Prepp

Your Personal Exams Guide

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RRB NTPC 2021 (CBT 1) Previous Year Paper (18 Jan 2021) Shift 2

Total Time: 1 Hour : 30 Minute **Total Marks:** 100

Instructions

Sl No.	Section Name	No. of Question	Maximum Marks	Negative Marks	Positive Marks
1	Test	100	100	0.33	1

1.) A total of 90 minutes is allotted for the examination.

2.) The server will set your clock for you. In the top right corner of your screen, a countdown timer will display the remaining time for you to complete the exam. Once the timer reaches zero, the examination will end automatically. The paper need not be submitted when your timer reaches zero.

3.) There will, however, be sectional timing for this exam. You will have to complete each section within the specified time limit. Before moving on to the next section, you must complete the current one within the time limits.

Test

1. Select the correct sequence of words in the order in which they appear in an English dictionary. **(+1, -0.33)**

   a. Practical → Practise → Praise → Prank → Prayer

   b. Praise → Practical → Prank → Prayer → Practise

   c. Practical → Prank → Prayer → Practise → Praise

   d. Praise → Practical → Prayer → Practise → Prank

---

2. A can complete a task in the same time in which B and C together can complete it. If A and B together can complete it in 10 days and C alone can complete it in 60 days, then B alone can complete it in: **(+1, -0.33)**

   a. 23 days

   b. 22 days

   c. 21 days

   d. 24 days

---

3. If LCM and HCF of two numbers are 70 and 7 respectively and if one number is 35, then what will be the second number? **(+1, -0.33)**

   a. 49

   b. 25

   c. 40

   d. 14

4. When was the None Of The Above (NOTA) option first used in the assembly election in India? (+1, -0.33)

a. October 2000

b. November 2013

c. January 1950

d. August 1947

5. Name the Spanish professional tennis player known as the King of Clay. (+1, -0.33)

a. Roy Emerson

b. Roger Federer

c. Rafael Nadal Parera

d. Neale Fraser

6. If θ = 45°, then what will be the value of $\frac{sin\,\theta + \cos\,\theta}{\sin\,\theta - \cos\,\theta}$? (+1, -0.33)

a. 0

b. 1

c. -1

d. ∞

7. Which of the following statements is NOT true about cottage industry? (+1, -0.33)

a. Uses local raw material

b. Involves Household Industry

c. Uses family or part-time labour

d. Requires advance technological skills

---

8. The L.C.M. of any two consecutive positive integers x and x + 1 is: **(+1, -0.33)**

a. x

b. x + 1

c. