floor number 3.

Floor	Lives
6	
5	
4	
3	F
2	
1	

2) B and E live on the floors below F's floor.

Floor	Lives

6	
5	
4	
3	F
2	B/E
1	B/E

3) D lives on a floor that is below A's floor but above C's floor.

(It means D is lives on Fifth floor)

Floor	Lives
6	A
5	D
4	C
3	F
2	B/E
1	B/E

Hence, “A” is the correct answer.

Q5. Answer: (a) Rs. 840

Given:

Total amount = Rs. 1470

Ratio of share of Anant and Mohan = 3 : 4

Calculation:

Let Anant and Mohan get 3x and 4x

According to the question,

3x + 4x = 1470

=> 7x = 1470

=> x = 210

=> 4x = 840

So, Mohan gets Rs. 840

Therefore The amount received by Mohan is Rs. 840.

Q6. Answer: (b) Shillong

The correct answer is Shillong.

Key Points

• Cherry Blossom Festival 2021

• Ambassador of Japan to India, H.E. Satoshi Suzuki, Chief Minister and Conrad K Sangma inaugurated the Cherry Blossom Festival in 2021.

• This festival took place in venues Polo Grounds and Ward’s Lake in Meghalaya.

• Cherry blossoms are also known as Prunus Cerasoides.

Additional Information

• Meghalaya state observed the 44th edition of ‘Wangala’, the festival of 100 Drums Festival in November 2021.

• It is a post-harvest festival of the Garos tribe which is being held every year to honour ‘Saljong’, the Sun God of Garos, which also marks the end of the harvest season.

• Some Popular Festivals of Meghalaya:

• Nongkrem Dance Festival

• Wangala Festival

• Ahaia

• Behdeinkhlam Festival

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• Shad Sukra
• The Meghalaya Cabinet has approved the proposal of the creation of a new district called Eastern West Khasi Hills district.

Q7. Answer: (d) Rs. 1948.80

Given:
Sum = Rs. 32000
Rate = 12%
Time = 6 month
Concept used:
A = P(1 + fracr100)^t
Interest = A - P
A = amount
P = principal or sum
r = rate of interest
t = time
For quarterly interest
Rate = r/4
Time = (4 × t)/12
Calculation:
Interest rate for quarterly = 12/4 = 3%
Time = 4 × (6/12) = 2
So,
A = 32000(1 + 3/100)²
=> A = 32000(103/100)2
=> A = 32000 × (10609/10000)
=> A = 33948.8
So, amount = Rs. 33948.8
Interest = 33948.8 - 32000
=> Rs. 1948.8
Therefore Required interest is Rs. 1948.8.
Shortcut TrickCompound interest on Rs. 32000 for 6 months
=> 32000 (1 + 12/(4 × 100))^(4 × 6/12) - 32000
=> 32000 × 1.03² - 32000
=> Rs. 1948.8
Therefore The compound interest on Rs. 32000 for 6 months at 12% per annum compounded quarterly is Rs. 1948.8.

Q8. Answer: (c) 73

Given:
4, 3, 2 = 21
5, 6, 3 = 52
5, 8, 4 = ?
The logic followed here is:
(1^(st) number)² + (2^(nd) number)² – (3^(rd) number)² = RHS
Now follow the steps:
4, 3, 2 = 21
= 4² + 3² - 2²
= 16 + 9 – 4
= 25 - 4
= 21 = RHS
And,
5, 6, 3 = 52
= 5² + 6² - 3²

= 25 + 36 – 9

= 61 - 9

= 52 = RHS

Similarly,

5, 8, 4 = ?

= $5^2 + 8^2 - 4^2$

= 25 + 64 – 16

= 89 - 16

= 73 = RHS

Hence, "73" is correct answer.

Q9. Answer: (c) 11

Shortcut Trick

Difference in Initial Principal = 91000 − 80000 = Rs. 11000

Suresh annual interest = 24% of 80000 = Rs. 19200

Ramesh annual interest = 20% of 91000 = Rs. 18200

Difference in Annual Interest = 19200 − 18200 = Rs. 1000

Time required to equalize amounts = Principal Difference ÷ Interest Difference = 11000 ÷ 1000 = 11 years

Therefore The correct answer is 11 years.

Alternate Method

Given:

For Suresh: Principal (P1) = Rs. 80000, Rate (R1) = 24% p.a.

For Ramesh: Principal (P2) = Rs. 91000, Rate (R2) = 20% p.a.

Formula Used:

Amount (A) = Principal (P) + Simple Interest (SI)

SI = (P × R × T) ÷ 100

Let the Time be T years.

=> Suresh Amount = 80000 + (80000 × 24 × T) ÷ 100

=> Suresh Amount = 80000 + 19200T

=> Ramesh Amount = 91000 + (91000 × 20 × T) ÷ 100

=> Ramesh Amount = 91000 + 18200T

According to the question, Suresh Amount = Ramesh Amount:

=> 80000 + 19200T = 91000 + 18200T

=> 19200T − 18200T = 91000 − 80000

=> 1000T = 11000

=> T = 11000 ÷ 1000

=> T = 11 years

Therefore The correct answer is 11 years.

Additional Information

Simple Interest Concept

Simple interest is calculated only on the principal amount. Formula: SI = (P × R × T) ÷ 100.

Amount Calculation

The total amount (A) is the sum of the principal (P) and the interest earned (SI). A = P + SI = P(1 + RT/100).

Rate Comparison

When two amounts with different principals and rates equalize, the person with the lower initial principal must have a higher interest rate to bridge the gap.

Q10. Answer: (d) Both I and II follow

• Just as there is a department in the company for every task, a team of experts should be appointed to find out the root cause of mistakes in the accounts of a private limited company and suggest remedial action.

• A thorough investigation of all the employees involved is necessary to find out the root cause of the mistakes in the accounts of the Private Limited Company.

Hence, the correct answer is "Option 4".

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Q11. Answer: (b) 20

Given:

((1111/12 × 13/13 ÷ 23/4) ÷ (7/10 ÷ (3/4 × 12/5)))/(1/4 × 2/3 × 22/5)

Concept used:

Calculation:

((1111/12 × 13/13 ÷ 23/4) ÷ (7/10 ÷ (3/4 × 12/5)))/(1/4 × 2/3 × 22/5)

=> ((143/12 × 16/13 ÷ 11/4) ÷ (7/10 ÷ (3/4 × 7/5)))/(1/4 × 2/3 × 22/5)

=> ((143/12 × 16/13 × 4/11) ÷ (7/10 ÷ 21/20))/(1/4 × 2/3 × 22/5)

=> ((16/3) ÷ (7/10 × 20/21))/(1/4 × 2/3 × 22/5)

=> ((16/3) ÷ (2/3))/(1/4 × 2/3 × 22/5)

=> ((16/3) × (3/2))/(1/4 × 2/3 × 22/5)

=> 8/(1/4 × 2/3 × 12/5)

=> 8/(2/5)

=> 20

Therefore Required answer is 20.

Q12. Answer: (d) The marginal product of a factor input initially rises with its employment level, but after reaching a cert...

The correct answer is The marginal product of a factor input initially rises with its employment level, but after reaching a certain level of employment, it starts falling.

Key Points

• The Law of Variable Proportion is regarded as a key economics concept.

• According to the law of variable proportions, as one factor's amount is raised while the other factors remain constant, the marginal product of that factor will eventually decrease.

• This means that the variable factor's marginal product may increase up to a certain point when it is used, but after that point, it begins to diminish.

• It's possible for the marginal product to turn negative when the variable element is quite abundant.

• The total product will initially increase at a rising pace, then it will increase at a diminishing rate, and finally, there will be a fall in the production rate when the variable factor is increased while keeping all other elements constant.

Important Points

• According to the law of declining marginal productivity, the productivity gained from each subsequent unit produced once a factor of production is improved will only slightly increase from one unit to the next.

Q13. Answer: (b) Percentage of deposits which a bank must keep as cash reserves with the Reserve Bank of India.

The correct answer is Percentage of deposits which a bank must keep as cash reserves with the Reserve Bank of India.

Key Points

• The term "Cash Reserves Ratio" (CRR) refers to the percentage of commercial banks' total deposits that they are required to maintain as cash reserves with the central bank in the form of cash.

• CRR is a rule that is enforced in virtually every country by the Central Bank of that nation and is a crucial tool for monetary policy in order to manage the amount of money in the economy.

• Every commercial bank is required to maintain the CRR rate in accordance with the requirements of the Central Bank, or RBI, which is the minimum percentage of cash deposits (as stated by RBI).

• Each bank's net demand and time obligations are used to calculate the cash reserve ratio rate.

• The sum of the balances in the savings account, current account, and fixed deposit yields the Net Demand and Time Liability.

Important Points

• The domestic currency holdings and deposits with the monetary authorities to claims on other governments, nonfinancial public businesses, the private sector, and other banking institutions make up the ratio of bank liquid reserves to bank assets.

• Deposits from consumers in their current and savings accounts make up the bank's obligations.

• Total fund costs are divided by total fund assets to determine the expense ratio.

Q14. Answer: (b) 39 × 40

Given:

(13)3 + (- 8)3 + (- 5)3

Concept used:

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$A^3 - B^3 = (A - B)(A^2 + AB + B^2)$

$(-A)^3 = -A^3$

Calculation:

(13)3 + (- 8)3 + (- 5)3

=> $(133 - 8^3) - 5^3$

=> $(13 - 8)(13^2 + 13 \times 8 + 8^2) - 125$

=> $5 \times (169 + 104 + 64) - 125$

=> $5 \times 337 - 125$

=> $5 \times (337 - 25)$

=> 5×312

=> 40×39

=> 39×40

Therefore The value of (13)3 + (- 8)3 + (- 5)3 is 39×40.

Q15. Answer: (a) United Arab Emirates

The correct answer is United Arab Emirates.

Key Points

• Astronaut and engineer Nora Al Matrooshi is an Emirati. She will undergo training with NASA Astronaut Group 23 to become a specialist for international missions after being chosen in April 2021.

• She holds a BS from the United Arab Emirates University and is a mechanical engineer by trade.

• The next two astronauts of the United Arab Emirates' space programme were announced on April 10, 2021.

• Additionally, it features Noura al-Matroushi, the nation's first female astronaut.

• The two astronauts' names were revealed on Twitter by Dubai's autocratically-ruled ruler, Sheikh Mohammed bin Rashid Al Maktoum, who also holds the positions of vice president and prime minister.

Important Points

• The class of NASA Astronaut Group 23, often known as "The Flies," was announced on December 6th, 2021, and is expected to report for duty sometime in 2022.

• Seven males and five women were among the twelve astronaut candidates who were chosen.

• Initially scheduled to arrive at the Johnson Space Center in Houston for training in the summer of 2021, the Group 23 Astronaut Candidates will be qualified for future missions to the International Space Station in low Earth orbit aboard NASA or commercial crew vehicles, the Moon via the Artemis programme, and Mars once their roughly two-year training programme is finished.

Q16. Answer: (d) 17

Given:

7 digit number 504x5y3 is divisible by 11

Concept used:

Divisibility law of 11: If the difference of the sum of alternating digits of the number is either a multiple of 11 or 0(zero) [e.g. 2343 is divisible by 11 because (2 + 4) – (3 + 3) = 0, which is zero].

Calculation:

(5 + 4 + 5 + 3) - (0 + x + y) = 0 or multiple of 11

=> 17 - (x + y) = 0 or multiple of 11

=> Here (x + y) can be 6 or 17

From the options, we can say that the value of the sum of x and y is 17

Therefore One of the values of the sum of x and y is 17.

Q17. Answer: (c) 25^(th)

Given:

1) Raghav is standing at the 14th position from the extreme left end and Naresh is at the 16th position from the extreme right end.

2) After interchange their respective positions, Raghav now becomes 23rd from the extreme left end.

=> The total number of persons = Raghav position from left + Raghav position from right - 1

=> The total number of persons = 23 + 16 - 1 = 38

Naresh position from the right:

=> The total number of persons = Naresh position from left + Naresh position from right - 1

=> 38 = 14 + Naresh position from right - 1

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=> Naresh position from right = 38 - 14 + 1 = 39 - 14 = 25

Hence, Naresh position from right is “25”.

Q18. Answer: (b) Kolkata

The correct answer is Kolkata.

Key Points

• Kolkata Port is located on the Hugli river, 128 km inland from the Bay of Bengal.

• Like the Mumbai port, this port was also developed by the British. Kolkata had the initial advantage of being the capital of British India.

• The port has lost its significance considerably on account of the diversion of exports to the other ports

such as Vishakhapatnam, Paradwip and its satellite port, Haldia.

• Kolkata Port is also confronted with the problem of silt accumulation in the Hugli river which provides a link to the sea.

• Its hinterland covers U.P., Bihar, Jharkhand, West Bengal, Sikkim and the north-eastern states.

• Apart from this, it also extends ports facilities to our neighbouring land-locked countries such as Nepal and Bhutan.

Additional Information

• Tuticorin Port:

• Tuticorin Port was also developed to relieve the pressure of Chennai port.

• It deals with a variety of cargo, including coal, salt, food grains, edible oils, sugar, chemicals and petroleum products.

• Kandla Port:

• The Kandla Creek area located 90 kilometres away from the Gulf of Kutch is home to the Port of Kandla.

• It is one of the oldest ports in India and was constructed back in the 1950s following the India-Pakistan partition.

• It was the first export processing port in India.

• Kochi Port:

• It is known as the Queen of the Arabian Sea.

• It was an important spice trading centre on the west coast of India from the 14th century onward and maintained a trade network with Arab merchants from the pre-Islamic era.

• The Kingdom of Cochin became a protectorate of the Portuguese in 1503.

Q19. Answer: (b) 1

Given:

Observations are 60, 68, 70, 72, 74, 76, 78, 80

Concept used:

The following steps are helpful while applying the median formula for ungrouped data.

• Step 1: Arrange the data in ascending or descending order.

• Step 2: Secondly, count the total number of observations 'n'.

• Step 3: Check if the number of observations 'n' is even or odd.

Median Formula When n is Odd

Median = [(n + 1)/2]^(th) term

Median Formula When n is Even

Median = [(n/2)^(th) term + ((n/2) + 1)^(th)term]/2

Calculation:

As the numbers are already in the increasing order so we don't need to arrange them

Now, median = (4^(th)term+5^(th)term)/2

=> (72 +74)/2

=> 73

Now, if 70 is removed the new median will be = 4th term,

=> 74

So, median increased = 74 - 73

=> 1

Therefore Required increased in the median is 1.

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Q20. Answer: (b) Kolannalu

The correct answer is Kolannalu.

Key Points

• One of the most well-known dance narratives in Andhra Pradesh is the "stick dance," also known as "kolannalu" or "kolkolannalu" (also known as "kolattam").

• It is a sort of rural art that is frequently displayed at village festivals. It consists of songs, music, and rhythmic movements.

• The Kolattam ensemble is made up of dancers in pairs, ranging in age from 8 to 40.

• The predominant beat is provided by the sticks. A leader directs the dancers as they move in two circles.

• The artists in the outside circle deliver the strikes, which the inner circle receives on their sticks.

• The dancers essentially move in circles while striking the sticks to the beat of the song.

Important Points

• The older generation of the Nagaland state is mostly responsible for creating the unique genre of music known as neuleu song.

• Villu Paatu, also known as Villadichampaatu, is a traditional kind of musical story-telling that is still practiced in Tamil Nadu, Kerala, and North-East Sri Lanka. Narration and music are intermingled throughout the performance.

• The socio-religious folk dance known as Raas or Dandiya Raas has its roots in Gujarat, India, and is frequently performed during the Navaratri festival.

Q21. Answer: (b) sad

According to the given information

Word	Code
doll	toy
kill	tom
and	sad

‘and’ is coded as "sad".

Hence, 'sad' is the correct answer.

Q22. Answer: (c) 4

According to the question.

Given: Six boys, Mukul, Rajan, Jayant, Suresh, Prakash and Karan, each having different heights.

1) Only three boys are taller than Karan and only three boys are shorter than Prakash.

_ > _ > Prakash > Karan > _ > _

2) Suresh is taller than Rajan but shorter than Karan.

_ > _ > Prakash > Karan > Suresh > Rajan

3) Mukul is not the tallest among all.

_ > Mukul > Prakash > Karan > Suresh > Rajan

4) Only Jayant are left so

Jayant > Mukul > Prakash > Karan > Suresh > Rajan

Hence, “4” boys are shorter than Mukul.

Q23. Answer: (c) 25

Given:

Equation (1) = 3x - 2y - 11 = 0

Equation (2) = x + y = 7

Intersect point = P(α, β)

Concept used:

We will solve the linear equations.

The value of x and y will be the coordinates of intersecting point P.

Calculation:

3x - 2y = 11 ------(i)

x + y = 7 ------(ii)

Multiplying eq (ii) by 3, we get,

3x + 3y = 21 ----(iii)

By solving equation (i) and (ii) we get

5y = 10

=> y = 2

Now putting the value of y in eq (ii) we get,

x = 5,

P (α, β) = P (5, 2)

So, α = 5, β = 2

Now,

(3α + 5β)

=> 3 × 5 + 5 × 2

=> 15 + 10

=> 25

Therefore The value of (3α + 5β) is 25.

Q24. Answer: (b) Biotech-PRIDE

The correct answer is Biotech-PRIDE.

Key Points

• On July 30, 2021, Dr Jitendra Singh, Union Minister of State for Science and Technology, published "Biotech-PRIDE (Promotion of Research and Innovation via Data Exchange) Guidelines."

• They were created by the Ministry of Science and Technology's Department of Biotechnology (DBT).

• The Indian Biological Data Centre, or IBDC, website was also launched by the Minister.

• The Indian Biological Data Centre (IBDC), a Regional Centre for Biotechnology financed by the Department of Biotechnology, will apply the Guidelines.

• This IBDC, which will be dubbed Bio-Grid, will be connected to other existing databases and data centres.

Important Points

• Dr. Jitendra Singh is a politician and doctor from India who was born on November 6, 1956.

• He is the Minister of State (Independent Charge) for the Department of Atomic Energy, the Department of Space, and the Ministry of Science and Technology.

• He is also the Minister of State (Independent Charge) for the Prime Minister's Office, Personnel, Public Grievances, and Pensions, and the Ministry of Earth Science.

Q25. Answer: (d) Rajasthan

The correct answer is Rajasthan.

Key Points

• Mirabai was raised at Merta after being born into a Rathore Rajput royal family in Kudki (the present-day Pali region of Rajasthan).

• Hindu mystic poet Meera, also known as Mirabai and revered as Sant Meerabai, was a follower of Krishna in the 16th century.

• She is revered as a Bhakti saint, especially in the Hindu tradition of North India.

• She is mentioned in Bhaktamal, demonstrating that by around 1600 CE, the Bhakti movement's culture had made her a well-known and cherished figure.

• The majority of stories about Mirabai focus on her brazen contempt for societal and familial norms, her love for Krishna, how she treated Krishna as her spouse, and how her in-laws mistreated her because of her religious fervor.

• She had a strong devotion to Lord Krishna. One of the most prominent proponents of Prema Bhakti (Divine Love) and a gifted poetess, Mirabai.

• She praised Giridhara Gopala (Shri Krishna), her lord, singing in vraja-bhasha, occasionally blended with Rajasthani, for whom she felt the deepest love and devotion.

Q26. Answer: (d) Monday

Arpit's birthday = 10^(th) March 2020, Tuesday.

Arpit's wife's birthday = 25^(th) May 2020

Days between 10^(th) March 2020 - 25^(th) May 2020

→ 21 (March) + 30 (April) + 25 (May)

→ 76 days = 76 ÷ 7 = 6 odd day

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→ Tuesday + 6 = Monday

Hence, "Monday" was Arpit's wife's birthday on 25th May 2020

Q27. Answer: (b) 21^(st) century

The correct answer is 21st century.

Key Points

• Agenda 21:

• Agenda 21 of the Rio Summit 1992 is related to Sustainable Development

• United Nations Conference on Environment and Development(UNCED), also known as the Rio Summit

• It was held in Rio de Janeiro in June 1992

• The summit was convened for addressing the urgent problem of environmental protection and socio-economic development at the global level.

• The Rio convention endorsed global forest principles and adopted agenda 21 for achieving sustainable development in the 21st century.

Additional Information

• UNDP:

• The United Nations Development Programme is an international organization that works to eradicate poverty while protecting the planet.

• UNDP works in about 170 countries and territories, helping to achieve the eradication of poverty and the reduction of inequalities and exclusion.

• They help countries to develop policies, leadership skills, partnering abilities, institutional capabilities, and build resilience in order to sustain development results.

• The headquarter of UNDP is in New York City.

• UNFPA:

• The United Nations Population Fund (UNFPA) is a UN organization formerly known as United Nations Fund for Population Activities.

• Their work involves the improvement of reproductive health including the creation of national strategies and protocols, and providing supplies and services.

• UNODC:

• The United Nations Office on Drugs and Crimes (UNODC) has launched a ‘Lockdown Learners' series of online dialogues with students and educators in India.

• The dialogue is on COVID-19 and its impact on Sustainable Development Goals, peace, and rule of law.

• The aim is to sensitize students on concerns of vulnerable groups and emerging issues such as cybercrime, misinformation, etc.

Q28. Answer: (c) 42 cm

Given:

ABCDEF is a regular hexagon and m(BE) = 14 cm.

Concept used:

The length of a diagonal of a regular hexagon is equal to two times the length of its side.

Perimeter of a regular hexagon = 6 × Length of each side

Calculation:

Here, BE is one of the diagonals of the hexagon ABCDEF.

Hence, the length of each side = 14/2 = 7 cm

Thus, the perimeter of the hexagon = 6 × 7 = 42 cm

Therefore The perimeter of the hexagon is 42 cm.

Q29. Answer: (d) Both I and II together are sufficient

Statements:

(I) William is 15^(th) from the extreme left end of the row.

(II) David is exactly in the middle of the row and there are ten soldiers to his right.

So David rank 11th from the left.

When combining Statement I and II:

soldiers are there between William and David = William rank from right - David rank from right - 1

soldiers are there between William and David = 15 - 11 - 1 = 15 - 12 = 3

So, "3" soldiers are there between William and David

Hence, "Both I and II together are sufficient"

Q30. Answer: (a) Bottom

The correct answer is Bottom.

Key Points

In Microsoft Excel, when you enter text or numbers into a cell, the software applies default alignments for both horizontal and vertical axes. While the horizontal alignment varies (text to the left, numbers to the right), the vertical alignment is set to the Bottom for all types of data by default.

Detailed Breakdown of Alignment

To better understand how Excel handles your data, here are the default settings:

• Vertical Alignment: Always Bottom. This means the text "sits" at the base of the cell.

• Horizontal Alignment (Text): Left.

• Horizontal Alignment (Numbers): Right. This helps when aligning decimal points in a column of figures.

Changing the Alignment

You can modify these settings by navigating to the Home tab and looking in the Alignment group. The vertical options include:

• Top Align: Aligns text to the top edge.

• Middle Align: Centers text between the top and bottom edges.

• Bottom Align: The default setting.

Important Points

• A group of cells arranged in rows and columns is referred to as a worksheet in Excel documents.

• It is the work surface that you use to input data.

• Each worksheet functions as a massive table for organizing data with 1048576 rows and 16384 columns.

• A workbook typically has numerous worksheets with connected content, but only one of them is open at any given moment.

Q31. Answer: (b) Dharavi

The correct answer is Dharavi.

Key Points

• Dharavi is a locality in Mumbai, Maharashtra, India, considered to be one of Asia's largest slums.

• Dharavi has an area of just over 2.1 square kilometres and a population of about 1,000,000.

• With a population density of over 277,136/km2, Dharavi is one of the most densely populated areas in the world.

• The Dharavi slum was founded in 1884 during the British colonial era.

• It grew because of the expulsion of factories and residents from the peninsular city centre by the colonial government and from the migration of rural Indians into urban Mumbai.

• For this reason, Dharavi is currently a highly diverse settlement religiously and ethnically.

• Dharavi has an active informal economy in which numerous household enterprises employ many of the slum residents as leather, textiles, and pottery products are among the goods made inside Dharavi.

• Dharavi has suffered from many epidemics and other disasters, including a widespread plague in 1896 which killed over half of the population of Mumbai.

• Sanitation in the slums remains poor.

Q32. Answer: (c) Ganesh

The pattern followed here is,

Let,

“×” means does not sit with

“+” means sit with

Given:

There are two benches A and B and one chair.

Three persons can sit on each of these benches and one on the chair.

Seven persons, Aman, Bhaskar, Chetan, Dablu, Ekta, Fauzia, and Ganesh

(i) Fauzia does not sit on the same bench as Dablu.

• Fauzia × Dablu

(ii) Ekta does not sit on the same bench as Dablu.

• Ekta × Dablu

(iii) Chetan can sit with Aman but not with Ganesh.
• (Chetan + Aman) × Ganesh
(iv) Aman can sit with Dablu but not with Bhaskar or Ganesh.
• (Aman + Dablu) × Bhaskar or Ganesh
(v) Ganesh does not sit on the same bench as Fauzia.
• Ganesh × Fauzia
From Point (iii) and (iv) we get,
Chetan, Dablu and Aman sit on same bench

Bench A	Bench B	Chair
Chetan + Dablu + Aman	Fauzia / Ekta / Bhaskar / Ganesh	Fauzia / Ekta / Bhaskar / Ganesh

But from Point (v) Ganesh does not sit on the same bench as Fauzia.
So,

Bench A	Bench B	Chair
Chetan + Dablu + Aman	Fauzia + Ekta + Bhaskar	Ganesh

Hence, “Ganesh” is sitting in the chair.

Q33. Answer: (b) 28 km

Given:
Julie can cover a distance of 140 m 18 seconds
Concept used:
Speed = Distance/Time
Speed in m/sec = Speed in km/h × 5/18
Calculation:
Julie's speed in m/sec = 140/18
=> 70/9 m/sec
Now, according to the concept,
Julie's speed in km/h = (70/9) × (18/5)
=> 28 km/h
Therefore Julie can cover 28 km in 1 hour.
Shortcut Trick Use unitary method to solve the Question.
=> In 18 sec Julie covers = 140m
=> In 1 sec Julie covers = 140/18
=> In 1 hour (3600 sec) Julie covers = (140/18) × 3600
Therefore Distance covered in 1 hr = 28000m = 28km

Q34. Answer: (c) Saturday

Given that,
2^(nd) February 2007 is a Friday.
2nd February 2007 + 365 days = 2nd February 2008 (since 2008 is a leap year but we are counting only up to 2nd February)
365 days = 1 odd day
Therefore, 2^(nd) February 2008 is Saturday.
Hence, the correct answer is "Saturday".
Additional Information
Year - One year has 365 days or 366 days on this basis the year is divided into two parts:
• Normal year - It has 365 days.
• Leap year - It has 366 days and is completely divisible by 4.
Century leap year - The year which is exactly divisible by 400. Example - 1200, 1600, 2000 etc.
Counting Odd days
Ordinary Year: 365 days (52 weeks + 1 day)
= 1 Odd days

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Leap Year: 366 days (52 weeks + 2 days)

= 2 Odd days

Q35. Answer: (b) 40 km

Given:

Speed of the car = 50 km/h

Speed of the bicycle = 10 km/h

Total time = 2 hours 24 minutes or 12/5 hours [Because 1 hour = 60 min]

Concept used:

Time = Distacne/speed

Calculation:

Let the distance of one way be 100x km

According to the question,

100x/50 + 100x/10 = 12/5

=> 2x + 10x = 12/5

=> 12x = 12/5

=> 60x = 12

=> x = 12/60

=> x = 0.2

So, distance of one way = 100 × 0.2

=> 20 km

So, total distance = 20 × 2 = 40 km

Therefore The total distance that she covered was 40 km.

Shortcut Trick

D = { 2ab/(a+b) } × T = { 2 × 50 × 10/(50 + 10) } × 12/5 = 40 km

Q36. Answer: (a) Ravi Shankar

The correct answer is Ravi Shankar.

Key Points

• Ravi Shankar (Indian musician, player of the sitar, composer)

• Ravi Shankar gave up dancing at the age of 18.

• For the next seven years, he studied the sitar under the noted musician Ustad Allauddin Khan.

• He served as music director of All-India Radio from 1948 until 1956.

• He won Grammy Awards for the albums "West Meets East (1966)", "The Concert for Bangladesh (1971)", and "Full Circle (2001)".

• Two months after his death, Shankar won a fourth Grammy Award, for an intimate collection of ragas titled "The Living Room Sessions Part 1".

• He was the founder of the National Orchestra of India.

Additional Information

• Mamata Shankar

• Mamata Shankar is an Indian actress and dancer.

• She is known for her work in Bengali cinema.

• Ananda Shankar

• Ananda Shankar was an Indian musician, singer, and composer.

• Best known for fusing Western and Eastern musical styles.

• Uday Shankar

• Uday Shankar was an Indian dancer and choreographer.

• Known for creating a fusion style of dance, adapting European theatrical techniques to Indian classical dance.

• In 1962, he was awarded the Sangeet Natak Akademi Fellowship for lifetime achievement.

• In 1971, the Govt. of India, awarded him its second-highest civilian award the Padma Vibhushan.

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Q37. Answer: (a) Robert Lewandowski

The correct answer is Robert Lewandowski.

Key Points

• Bayern Munich's Polish striker Robert Lewandowski has won the FIFA Best Men's Player award for 2021.

• Barcelona's Spanish midfielder Alexia Putellas won the FIFA Best Women's Player prize.

• They were awarded on 17 January 2022.

• Chile and Olympique Lyonnais' Christiane Endler was named The Best Women's Goalkeeper.

• The Puskas Award for Best Goal of the Year was won by Argentine Erik Lamela.

• Chelsea won both the awards for the best coach, with Thomas Tuchel winning the men's award and Emma Hayes named the best women's coach.

• Robert Lewandowski:

• Additional Information

• Lucy Bronze won The Best FIFA Women's Player of the year 2020.

• Some famous football players of India - Sunil Chhetri, Bhaichung Bhutia, Pronay Halder, Sandesh Jhingan, Gurpreet Singh Sandhu.

Q38. Answer: (c) Irish Constitution

The correct answer is Irish Constitution.

Key Points

• DPSP

• Part IV of the Indian Constitution deals with the Directive Principles of State Policy(Article 36 to 51).

• Directive Principles of State Policy (DPSP) of the Indian Constitution was influenced by a similar feature of the Irish Constitution. Hence, Option 4 is correct.

• Dr B R Ambedkar called DPSP "Novel features of the Indian constitution".

• K.T Shah called DPSP as "A cheque on a bank payable at the convenience of the bank".

• Directive Principles deal with economic, social, and cultural rights.

• Directive Principles are non-justiciable (Article 37).

• Sapru committee incorporated the Directive Principles of State Policy into the Indian constitution.

Additional Information

Borrowed features of Indian Constitution

Taken From	Feature
French Constitution	• The Principles of Liberty, Equality, and Fraternity of the Indian Constitution are borrowed from the French constitution.
Canadian Constitution	• Federation with a strong center. - Residuary powers. - Union and state lists. - Advisory jurisdiction of the Supreme Court.
American Constitution	• Judicial Review. - Fundamental Rights. - Impeachment of the President. - Preamble. - Functions of the vice president.
British Constitution	• Parliamentary Government - Single Citizenship - Rule of law - Writs - Speaker and his/her role - Law Making Procedure
Australian Constitution	• Freedom of Trade and Commerce. - Joint sitting. - Concurrent list.
Japanese Constitution	• The procedure established by Law

Q39. Answer: (c) Lord Dalhousie

The correct answer is Lord Dalhousie.

Key Points

• The chief instrument through which Lord Dalhousie implemented his policy of annexation was the 'Doctrine of Lapse'.

• Under the Doctrine of Lapse, when the ruler of a protected state died without a natural heir, his/her state was not to pass to an adopted heir as sanctioned by the age-old tradition of the country.

• Lord Dalhousie came to India as the Governor-General in 1848.

• Lord Dalhousie was keen on annexing the kingdom of Avadh.

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Additional Information

• Lord Auckland

• Auckland was appointed Governor-General in the year 1836.

• George Eden, earl of Auckland served from 1836 to 1842.

• The first Anglo-Afghan war was fought during his tenure.

• He is known for expansion of the commercial industry in India.

• Lord William Bentinck (1828-1835):

• During his tenure as Governor- General following were the various events that took place:

• Abolition of sati and other cruel rites (1829).

• Suppression of thugi (1830).

• Charter Act of 1833.

• Resolution of 1835, and educational reforms and introduction of English as the official language.

• Annexation of Mysore (1831), Coorg (1834) and Central Cachar (1834).

• Treaty of 'perpetual friendship with Ranjeet Singh.

• Abolished the provincial court of appeal and circuit.

Q40. Answer: (d) Only conclusion II follows

Statements:

All pens are pencils.

Some pens are books.

Venn diagram:

Conclusions:

I. All books are pens → False (As some pens are books so all books are pens is possible but not definite)

II. Some pencils are books → True (As some pens are books and all pens are pencils so definitely some pencils are books)

Hence, “Only conclusion II follows” is the correct answer.

Q41. Answer: (d) government

The correct answer is government.

Key Points

• In the Fixed Exchange Rate System, the government fixes the exchange rates at a particular level.

• A fixed exchange rate is a system used by a government or central bank that links the value of the nation's official currency to the currency of another nation or the price of gold.

• A fixed exchange rate system's goal is to maintain a currency's value within a specific range.

• Fixed exchange rates assist the government to maintain low inflation and provide exporters and importers more security.

• In the early 1970s, the floating exchange rate system was adopted by several industrialized countries.

Important Points

• For importers and exporters, fixed rates increase predictability.

• Fixed rates also assist the government in maintaining low inflation, which over time helps to keep interest rates low and promotes investment and commerce.

• The majority of large industrialized countries have had floating exchange rate systems, where the price of a currency is determined by the global market rate (forex).

Q42. Answer: (d) 13

Given:

11 -digit number 88p554085k6 is divisible by 72

$k \neq p$

Concept used:

Divisibility Rule of 8 = If the last three digits of a number are divisible by 8, then the number is completely divisible by 8

Divisibility Rule of 9 = If the sum of digits of the number is divisible by 9, then the number itself is divisible by 9

Calculation:

=> $72 = 8 \times 9$

So, the number must be divisible by both 8 and 9

Now,

5k6 is divisible 8

Here possible values of k can be 3, 7

Now,

=> 8 + 8 + p + 5 + 5 + 4 + 0 + 8 + 5 + 3 + 6 = 52 + p is divisble by 9

So, p = 2

=> 8 + 8 + p + 5 + 5 + 4 + 0 + 8 + 5 + 7 + 6 = 56 + p is divisble by 9

So, p = 7

Now, 7 cannot be a possible value of p [Because k ≠ p]

So, p = 2

Now,

=> (3k + 2p) = 3 × 3 + 2 × 2

=> 9 + 4

=> 13

Therefore The required answer is 13.

Q43. Answer: (d) Pink

The correct answer is Pink.

Key Points

• Singer Pink was honoured with the Icon Award at the 2021 Billboard Music Awards in May 2021.

• At the 2021 Billboard Music Awards, singer Pink received the Icon Award (BBMAs).

• The prize aims to honour musicians who have made an enduring contribution to music while enjoying success on the Billboard charts.

• Along with Neil Diamond, Stevie Wonder, Prince, Jennifer Lopez, Celine Dion, Cher, Janet Jackson, Mariah Carey, and Garth Brooks, Pink is the latest honoree.

Important Points

• Pink (stylized as Pink) is the stage name of Alecia Beth Moore, an American singer, songwriter, actress, and dancer.

• She formerly belonged to the female group Choice. Pink received a solo recording contract from LaFace Records in 1995 when they recognised her talent.

• Her R&B-influenced debut studio album Can't Take Me Home (2000) earned double platinum status in the US and produced the top ten singles "There You Go" and "Most Girls" on the Billboard Hot 100.

Additional Information

• At the Microsoft Theater in Los Angeles, California, on May 23, 2021, the 2021 Billboard Music Awards were presented. Nick Jonas served as the ceremony's host, and it was live-streamed from NBC.

• On April 28, 2021, the finalists for the Top Hot 100 Artist, Top Latin Male Artist, and Top Rap Female Artist awards were revealed. On April 29, 2021, the entire list of nominations was announced.

• Mariah Carey is an American actress, singer, songwriter, record producer, and actress.

• She is recognised for her five-octave vocal range, melismatic singing style, and distinctive usage of the whistle register.

• She is also referred to as the "Songbird Supreme" and the "Queen of Christmas."

• J.Lo, commonly referred to as Jennifer Lynn Lopez, is an American dancer, actor, and singer.

• American country music performer and songwriter Troyal Garth Brooks.

Q44. Answer: (b) Article 226

The correct answer is Article 226.

Key Points

• The High Court's power to issue writs is mentioned under Article 226.

• A High Court is authorized to issue directives, orders, or writs under Article 226 for the enforcement of a Fundamental Right as well as for any other reason, including writs of habeas corpus, mandamus, prohibition, quo warranto, and certiorari.

• While exercising its judicial review authority, the High Court does not serve as an appellant body.

• It is concerned with the unlawfulness, irrationality, and improper procedural conduct of a state or statutory authority's order.

Important Points

• According to Article 233 of the Constitution, anyone who is not currently employed by the Union or the State may be appointed as a district judge only if they have not served as an advocate or a pleader for less than seven years and are nominated for appointment by the High Court.

• Article 230 in The Indian Constitution: Extension of jurisdiction of High Courts to Union territories

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• While Section 28 of the RTI Act gives the Chief Justice of the High Court the authority to adopt rules to carry out the RTI Act's provisions, Article 225 of the Indian Constitution grants the High Court the authority to make rules on proceedings and other matters related to the High Court.

Q45. Answer: (c) New Delhi

The correct answer is New Delhi.

Key Points

• The International Conference on Soil and Water Resources Management for Climate was organised in November 2019 in New Delhi to deliberate on the various issues and challenges of soil and water conservation.

• The five-day "International Conference on Soil and Water Resources Management for Climate Smart Agriculture and Global Food and Livelihood Security" was launched at the National Agricultural Science Centre Complex in New Delhi by Dr Trilochan Mohapatra, Secretary (DARE) & Director General (ICAR).

• With the aim of discussing the various problems and difficulties associated with soil and water conservation, the conference was jointly organised by the Soil Conservation Society of India, World Association of Soil and Water Conservation (WASWAC), China and the International Soil Conservation Organization (ISCO), United States.

Important Points

• In order to protect productive and sustainable agriculture, Dr. Mohapatra addressed his concerns regarding the deterioration of soil and water resources.

• According to him, the steadily rising temperature of the climate is a serious issue since it has a profound impact on human life.

• He believed that the catastrophic climate changes were primarily caused by numerous human activities.

• He also advised people to take a number of steps to lessen the effects of climate change.

Q46. Answer: (b) 48π

Given:

An equilateral triangle of side 12 cm is inscribed in a circle.

Concept used:

Circumradius of an equilateral triangle = A/√3 unit (A being the length of each side of it)

Area of a circle = πr^2

Where r = radius of the circle

Calculation:

Since the equilateral triangle is inscribed in the circle, we can conclude that the circle is circumscribed around the equilateral triangle.

Hence, the circumradius of the equilateral triangle = 12/√3 cm

Thus, the area of the circle = $\pi \times (12/\sqrt{3})^2 = 48\pi$ cm²

Therefore The area of the circle is 48π cm².

Q47. Answer: (b) 60

The correct answer is 60.

Key Points

• Article 60 of the Indian Constitution tells about the Oath and Affirmation of the President of India.

• Oath or Affirmation by the President:- Before entering his office, the President has to make and subscribe to an oath or affirmation. In his oath, the President swears:

• To faithfully execute the office.

• To preserve, protect and defend the Constitution and law.

• To devote himself to the service and well-being of the people of India.

• President makes and subscribes to an oath in the presence of the Chief Justice of India.

Additional InformationSome Important Articles related to the President of India

Article	Consists of
Article 52	States about The president of India in the constitution.
Article 53	The executive power of the union.
Article 54	Election of the president.
Article 55	Manner of the election of the president.

Article 56	Term of office of president.
Article 57	Eligibility of re-election.
Article 58	Qualification for the election of the president.
Article 59	Conditions of the president's office.
Article 60	Oaths or affirmation by the president.
Article 61	States the procedure for the impeachment of the president.
Article 62	Time of holding an election to fill the vacancy of the office of president and the term of office of the person elected to fill a casual vacancy.

Q48. Answer: (c) Lysosomes

The correct answer is Lysosomes.

Key Points

• Lysosomes:

• These are membrane-bound vesicular structures formed by the process of packaging in the Golgi apparatus.

• These are also called "Suicidal bags" because of their phagocytic activity. Lysosome keeps the cell clean by digesting any foreign material as well as worn-out cell organelles.

• If any cell or cell organelle gets damaged, the lysosome digest the damaged cell or cell organelle by the application of hydrolytic enzymes (hydrolases – lipases, proteases, carbohydrates)

Additional Information

• Golgi body

• Cells synthesize a large proteins and lipids.

• The Golgi apparatus is integral in modifying, sorting, and packaging these macro molecules for cell secretion.

• The Golgi apparatus is an organelle found in most Eukaryotic cells.

• It is also a major site of carbohydrate synthesis.

• Mitochondria

• Mitochondria (sing.: mitochondrion), unless specifically stained, are not easily visible under the microscope.

• The number of mitochondria per cell is variable depending on the physiological activity of the cells.

• In terms of shape and size also, a considerable degree of variability is observed.

• Typically it is sausage-shaped or cylindrical having a diameter of 0.2-1.0µm (average 0.5µm) and length 1.0-4.1µm.

• Each mitochondrion is a double membrane-bound structure with the outer membrane and the inner membrane dividing its lumen distinctly into two aqueous compartments, i.e., the outer compartment and the inner compartment

• Both mitochondria and plastid possess their own genetic material and ribosomes and thus, they are called as semi-autonomous organelles.

• The mitochondrial DNA and plastid DNA possess genes which produce the proteins necessary for the functioning of mitochondria and plastids respectively.

• Chloroplast

• The chloroplast is a double membrane-bound cell organelle.

• Out of the two membranes, the inner membrane is relatively less permeable. (the outer membrane contains porins).

• The space limited by the inner membrane is called the stroma.

• Chloroplasts contain chlorophyll and carotenoid pigments which are responsible for trapping of light energy essential for photosynthesis.

• The majority of chloroplasts are found in the mesophyll cells of the leaves.

Q49. Answer: (b) cannot be enforced by any court

The correct answer is cannot be enforced by any court.

Key Points

• DPSP

• Part IV of the Indian Constitution deals with the Directive Principles of State Policy(Article 36 to 51).

• Directive Principles of State Policy (DPSP) of the Indian Constitution was influenced by a similar feature of the Irish Constitution.

• Dr B R Ambedkar called DPSP "Novel features of the Indian constitution".

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• K.T Shah called DPSP as "A cheque on a bank payable at the convenience of the bank".
• Directive Principles deal with economic, social, and cultural rights.
• Directive Principles are non-justiciable (Article 37).
• Sapru committee incorporated the Directive Principles of State Policy into the Indian constitution.

Q50. Answer: (c) 10

Given:
49 - [35 + {12 ÷ 3 of (6 + 7 - 12)}]
Concept used:
Calculation:
49 - [35 + {12 ÷ 3 of (6 + 7 - 12)}]
=> 49 - [35 + {12 ÷ 3 of (6 - 5)}]
=> 49 - [35 + {12 ÷ 3 of 1}]
=> 49 - [35 + {12 ÷ 3}]
=> 49 - [35 + {12 ÷ 3}]
=> 49 - [35 + 4]
=> 49 - 39
=> 10
Therefore Required answer is 10.

Q51. Answer: (d) 77

Decoding the information,

Sign	Q	J	T	K
Means	•	×	•	÷

Given:
52 K 4 Q 6 J 12 T 8
After replacing the signs from left to right and using the BODMAS rule,
= 52 ÷ 4 + 6 × 12 - 8
= 13 + 6 × 12 - 8
= 13 + 72 - 8
= 85 - 8
= 77
Hence, “77” is the correct answer.

Q52. Answer: (b) 9 days

Shortcut Trick
Total work = LCM(18, 30) = 90 units.
Efficiency of X = 5, Efficiency of Y = 3.
Z is 50% more efficient than Y => Z's efficiency = 3 + 1.5 = 4.5.
Work by (Y + Z) in 4 days = 4 × (3 + 4.5) = 30 units.
Remaining work (90 − 30 = 60 units) is done by (X + P) in 4 days => Efficiency of P = (60 ÷ 4) − 5 = 10.
Time taken by P alone = 90 ÷ 10 = 9 days.
Therefore The correct answer is 9 days.
Alternate Method
Given:
Time taken by X = 18 days
Time taken by Y = 30 days
Z is 50% more efficient than Y.

Person	Days	Total Work	Efficiency
X	18	90	5
Y	30	3	

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Calculations:

=> Efficiency of Z = Efficiency of Y + (50% of Efficiency of Y)

=> Efficiency of Z = 3 + (0.5 × 3) = 4.5 units/day

=> Y and Z started the work and left after 4 days.

=> Work completed by Y and Z = 4 × (Efficiency of Y + Efficiency of Z)

=> Work completed by Y and Z = 4 × (3 + 4.5) = 4 × 7.5 = 30 units

=> Remaining work = Total Work − Work completed

=> Remaining work = 90 − 30 = 60 units

=> This remaining work is completed by X and P in 4 days.

=> Combined efficiency of X and P = Remaining work ÷ Time

=> Combined efficiency of X and P = 60 ÷ 4 = 15 units/day

=> Efficiency of P = Combined efficiency − Efficiency of X

=> Efficiency of P = 15 − 5 = 10 units/day

=> Time taken by P alone to complete the original work = Total Work ÷ Efficiency of P

=> Time taken by P = 90 ÷ 10 = 9 days

Therefore The correct answer is 9 days.

Additional Information

Efficiency and Time

The time taken by a person to complete a piece of work is inversely proportional to their efficiency. Higher efficiency results in lesser time taken.

Total Work Concept

Total Work can be assumed as the Least Common Multiple (LCM) of the given individual times to simplify efficiency calculations. Total Work = Efficiency × Time.

Work and Wages

Wages are distributed in direct proportion to the amount of total work completed by each individual, or their efficiency if they work for the same number of days.

Pipes & Cisterns

Functions identically to Time & Work problems, with the exception that outlet pipes or leaks are treated as negative efficiency.

Q53. Answer: (b) 7.7%

The correct answer is 7.7%.

Key Points

• According to the Ministry of Fisheries (2020), India contributes about 7.7% to global fish production.

• India ranks fourth in the world for exports of fish products and provides 7.7% of the world's fish production.

• The industry planned to raise farmers' incomes by boosting output and productivity, enhancing quality, and lowering waste.

• Considering that the centrally sponsored program "Blue Revolution," which debuted in December 2015, had greatly aided the growth of the industry.

• In 2018–19, the Fisheries sector made up roughly 1.24 percent of the country's GVA and 7.28 percent of the agricultural GVA.

Important Points

• On November 21, 2020, in the NASC Complex, Pusa, New Delhi, the Department of Fisheries, Ministry of Fisheries, Animal Husbandry, and Dairying, Government of India, celebrated "World Fisheries Day."

• The "Pradhan Mantri Matsya Sampada Yojana" (PMMSY) was introduced by Prime Minister Shri Narendra Modi on September 10, 2020, with an expected investment of Rs. 20,050 crores for a five-year period, from 2020–2021 to 2024–2025.

• By 2024–2025, PMMSY hopes to increase fish production to 22 million metric tonnes (MMT) and offer an additional 55 lakh people employment opportunities.

Q54. Answer: (a) 12.9

Concept used:

Prime number: A prime number is a number that can be divided only by one and the number itself.

Example - 2, 3, 5, ..etc.

Formula used:

The arithmetic mean = Sum of all terms/ Number of terms

Calculation:

According to the question,

First 10 prime numbers = 2, 3, 5, 7, 11, 13, 17, 19, 23, 29

The arithmetic mean = (2 + 3 + 5 + 7 + 11 + 13 + 17 + 19 + 23 + 29)/10

=> 129/10 = 12.9

The arithmetic mean of the first ten prime numbers is 12.9.

Q55. Answer: (c) B is sitting to the immediate right of G.

Seven friends A, B, C, D, E, F and G are sitting facing the centre in a circular position.

1) F is sitting to the immediate right of C.

2) C is sitting at the second position to the right of G.

3) B is an immediate neighbour of both D and E.

4) E is sitting at the third position to the right of A.

Now check all the options,

Option (1): C is sitting at the third position to the right of D → True

Option (2): A is sitting to the immediate left of C → True

Option (3): B is sitting to the immediate right of G → False (B is sitting to the immediate right of E)

Option (4): E is sitting at the third position to the left of G → True

Hence, “Option (3)” is the correct answer.

Q56. Answer: (c) Odisha

The correct answer is Odisha.

Key Points

• The Paika Naach or Paika Nritya is a well-known Orissan dancing style from the Khurda district.

• It is an intense dance performance that calls for a lot of vigour and energy.

• It has been a staple of Orissa since the dawn of time and is now an integral component of the state's well-known celebrations.

• The Paika dance, performed by the Munda tribe in the Jharkhand region of Mayurbhanj, is well-known.

• It is a distinctive folk dance that embodies martial arts.

• The dance plays a significant role in weddings, Dussehra, and numerous other festivities.

Important Points

• Odissi is one of the most well-known Indian classical dance forms, along with Bharatanatyam, Kuchipudi, Kathak, Kathakali, and Manipuri.

• It is indigenous to Orissa in eastern India and adheres to the Natya-tenets. shastra's Odissi emphasises sinuous postures and is energized by various heights and hops, sharing a basic pattern with Bharatanatyam. It is primarily a female dance.

Additional Information

States	Dance forms
Kerala	Kathakali, Mohiniyattam, Theyyam, Ottamthullal, Kutiyattam, and Nangiar
Tamil Nadu	Bamber dance, Bharatanatyam, Bommalattam or puppet show, Chakkai Attam, Devaraattam and Kamandi or Kaman Pandigai
Manipur	Manipuri, Pung Cholom or Drum Dance, Luivat Pheizak Dance, Shim Lam Dance, Thang ta Dance and Ras Leela

Q57. Answer: (d) South-west

Given:

1. Rekha was standing facing the east.

2. Then turned 90 degrees right.

3. Then turned 45 degrees in the anti-clockwise direction.

4. Then turned 90 degrees clockwise.

According to the given information, we get the following figure

Therefore, the direction Rekha is facing right now is South - West.

Hence, the correct answer is "South - West".

Q58. Answer: (c) 3√7 cm

Shortcut Trick

In an equilateral triangle, altitude = (√3 ÷ 2) × side = (√3 ÷ 2) × 12 = 6√3 cm.

Angle bisector CD is also the altitude and median, making BD = 12 ÷ 2 = 6 cm.

Since E is the midpoint of CD, DE = 6√3 ÷ 2 = 3√3 cm.

Using Pythagoras theorem in right ΔBDE: BE = √(BD² + DE²) = √(6² + (3√3)²).

BE = √(36 + 27) = √63 = 3√7 cm.

Therefore The correct answer is 3√7 cm.

Alternate Method

Given:

Side of equilateral ΔABC = 12 cm.

CD is the bisector of angle C meeting AB at D, and E is the mid-point of CD.

Formula Used:

Altitude of equilateral triangle = (√3 ÷ 2) × side

Pythagoras Theorem: Hypotenuse² = Base² + Perpendicular²

A

B

C

D

E

6 cm

6 cm

3√3 cm

3√3 cm

?

Calculations:

In an equilateral triangle, the angle bisector is also the median and altitude to the opposite side.

=> ΔCDB is a right-angled triangle at D.

=> BD = AB ÷ 2 = 12 ÷ 2 = 6 cm

=> CD = (√3 ÷ 2) × 12 = 6√3 cm

Since E is the midpoint of CD:

=> DE = CD ÷ 2 = 6√3 ÷ 2 = 3√3 cm

Now, applying Pythagoras theorem in right-angled ΔEDB:

=> BE² = BD² + DE²

=> BE² = 6² + (3√3)²

=> BE² = 36 + 27 = 63

=> BE = √63 = √(9 × 7) = 3√7 cm.

Therefore The correct answer is 3√7 cm.

Additional Information

Equilateral Triangle Properties

In an equilateral triangle, all three sides are equal, and each angle is 60°. The altitude, median, angle bisector, and perpendicular bisector drawn from any vertex are exactly the same line.

Altitude Formula

The length of an altitude (h) in an equilateral triangle of side 'a' is given by the formula h = (√3 ÷ 2) × a.

Pythagoras Theorem

In a right-angled triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides: H² = P² + B².

Q59. Answer: (c) Rajnath Singh

The correct answer is Rajnath Singh.

Key Points

• The Lok Sabha passed the Essential Defence Services Bill, 2021 on 3 August 2021.

• The bill seeks to replace the ordinance promulgated in June 2021 and allows the central government to prohibit strikes,

lock-outs, and lay-offs in units engaged in essential defense services.

• The prohibition order will remain in force for six months and may be extended by another six months.

Additional Information

• Key features of the Bill include:

• Essential defence services:

• Essential defence services include any service in: (i) any establishment or undertaking dealing with the production of goods or equipment required for defence-related purposes, or (ii) any establishment of the armed forces or connected with them or defence.

• Public utility service: The Bill amends the Industrial Disputes Act, 1947 to include essential defence services under public utility services.

• Strikes: Under the Bill, the strike is defined as cessation of work by a body of persons acting together.

• Prohibition on strikes, lock-outs, and lay-offs: Under the Bill, the central government may prohibit strikes, lock-outs, and lay-offs in units engaged in essential defence services.

Q60. Answer: (c) OTJ

The logic here is,

WLX : SHT

And,

FGJ : BCF

Similarly,

? : KPF

Hence, "OTJ" is the correct answer.

Q61. Answer: (a) 14

Given:

Length and the height of a cuboid are 18 m and 12 m respectively

Volume = 3024 m3

Concept used:

Volume of a cube = (l × b × h)

l = length

b = breadth

h = height

Calculation:

Let the breadth be b m

Now,

18 × 12 × b = 3024

=> 216b = 3024

=> b = 3024/216

=> b = 14

So, breadth of the cuboid = 14 m

Therefore Its breadth (in m) 14.

Q62. Answer: (d) 29

Given:

• In a class consisting of 67 students.

• Teena ranked 12th from the top and her friend Rishabh ranked 26th from the bottom.

Rishabh rank from the top:

=> Total students = Rishabh rank from top + Rishabh rank from the bottom - 1

=> 67 = Rishabh rank from top + 26 - 1

=> Rishabh rank from top = 67 - 25 = 42

Students ranked between Teena and Rishabh:

=> Students ranked between Teena and Rishabh = Rishabh rank from top - Teena rank from top - 1

=> Students ranked between Teena and Rishabh = 42 - 12 - 1 = 42 - 13 = 29

Hence, "29" Students ranked between Teena and Rishabh.

Q63. Answer: (d) Swarna Jayanti Shahari Rozgar Yojana

The correct answer is Swarna Jayanti Shahari Rozgar Yojana.

Key Points

• On December 1st, 1997, the Swarna Jayanti Shahari Rozgar Yojana (SJSRY) programme was implemented in India.

• The programme encourages the creation of self-employment projects or the provision of pay employment in an effort to give the underemployed and the poor in metropolitan areas to access to productive employment.

• Cost-sharing between the Center and the States in the ratio of 75:25 is being used to implement the SJSRY system.

• Only 50,000 urban poor people receive benefits under SJSRY, self-employment due to the inadequate allocations for the programme, which benefits roughly 2 lakh urban poor people under skill development.

Important Points

• Considering that the number of the urban poor was predicted to be 81 million in 2004–2005 and that the Nationwide Council on Skill Development has set a national aim of 500 million people to be skill-trained by 2022, the target under skill development for the urban poor is quite low.

• The SJSRY was discontinued in 2013 in favour of the National Urban Livelihood Mission (NULM), which is now known as the Deendayal Antyodaya Yojana - National Urban Livelihoods Mission (DAY-NULM).

• Both are merely job programmes designed to let urban poor people work for themselves and for pay. For urban areas, there is no MGNREGA-style employment guarantee programme as of 2022.

Q64. Answer: (b) Ajay Kumar

The correct answer is Ajay Kumar.

Key Points

• The Appointments Committee of the Cabinet (ACC) has given the additional charge of Secretary of Department of Defence Production to the Defence Secretary Dr Ajay Kumar (IAS).

• Defence Ministry has formulated a draft Defence Production and Export Promotion Policy 2020 (DPEPP-2020).

• The policy aims to provide impetus to self-reliance in defence manufacturing under the Atmanirbhar Bharat Scheme.

• Its 1st goal is to achieve a turnover of Rs. 1,75,000 core including export of Rs. 35,000 Crore in the Aerospace and Defence goods and services by the year 2025.

Q65. Answer: (b) 4

The pattern followed here is:

Hence, the correct answer is "4".

Q66. Answer: (c) 5.6

Given:

The time taken by a boat to go 7 km downstream is the same as the time taken by it to go 3 km upstream

It can go 14 km upstream and the same distance downstream in a total time of 6 2/3 hours

Concept used:

Speed = Distance/time

Downstream speed = u + v

Upstream speed = u - v

Calculation:

Let the speed of the boat be u and the speed of the stream be v

According to the question,

$7/(u+v)=3/(u-v)$

$\Rightarrow (u-v)/(u+v)=3/7$

So, speed in downstream = 7 km/h, and upstream = 3 km/h

So,

To go 16.8 km upstream will take = 16.8/3

=> 5.6 hours

Therefore It will take 5.6 hours to go 16.8 km upstream.

Q67. Answer: (a) Daniel is third to the left of Meghana.

Given:

Five friends Komal, Harris, Paul, Daniel and Meghana are standing in a row facing north.

1) Only Harris is between Komal and Meghana.

2) Paul is to the immediate right of Meghana.
3) Daniel is to the immediate left of Komal.
Now check all the Options,
Option (1): Daniel is third to the left of Meghana → True (Daniel is third to the left of Meghana)
Option (2): Harris is to the right of Meghana → False (Paul is to the right of Meghana)
Option (3): Harris is to the left of Komal → False (Daniel is to the left of Komal)
Option (4): Komal is third to the left of Harris → False (Noting is sitting third to the left of Harris)
Hence, the correct answer is "Option (1)".

Q68. Answer: (c) 25

The logic followed here is:
(1^(st) number + 2^(nd) number + 3^(rd) number) ÷ 5 = RHS
Now follow the steps:
36, 58, 21 = 23
= (36 + 58 + 21) ÷ 5
= 115 ÷ 5
= 23 = RHS
And,
41, 39, 20 = 20
= (41 + 39 + 20) ÷ 5
= 100 ÷ 5
= 20 = RHS
Similarly,
39, 52, 34 = ?
= (39 + 52 + 34) ÷ 5
= 125 ÷ 5
= 25 = RHS
Hence, the correct answer is "25".

Q69. Answer: (b) 2856

Given:
12.5% of the first number is 37.5% of the second number.
2nd number - 1st number = 1428
Calculation:
12.5% = 1/8 and 37.5% = 3/8
Let the numbers be 8a and 8b
According to the question,
8a × 1/8 = 8b × 3/8
=> a = 3b
So, the first number is 8 × 3b = 24b
Now,
24b - 8b = 1428
=> 16b = 1428
=> b = 89.25
So, the actual numbers are 89.25 × 24 = 2142, and 89.25 × 8 = 714
Sum of the numbers = 2142 + 714
=> 2856
Therefore The sum of the two numbers is 2856.

Q70. Answer: (a) QASKOGF

The pattern followed here is:
ALMIRAH is written as HRRMUCI
And,

COMPANY is written as JURTDPZ
Similarly,
'JUNGLEE' = ?
Hence, 'JUNGLEE' is coded as "QASKOGF".

Q71. Answer: (b) T

Given:
‘A & B' means 'A is younger than B'
'A @ B' means 'A is equal to B'
Let us first decode the given symbols and then draw a family tree.

A is		
Symbol	&	@
Meaning	younger	equal
to B		

Now break the code of ‘P & Q @ Y & Z & T’
1) P & Q
‘P & Q’ means ‘A is younger than B’
2) Q @ Y
‘Q @ Y’ means ‘A is equal than B’.
3) Y & Z
' Y & Z’ means ‘A is younger than B’
4) Z & T
‘Z & T’ means ‘A is younger than B’
After combining all the data.
P < Q = Y < Z < T
Hence, ‘T’ is the oldest among all.

Q72. Answer: (c) 16%

Given:
The initial profit percentage on the sale of an item was 74%
Concept used:
SP = CP + CP × profit%
Here,
SP = Selling price
CP = Cost price
Calculation:
Let the CP of an article be 100a
So, profit = 100a × 74%
=> 74a
So, SP = 100a + 74a
=> SP = 174a
New CP = 100a + 100a × 50%
=> 100a + 50a = 150a
So, new profit = 174a - 150a
=> 24a
Profit% = (24a/150a) × 100
=> 16
Therefore The new profit percentage would be 16%.

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Q73. Answer: (b) IAH

The pattern followed here is:

Hence, the correct answer is "IAH".

Q74. Answer: (c) 120

Given:

SP = 123

Discount% = 18%

Profit% = 25%

Concept used:

SP = MP - MP × discount%

SP = CP + CP × profit%

Calculation:

According to the question,

MP - MP × 18% = 123

=> MP - 0.18MP = 123

=> 0.82MP = 123

=> MP = 123/0.82

=> MP = 150

If he sells the article at MP the there is a profit of 25%

So,

CP + CP × 25% = 150

=> CP + 0.25CP = 150

=> 1.25CP = 150

=> CP = 150/1.25

=> CP = 120

So, its cost price is Rs. 120

Therefore The cost price in (in Rs.) of the article is 120.

Q75. Answer: (b) Rs. 2475

Given:

Three friends A, B, and C divide Rs. 5525 amongst them in such a way that if Rs. 50, Rs. 100 and Rs. 75 are removed from the sums that A, B and C received respectively, then the share of the sums that they get would have been in the ratio of 11 : 18 : 24.

Calculation:

Let the common ratio be Q.

Original shares,

A's share = 11Q + 50

B's share = 18Q + 100

C's share = 24Q + 75

According to the question,

(11Q + 50) + (18Q + 100) + (24Q + 75) = 5525

=> 53Q + 225 = 5525

=> 53Q = 5525 - 225

=> Q = 5300 ÷ 53

=> Q = 100

Now, C initially received

=> 24Q + 75

=> 24 × 100 + 75

=> 2475

Therefore C initially received Rs. 2475.

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Q76. Answer: (b) UCEPJ

The pattern followed here is:

SOFA is written as TQIE

• And,

CLOAK is written as DNREP

• Similarly,

'TABLE' = ?

• Hence, 'TABLE' is coded as "UCEPJ".

Q77. Answer: (a) Both SRAM and DRAM are random access memory.

The correct answer is Both SRAM and DRAM are random access memory.

Key Points

• Random-access memory comes in both SRAM and DRAM varieties.

• Both RAMs were developed to give different programmes access to data storage. A form of RAM known as SRAM (Static Random Access Memory) saves data bits in the memory when it is powered on.

• However, DRAM (dynamic random access memory) stores information in bits in both transistor and capacitor cell structures.

Important Points

• The term "SRAM" refers to a specific kind of RAM (random-access memory) that primarily uses flip-flops or latching circuits to store each bit of data.

• SRAM is also known as static random-access memory.

• Each bit of data is kept directly in the memory cell when using a certain kind of semiconductor memory called DRAM (dynamic random access memory).

• The transistor and small capacitor in his memory cell are both MOS (metal-oxide-semiconductor) devices.

Q78. Answer: (c) Indira P P Bora

The correct answer is Indira P P Bora.

Key Points

• Indira P P Bora was selected for 'Guru Gopinath Desiya Natya Puraskaram, 2019' by the State Government of Kerala for popularising Sattriya - the Indian classical dance form of Assam.

• Indira P.P. Bora, a Sattriya dancer, has been chosen to receive the Guru Gopinath Desiya Natya Puraskaram, 2019, the State government's highest honour given annually for excellence in dance.

• The Guru Gopinath Natana Gramam established the prize for the Culture Department.

• A notable form of Indian classical dance is sattriya. The scholar and saint Mahapurush Srimanta Sankardev, a member of the Bhakti movement, is credited with creating this dance-drama performance art, which has its roots in the Assamese Vaishnavism monasteries that are centred on Krishna.

Important Points

• With Sattriya dance, Tankeswar Hazarika Borbayan is known. Tankeswar has been chosen for the 2018 Sangeet Natak Akademi Awards (Akademi Puraskar).

• Guru Ramkrishna Talukdar is the first Assamese individual to receive an "A" grade accreditation from Doordarshan Delhi in Sattriya.

• Sangeet Natak Akademi Award nominee for 2016 is Assamese Sattriya dancer Haricharan Bhuyan Borbayan.

Q79. Answer: (a) 165

Given:

Two natural numbers are in the ratio of 6 : 5 and the product of their LCM and HCF is 6750.

Concept used:

LCM × HCF = Product of two numbers

Calculation:

Let the common ratio be Q.

Hence, the two natural numbers are 6Q and 5Q.

Thus, the product of the two natural numbers = 6Q × 5Q = $30Q^2$

According to the question,

$30Q^2 = 6750$

$\Rightarrow Q^2 = 225$

=> Q = 15 (since we're only considering the natural numbers)

=> 6Q = 90

=> 5Q = 75

Now,

6Q + 5Q = 90 + 75

=> 6Q + 5Q = 165

Therefore The sum of the numbers is 165.

Q80. Answer: (c) GPQ

The logic here is,

LST : MQW

And,

KOP : LMS

Similarly,

? : HNT

Hence, "GPQ" is the correct answer.

Q81. Answer: (d) Primary

The correct answer is Primary.

Key Points

• In India, the primary sector employs a disproportionately large number of people.

• In the primary sector, 50–60% of the workforce is employed. Additionally, this industry makes for one-fourth of the GDP.

• The primary sector is made up of all endeavours whose ultimate goal is the exploitation of natural resources, such as agriculture, fishing, forestry, mining, and deposits.

Important Points

• Secondary Sector

• The production of goods in the economy, including the processing of raw materials generated by the primary sector, is under the purview of the secondary sector.

• Tertiary Sector

• The tertiary sector encompasses a wide range of activities, including commercial and personal services, education, health care, social work, transportation, financial and real estate activities, and administration.

• Quaternary sector

• The economic activity connected to the intellectual or knowledge-based economies forms the foundation of the quaternary sector of the economy.

Q82. Answer: (a) Indonesia

The correct answer is Indonesia.

Key Points

• The Greater Sundas (Sumatra, Java, Borneo, and Celebes), the Lesser Sundas, the Moluccas, and western New Guinea are the main islands and island groups that make up the Republic of Indonesia.

• The Philippines' main islands are Mindanao in the south, Luzon in the north, and the Visayas in the middle.

• Brunei, Papua New Guinea, and East Malaysia (Sabah and Sarawak) are other political entities in the archipelago.

• The Malay Archipelago, the biggest collection of islands in the world, is made up of roughly 7,000 islands in the Philippines and more than 17,000 islands in Indonesia.

• The archipelago is sometimes referred to by its local name, "East Indies."

Important Points

• Between the Indian and Pacific oceans, in Southeast Asia and Oceaania, is the nation of Indonesia, formally known as the Republic of Indonesia.

• Sumatra, Java, Sulawesi, and portions of Borneo and New Guinea are among the more than 17,000 islands that make up this archipelago.

• With 1,904,569 square kilometres, Indonesia is the world's largest country by area, the largest archipelagic state, and the largest island nation (735,358 square miles).

• Indonesia, which has a population of over 275 million, is the fourth-most populous nation in the world and the largest Muslim-majority nation.

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• Moreover half of the people in the nation live in Java, the island with the highest population in the world.

Additional Information

• Indonesia: (As on July 2022)

• Capital and largest city: Jakarta

• Official language: Indonesian

• President: Joko Widodo

• Vice President: Ma'ruf Amin

• Currency: Indonesian rupiah

Q83. Answer: (c) Thermal expansion

The correct answer is Thermal expansion.

Key Points

• Thermal expansion is NOT a chemical weathering process.

• Thermal expansion, which typically excludes phase transitions, is the tendency of matter to change its shape, area, volume, and density in response to a change in temperature.

• The average molecular kinetic energy of a substance has a monotonic relationship with temperature. When something is heated, the molecules start to move and vibrate more, usually putting more space between them.

• Rarely, and only within certain temperature ranges, do substances contract as the temperature rises (see examples below).

Important Points

• Weathering by Chemical Rocks and soil undergoes chemical weathering, which modifies their molecular composition.

• For instance, a process known as carbonation occurs occasionally when water and carbon dioxide from the air or soil combine.

• This generates carbonic acid, a weak acid that can dissolve rock. Limestone can be easily dissolved by carbonic acid.

Additional Information

• Carbonation

• Carbonation is the process by which carbon dioxide is chemically transformed into carbonates, bicarbonates, and carbonic acid.

• Hydration

• A material that contains water or its component parts is referred to as a hydrate in chemistry.

• Oxidation

• A molecule, atom, or ion undergoes oxidation when it loses electrons as a result of a process.

Q84. Answer: (a) ÷, + and 5, 10

According to the BODMAS rule:

Option 1 :) ÷, + and 5, 10

Given:

630 + 6 - 5 ÷ 40 × 10 = 295

After interchanging signs and numbers;

630 ÷ 6 - 10 + 40 × 5 = 295

By BODMAS rule

105 - 10 + 40 × 5 = 295

105 - 10 + 200 = 295

305 – 10 = 295

295 = 295 (LHS = RHS)

Option 2 :) ÷, - and 10, 6

Given:

630 + 6 - 5 ÷ 40 × 10 = 295

After interchanging signs and numbers;

630 + 10 ÷ 5 - 40 × 6 = 295

By BODMAS rule

630 + 2 – 40 × 6 = 295

630 + 2 – 240 = 295

632 – 240 = 295

392 = 295 (LHS ≠ RHS)

Option 3:) ÷, × and 5, 6

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Given:

630 + 6 - 5 ÷ 40 × 10 = 295

After interchanging signs and numbers;

630 + 5 - 6 × 40 ÷ 10 = 295

By BODMAS rule

630 + 5 - 6 × 4 = 295

630 + 5 - 24 = 295

635 – 24 = 295

611 = 295 (LHS ≠ RHS)

Option 4:) +. - and 6, 5

Given:

630 + 6 - 5 ÷ 40 × 10 = 295

After interchanging signs and numbers;

630 - 5 + 6 ÷ 40 × 10 = 295

By BODMAS rule

630 - 5 + 0.15 × 10 = 295

630 – 5 + 1.5 = 295

631.5 – 5 = 295

626.5 = 295 (LHS ≠ RHS)

Hence, the correct answer is “÷, + and 5, 10”.

Q85. Answer: (a) ta

According to the given information.

‘go’ is coded as 'ta'.

Hence, the correct answer is "ta".

Q86. Answer: (c) Nitisara

The correct answer is Nitisara.

Key Points

• Nitisara is NOT written by Kalidasa.

• An old Indian treatise on politics and statecraft is called Nitisara or the Nitisara of Kamandaki.

• It was written by Chanakya's student Kamandaka, also known as Kamandaki or Kamandakiya.

• Despite the fact that it is actually a recension based on Sukra Nitisara of the fourth century BCE, current scholarship places its dating between the third and seventh centuries CE, between the Gupta and Harsha periods.

• It is traditionally dated to the fourth and third centuries BCE. There are 19 sections in it.

Important Points

• Mahakavi Kalidas, who is arguably the greatest Sanskrit virtuoso, wrote Abhigyan Shakuntalam about 2,500 years ago.

• The most renowned Sanskrit poet, Kalidasa, is the author of the epic poem Raghuvaa in Sanskrit.

• The four- or five-act Sanskrit play Vikramrvayam, written by the ancient Indian poet Kalidasa, is based on the Vedic love narrative between King Pururavas and the beautiful Apsar (celestial nymph) rva.

Additional Information

• The finest poet and playwright of classical Sanskrit literature in ancient India is frequently regarded as Klidasa (c. 4th–5th century CE).

• The Vedas, the Ramayana, the Mahabarata, and the Puranas are the main sources for his plays and poems.

• Three plays, two epic poems, and two shorter poems are all that are left of his writings.

Q87. Answer: (d) 2925π

Given:

A tent is cylindrical up to a height of 6 m and conical above it.

The diameter of the base is 90 m and the height of the conical part is 28 m.

Formula used:

Curved surface area = πrl

where r = radius of the base and l = slant height

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Curved surface of a cylinder = 2πrh

where r = Radius of the base, h = height

Diameter = Radius × 2

Calculation:

The radius of the base = 90 ÷ 2 = 45m

Hence,

The radius of the base of the cylindrical part = 45m

The radius of the base of the conical part = 45m

Thus, the length of the slant height of the conical part = √(45² + 28²) = 53m

Hence,

The curved surface area of the conical area

=> π × 45 × 53 = 2385π m²

The curved surface area of the cylindrical area

=> 2π × 45 × 6 = 540π m2

Now, the area of canvas used in making it = (2385 + 540)π = 2925π m²

Therefore The area of canvas used in making it is 2925π m2.

Q88. Answer: (d) 20 days

Given:

Paras can complete 40% of the work in 8 days while Deepti & Paras together can complete 10% of the work in a day.

Concept used:

Total work = Efficiency (Work done per day) × Total time taken

Calculation:

Considering, the total work to be 100%.

Paras does = (40/8)% = 5% work a day.

Hence, Deepti does = (10 - 5)% = 5% work a day.

Thus, time taken by Deepti to complete the work = (100/5) = 20 days.

Therefore The time taken by Deepti alone to complete the work is 20 days.

Q89. Answer: (c) 330

Given:

The diameter of the base of a right circular cone is 20 cm and its slant height is 10.5 cm

Concept used:

Diameter = Radius × 2

Curved surface area = πrl

where r = radius of the base and l = slant height

Calculation:

The radius of the base of a right circular cone = 20 ÷ 2 = 10 cm

Hence, the curved surface area of the right circular cone

=> π × 10 × 10.5

=> 330 cm²

Therefore The curved surface area of the right circular cone is 330 cm².

Q90. Answer: (a) No leaves

The correct answer is No leaves.

Key Points

• Succulent plants, often known as succulents, are a type of plant that thrives in dry environments and has some sections that are thick and fleshy in order to store and retain water.

• The Latin word sucus, which means sap or juice, is where the word "succulent" first appeared.

• Succulent plants are distinguished by their capacity to store water in many plant components, including the stem and leaves.

• On occasion, the name also refers to plants that store water in their roots, such as geophytes, which have a unique adaption to keep herbivores away from the plant.

• The term "succulent" in horticulture occasionally refers to plants other than cacti, which a botanist would consider to be

succulents.

Important Points

• Succulent plants frequently endure drought and develop abnormally thick leaves, stems, or roots because they store water in their tissues.

• Xerophytes are plants that can survive in severe, arid settings; examples include succulents.

Q91. Answer: (b) Vasantha

Six girls are sitting in a circle facing the centre.

1) Pragathi is sitting to the immediate left of Keerthi.

2) Kavya is an immediate neighbour of both Pragathi and Vaishali.

3) Meghana is an immediate neighbour of both Keerthi and Vasantha.

Hence, “Vasantha” is sitting to immediate left of Vaishali.

Q92. Answer: (b) Central America

The correct answer is Central America.

Key Points

• Panama Canal is located in Central America.

• Panama Canal connects the Atlantic Ocean and the Pacific Ocean.

• The Panama Canal linking the Atlantic and Pacific Oceans is a water passage across the isthmus of Panama where it proved a vital component of expanding global trade routes in the 20th century.

• The Panama Canal was opened in 1914 after the startup of its creation by France in 1881and later on handed over to the US in 1904.

• The canal consists of artificial lakes, several improved and artificial channels, and three sets of locks as well as an additional artificial lake, Alajuela Lake (known during the American era as Madden Lake) which acts as a reservoir for the canal.

• It decreases the distance to go all around South America and anyone can go directly through this canal.

Q93. Answer: (a) Western disturbances

The correct answer is Western disturbances.

Key Points

• Rainfall throughout the winter in northwest India is brought on by western disturbances.

• Westerlies are what cause this pattern.

• The growth of the Rabi crop, which contains the crucial local grain wheat, is dependent on Western Disturbances in the northern subcontinent.

• Over India in the winter, the north-east trade winds are dominant.

• It is a dry season for most of the country since they blow from land to sea.

• Winter precipitation across the plains and snowfall in the mountains are caused by them.

• It is because the winds that blow through this area take moisture with them as they go from the sea to the land.

Important Points

• India receives 125 cm of rain annually, with the monsoon season (June to September) accounting for 75% of the total.

• Tamil Nadu and Kerala are the states in India that experience winter rains.

• The North-East Monsoon is to blame for this. Only the southern region of India is affected by the northeast monsoon, which occurs between October and December.

Additional Information

• The southwest monsoon enters the Indian subcontinent when the Indian subcontinent experiences high temperatures and low pressure throughout the summer, which draws air from the Indian Ocean.

• Winter monsoons in the Indian Oceans, which last from October to April, are less well-known than their rainy summer counterparts.

• An upper-level easterly wind that begins in late June and lasts until early September is referred to meteorologically as the "Tropical Easterly Jet".

Q94. Answer: (b) G

English alphabet:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

English alphabets are written in reverse order:

Z Y X W V U T S R Q P O N M L K J I H G F E D C B A

12^(th) letter from the right:

Left → Z Y X W V U T S R Q P O N M L K J I H G F E D C B A → Right

5^(th) to the right of 12^(th) letter from the right:

Left → Z Y X W V U T S R Q P O N M L K J I H G F E D C B A → Right

Hence, “G” is the correct answer.

Q95. Answer: (b) 14 years

The correct answer is 14 years.

Key Points

• According to the Constitution of India, free and compulsory education for children is mandatory up to the age of 14 years.

• Article 21A:

• The Right of Children to Free and Compulsory Education Act or Right to Education Act (RTE), describes the modalities of the importance of free and compulsory education for children between 6 and 14 in India.

Additional Information

• Fundamental Rights

• The Fundamental Rights have been described in Articles 12-35, Part III of the Indian Constitution.

• The Right to Property, Article 31 was deleted from the list of Fundamental Act, 1978.

• By the 44th Amendment Act, 1978, it is made a normal constitutional right under Act 300A in Part XII of the Constitution.

• Article 21 of the Constitution provides that no person shall be deprived of his life or personal liberty except according to the procedure established by law.

• By the 86th Amendment Act, 2002, Article 21 (A) makes the right of education for children of the age of 6 to 14 years a fundamental right.

Q96. Answer: (c) Ravichandran Ashwin

The correct answer is Ravichandran Ashwin.

Key Points

• With 71 scalps under his belt, top Indian off-spinner Ravichandran Ashwin finished the 2019–21 World Test Championship cycle as the top wicket-taker.

• The accomplishment was accomplished by the 34-year-old Tamil Nadu off-spinner against New Zealand in the World Test Championship final, which was his 14th Test within this WTC cycle.

• Devon Conway of New Zealand was his 71st victim.

• New Zealand won the first World T20 after defeating India by eight wickets under the leadership of Kane Williamson.

• Pat Cummins of Australia, who has taken 70 wickets in 14 Test matches, came in second on the list, and Stuart Broad of England, who has taken 69 wickets in 17 matches, came in third.

Important Points

• The International Cricket Council (ICC) launched the ICC World Test Championship, a league tournament for Test cricket, on August 1, 2019.

• It is meant to be the top competition for Test cricket. It supports the ICC's objective of having a championship match for each of the three international cricket formats.

• The competition was originally supposed to replace the 2013 ICC Champions Trophy, however, those plans were scrapped. It was moved to June 2017, and a second Test championship was slated for February–March 2021 in India.

Additional Information

• International Cricket Council (ICC)

• Founded: 15 June 1909

• Chairman: Greg Barclay

• CEO: Geoff Allardice

• Headquarters: Dubai, United Arab Emirates

Q97. Answer: (c) L M N N M M

Given: M N L _ M N L L _ _ L L M _ L L _ N L L _ N

By checking options and substituting accordingly.

1) N M N M M L → M N L N - M N L L - M N L L - M M L L - M N L L - L N

• Here MNLL is repeated.

2) L N M N M M → M N L L - M N L L - M N L L - M N L L - M N L L - M N

3) L M N N M M → M N L L - M N L L - M N L L - M N L L - M N L L - M

4) L N N M M M → M N L L - M N L L - N N L L - M M L L - M N L L - M N

Hence, 'L M N N M M' is the correct answer.

Q98. Answer: (b) Sanskrit

The correct answer is Sanskrit.

Key Points

• Kalidasa, one of the finest Sanskrit poets, wrote the lyric poem Meghaduta around the fourth or fifth century CE.

• It tells the story of a yaka (or nature spirit) who begged a cloud to deliver a message of love to his wife after being banished by his lord for a year to a faraway area.

• The poem gained notoriety in Sanskrit literature and influenced other poets to produce Sandesha Kavya, or "messenger-poems," on related subjects.

• A follow-up to Meghduta, Ghanavrttam, was written by Korada Ramachandra Sastri.

Important Points

• The Indo-European language family includes Sanskrit. Vedic Sanskrit (c. 1500–500 BCE) is one of the three oldest ancient languages that have been recorded. It developed from a single root language that is today known as Proto-Indo-European language.

• Native to the Indian subcontinent, Pali is a Middle Indo-Aryan liturgical language.

• A set of Middle Indo-Aryan languages known as the Prakrits were spoken in the Indian subcontinent from roughly the third century BCE to the eighth century CE.

• The Hindi Belt region, which includes sections of northern, central, eastern, and western India, is home to the Hindi language, or more specifically Modern Standard Hindi, which is an Indo-Aryan language.

Q99. Answer: (c) 20

The correct answer is 20.

Key Points

• The Ministry of Textiles has cleared 20 strategic research projects worth Rs. 30 crores in the areas of specialty fibers and geotextiles.

• These strategic research projects fall under the government's flagship program 'National Technical Textiles Mission.'

• Previously, 11 research projects worth Rs. 78.60 crores were cleared by the ministry of textiles.

Additional Information

• The Union Ministry of Textileshas launcheda campaign for Diwali- "Local4Diwali".

• Union Minister, Piyush Goyal virtually launched India's first Digital Food Museum in Thanjavur, Tamil Nadu.

• The Union Minister for Commerce and Industry, Piyush Goyal has launched the 'National Single Window System (NSWS)', for investors and businesses.

• Minister of Textiles: Shri Piyush Goyal (As of July 2022).

Q100. Answer: (d) 58 g/mol

The correct answer is 58 g/mol.

Key Points

• Molecular mass is the total weight of all the atoms or components that make up a molecule.

• Sodium and chlorine have molar weights that are respectively

• Na =22.989770 g/mol Cl =35.453 g/mol

• Therefore,

• the molar mass of sodium chloride is

• 22.989770 g/mol +35.453 g/mol = 58.44277 g/mol

Important Points

• An ionic molecule called sodium chloride has sodium and chloride ions in a 1:1 ratio.

• Common names for it include table salt, common salt, and halite (the mineral form of common salt).

• It is a white, crystalline substance.

• It is known as a saline solution when it is in an aqueous state.

Q101. Answer: (c) 160

Shortcut Trick

Area of a parallelogram = Base × Height

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Given Base = 16 cm and Perpendicular Distance (Height) = 10 cm

Area = 16 × 10 = 160 cm²

Therefore The correct answer is 160 cm².

Alternate Method

Given:

Length of opposite sides (Base) = 16 cm

Perpendicular distance (Height) = 10 cm

Formula Used:

Area of Parallelogram = Base × Altitude

Calculations:

=> Area = 16 cm × 10 cm

=> Area = 160 cm²

Therefore The correct answer is 160 cm².

Additional Information

Parallelogram Properties

Opposite sides are parallel and equal in length. Opposite angles are also equal.

Perimeter of Parallelogram

Perimeter = 2 × (Sum of adjacent sides) = 2(a + b).

Relationship with Diagonals

Area = Base × Height = d1 × d2 × sin(θ) ÷ 2, where d1, d2 are diagonals and θ is the angle between them.

Q102. Answer: (c) 72

Given:

144, 360 and 504

Concept used:

HCF (Highest Common Factor) of two or more numbers is the greatest factor that divides the numbers.

Calculation:

144 = 2^4 × 3²

360 = 2³ × 3² × 5

504 = 2³ × 3² × 7

Hence, HCF (144, 360, 504) = 2³ × 3² = 72

Therefore 72 is the HCF of 144, 360 and 504.

Q103. Answer: (d) Finland

The correct answer is Finland.

Key Points

• The Sustainable Development Solutions Network for the United Nations released the World Happiness Report 2021, a day before the International Happiness Day (20th March).

• India has ranked 139 in the World Happiness Rankings 2021 published in the 9th World Happiness Report. It has been released in March 2021. India's rank in 2020 was 144

Important Points

• Top 5 Countries: Finland, Iceland, Denmark, Switzerland, Netherlands

• Bottom 5 Countries: Afghanistan (149), Zimbabwe (148), Rwanda (147), Botswana (146), Lesotho (145)

• The theme of 2021: "Happiness For All, Forever".

• The United Nations started to celebrate the International Day of Happiness in 2013 but a resolution for the same was passed in July 2012.

Additional Information

• The World Happiness Report ranks 149 countries by how happy their citizens perceive themselves to be.

• The rankings are based on polling (Gallup World Poll) which looks at six variables:

• Gross Domestic Product Per Capita (Purchasing Power Parity).

• Social Support.

• Healthy life expectancy at birth.

• Freedom to make life choices.

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• Generosity.

• Perceptions of corruption.

• Respondents are asked to rate their own current lives on a 0-10 scale.

Q104. Answer: (b) The process of moving from self-employment and regular salaried employment to casual wageworker is known as...

The correct answer is The process of moving from self-employment and regular salaried employment to casual wageworker is known as casualisation of workforce.

Key Points

• Workforce casualisation is the process in which employment shifts from a preponderance of full-time.

• It is permanent positions to casual and contract positions.

• Majority of workers in India are self-employed.

• Casual wage labourers and regular salaried employees together account for less than half the proportion of India’s workforce.

Q105. Answer: (c) N

Seven friends K, L, M, N, O, P and Q are sitting on a straight bench facing north.

1) K is sitting exactly at the middle position.

2) L is sitting third to the right of K.

3) K is sitting to the immediate left of O.

4) Only P is sitting between Q and N.

5) M and Q are not sitting at any of the extreme ends.

• Thus, we can see that Q cannot be sitting at the left end. Therefore, N sits at the left end.

6) Final sitting arrengment is:

So, "N" is sitting at the extreme left end.

Hence, the correct answer is "N".

Q106. Answer: (d) Calorie

The correct answer is Calorie.

Key Point

• The concept of Calory:

• Calorie, a unit of heat energy in the metric system.

• The measurement of heat is called calorimetry.

• The calorie, or gram calorie, is the quantity of heat required to raise the temperature of 1 gram of pure water 1°C.

• The kilocalorie is used in dietetics for stating the heat content of a food, i.e., the amount of heat energy that the food can yield as it passes through the body; in this context, the kilocalorie is usually called simply the calorie.

• The amount of heat energy needed to effect a 1°C temperature increase in 1 gram of water varies with temperature (see heat capacity); thus the temperature range over which the heating takes place must be stated to define the calorie precisely.

• The 15° calorie, or normal calorie, is widely used in chemistry and physics; it is measured by heating a 1-gram water sample from 14.5°C to 15.5°C at 1-atmosphere pressure.

• The 4° calorie, also called the small calorie or therm, is measured from 3.5°C to 4.5°C (water is most dense at 3.98°C); the large calorie, or Calorie, is equivalent to 1,000 small calories.

• The average value of the calorie in the range 0°C to 100°C is called the mean calorie; it is 1⁄100 of the energy needed to heat 1 gram of water from its melting point to its boiling point.

• The calorie may also be defined by expressing its value in some other energy units.

Additional Information

• Ohm

• Ohm is denoted by symbol Ω. It is the Greek letter omega.

• This is named after Georg Simon Ohm, a German physicist who studied the relationship between voltage, current, and resistance.

• Resistance is the measurement of the opposition to current flow in an electrical circuit.

• It is also defined as the ratio of the voltage applied to the electric current which flows through it.

• The resistance of a material is directly proportional to the length and inversely proportional to the area of cross-section. It is also directly proportional to the resistivity of the material.

• Conductors have less resistance and that is why current can flow easily through it. Insulators have high resistance and that is

why current can not flow easily through it.

• Ohm's law states that the electric current is proportional to voltage and inversely proportional to resistance. It is represented by V=IR.

• Newton

• Newton is the SI unit of force. And force equals the product of mass and acceleration.

• SI unit of force = Newton

• SI unit of mass = kg

• SI unit of acceleration = m.sec-2.

• Hence, 1 Newton is equals to, kg m.sec-2. the other units do not satisfy the unit of Newton.

Q107. Answer: (b) Mizoram

The correct answer is Mizoram.

Key Points

• Named after a famous flower, Anthurium is a major festival in Mizoram.

• Anthurium is celebrated with an objective of promoting tourism and it is held in the month of September each year.

• A small village called Reiek (about 70kms from capital city Aizawl) is the venue for this fest.

• Folk dance, music and cuisine are the highlight of this festival.

Additional Information Some important festivals of Mizoram

Festival	Details
Chapchar Kut	• Chapchar Kut Festival is a major festival celebrated in Aizawl, Mizoram. - Many foreign and Indian tourists come to see this festival in Mizoram. - They welcome the spring season with dance and songs.
Mim Kut	• Mim Kut Festival is one of the harvest festivals in Mizoram and it is related to the Chapchar Kut festival. - The maize crops are sowed during the Chapchar Kut festival and harvested in the Mim Kut festival time.
Pawl Kut	• Pawl Kut Festival is a harvest and cultural festival in Mizoram, celebrated every year. - This is a 2-day festival and they wear their traditional dress during this festival time.

Q108. Answer: (c) 632.5

Given:

0.46 × 137.5 = 63.25

Calculation:

0.46 × 137.5 = 63.25

=> 460 × 137.5 = 63.25 × 1000

=> 460 × 1.375 = 63.25 × 1000 ÷ 100

=> 460 × 1.375 = 632.5

Therefore The required value of 460 × 1.375 is 632.5.

Q109. Answer: (d) 166

Given:

Mean = 184 kg

Median = 178 kg

Concept used:

3 Median = 2 Mean + Mode

Calculation:

Hence, the mode of the distribution

=> 3 × 178 - 2 × 184

=> 166

Therefore The most likely value of the Mode is 166 kg.

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Q110. Answer: (b) Bewar

The correct answer is Bewar.

Key Points

• Slash and burn agriculture is known as Bewar or Dahiya in Madhya Pradesh.

• Slash and burn farming is a type of shifting agriculture in which the natural flora is cut down and burned to clear the ground for cultivation, and then the farmer moves to a new fresh plot and repeats the process when the plot becomes infertile.

• This procedure is repeated again and again. Because the rainforest's riches are in the trees, the earth loses its fertility. Everything is broken down by soil organisms as leaves fall or trees die, nutrients are returned to the soil, and tree roots take them up again.

• As a result, regular recycling ensures that everything remains fertile and grows.

Additional Information Different names of Slash and Burn farming in different states are:

Name	Regions
Jhumming	Assam, Meghalaya, Mizoram and Nagaland
Pamlou	Manipur
Dipa	Bastar (Chhattisgarh) and Andaman & Nicobar Islands
Podu or Penda	Andhra Pradesh
Pama Dabi or Koman or Bringa	Orissa
Kumara	Western Ghats
Kuruwa	Jharkhand
Valre or Waltre	South eastern Rajasthan

Q111. Answer: (d) 43

Shortcut Trick

Apply BODMAS: Bracket → Of → Division → Multiplication → Addition → Subtraction.

Calculate (4 + 2) = 6.

Calculate 6 of 9 = 54.

Perform 54 − 12 + 1 = 43.

Therefore The correct option is D.

Alternate Method

Given:

(4 + 2) of 9 − 6 × 2 + 5/5

Formula Used:

BODMAS rule defines the order of operations: Bracket, Of, Division, Multiplication, Addition, Subtraction.

Calculations:

=> (6) of 9 − 6 × 2 + 5 ÷ 5

=> 54 − 6 × 2 + 1

=> 54 − 12 + 1

=> 42 + 1

=> 43

Therefore The correct option is D.

Additional Information

BODMAS / VBODMAS Rule

It stands for Vinculum, Bracket, Of, Division, Multiplication, Addition, and Subtraction, establishing the priority for solving expressions.

Operator Priority

The 'of' operator is essentially multiplication but carries a higher priority than division and standard multiplication symbols.

Division and Multiplication

Division and Multiplication have the same level of precedence and are solved from left to right, though in BODMAS division is listed first.

Q112. Answer: (c) 1 5/18

Given:

Sum = 11/6

One fraction = 5/9

Calculation:

The fraction that should be added to 5/9

=> 11/6 - 5/9

=> (66 - 20)/36

=> 46/36

=> 23/18

=> 1 5/18

Therefore 1 5/18 should be added to 5/9 to obtain 11/6 as the sum.

Q113. Answer: (c) B is E's son.

Preparing the family tree using the following symbols,

We can dram following Family Tree from the information given above:

1) A is the sister of B and C.

2) D is the father of C.

3) E is the mother of A.

Now check all the options:

Option (1): E is the mother of B → True

Option (2): D is the father of A → True

Option (3): B is E's son → False (the gender of B is not known.)

Option (4): D is E's husband → True

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

Q114. Answer: (c) Both conclusions I and III follow.

Statements:

All ducks are tigers.

All tigers are monkeys.

All monkeys are cows.

The least possible diagram for the given statements is as follows

Conclusions:

I. All tigers are cows → True (As all tigers are monkeys and all monkeys are cows so all tigers are also cows)

II. All monkeys are ducks → False (As all ducks are tigers and all tigers are monkeys so all ducks are monkeys not all monkeys are ducks)

III. All ducks are cows → True (As all ducks are tigers, all tigers are monkeys and all monkeys are cows so all ducks are also cows)

IV. All cows are tigers → False (As all tigers are monkeys and all monkeys are cows so all tigers are cows not all cows are tigers)

Hence, “Both conclusions I and III follow” is the correct answer.

Q115. Answer: (b) Black Pagoda

The correct answer is Black Pagoda.

Key Points

• Konark:

• The famous Konark Sun temple is situated in the town of Konark in Odisha.

• This is one of the very few and famous Sun temples in India.

• It is also known as the ‘Black Pagoda’ because it is built out of black granite.

• It was made on the orders of King Narasimhadeva.

• It reached the pinnacle of fame when UNESCO made it a world heritage site in 1984.

• One of the highlights at the Konark Sun temple is the annual Konark Dance festival that is held every year in December and is devoted to Odissi, the classical dance of Odisha.

• The temple is the centre of all celebrations and the gigantic chariot of Surya (Sun God) forms the backdrop to all the festivities.

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• This chariot has 12 pairs of ornamental wheels, which were supposed to be pulled by seven horses.

Q116. Answer: (d) Rs. 1400

Shortcut Trick

Extra interest rate per year = 2%

Total extra interest for 3 years = 2% × 3 = 6%

Given, 6% of Principal = Rs. 84

1% of Principal = 84 ÷ 6 = Rs. 14

100% (Sum Invested) = 14 × 100 = Rs. 1400

Therefore The correct answer is Rs. 1400.

Alternate Method

Given:

Time (T) = 3 years

Difference in Interest = Rs. 84

Difference in Rate = (r + 2)% − r% = 2%

Formula Used:

Simple Interest (SI) = (P × R × T) ÷ 100

=> Let the Sum be P.

=> SI1 = (P × r × 3) ÷ 100

=> SI2 = (P × (r + 2) × 3) ÷ 100

=> SI2 − SI1 = 84

=> [(P × (r + 2) × 3) ÷ 100] − [(P × r × 3) ÷ 100] = 84

=> (3P ÷ 100) × [r + 2 − r] = 84

=> (3P ÷ 100) × 2 = 84

=> 6P ÷ 100 = 84

=> P = (84 × 100) ÷ 6

=> P = 14 × 100 = 1400

Therefore The correct answer is Rs. 1400.

Additional Information

Simple Interest Property

Simple interest is calculated only on the Principal amount, so the interest remains constant every year if the rate is unchanged.

Rate Change Impact

Change in SI = (P × Change in Rate × Time) ÷ 100. This direct proportionality allows for quick solving of incremental interest problems.

Amount Formula

Total Amount (A) = Principal (P) + Simple Interest (SI). A = P × [1 + (R × T) ÷ 100].

Q117. Answer: (a) Thiruvananthapuram and Wayanad districts

The correct answer is Thiruvananthapuram and Wayanad districts.

Key Points

• Researchers from SNM College Maliankara, the M.S. Swaminathan Research Foundation, and the Payyanur College have reported two new plant species, from the biodiversity-rich Western Ghats regions in Thiruvananthapuram and Wayanad districts.

• They have been named Fimbristylis sunilii and Neanotis prabhuii.

• The findings by the research teams about these species have been published in the November and December issues of the plant taxonomy journal Phytotaxa.

Important Points

• Fimbristylis sunilii

• Collected from the grasslands of Ponmudi hills, Thiruvananthapuram.

• Fimbristylis sunilii has been named after plant taxonomist C.N. Sunil, retired professor and research guide of Botany, SNM College.

• It is a perennial plant of the Cyperaceae family, it stands 20-59 cm tall and was collected from an elevation of 1,100 meters.

• Fimbristylis sunilii has been provisionally assessed as data deficient (DD) under the IUCN Red List.

• Neanotis prabhuii

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• Neanotis prabhuii is a prostrate perennial herb named after K.M. Prabhukumar, Senior Scientist at CSIR-NBRI, Lucknow, in recognition of his research on flowering plants of the Western Ghats.

• Discovered in the Chembra Peak grasslands of Wayanad.

• Belongs to the family Rubiaceae and grows on high-altitude grasslands.

Q118. Answer: (b) 220

Given:

x is the smallest six-digit number which, when divided by 20, 21, 22, 24, and 28, the remainder in each case is 5.

Concept used:

Dividend = Divisor × Quotient + Remainder

LCM of two or more numbers is the smallest number that is when divided by the aforementioned numbers leaves 0 as the remainder.

Calculation:

LCM (20, 21, 22, 24, 28) = 9240

The smallest number is divisible by all of 20, 21, 22, 24, and 28 is the LCM of 20, 21, 22, 24, and 28.

The smallest six-digit number = 100,000

Thus, 100,000 = 9240 × 10 + 7600

Hence, the smallest six-digit number which is divisible by all of 20, 21, 22, 24, and 28 = 9240 × 11 = 101,640 (taking the next multiple)

Now, the required number, x = 101,640 + 5 = 101,645.

Hence, 101,645 = 462 × 220 + 5

Therefore The quotient when x is divided by 462 is 220.

Q119. Answer: (d) 68 - 512

The logic followed here is:

(cbrt2^(nd) number)² + 1 = 1^(st) number

Now, follow the logic:

Option (1): 82 - 729

=> (cbrt729)² + 1 = 9² + 1 = 81 + 1 = 82 = 1st number

Option (2): 26 - 125

=> (cbrt125)² + 1 = 5² + 1 = 26 + 1 = 26 = 1st number

Option (3): 50 - 343

=> (cbrt343)² + 1 = 7² + 1 = 49 + 1 = 50 = 1st number

Option (4): 68 - 512

=> (cbrt512)² + 1 = 8² + 1 = 64 + 1 = 65 ≠ 1st number

This option does not follow the pattern.

Hence, the pair “68 - 512” is an odd one.

Q120. Answer: (b) 1 : 5

Calculation:

Total number of directors = 27 + 57 + 51 + 54 + 81 = 270

Total number of directors from the continent of America = 54

Hence, the ratio of the number of directors from the continent of America to the total number of directors = 54 : 270 = 1 : 5

Therefore 1 : 5 is the ratio of the number of directors from the continent of America to the total number of directors.

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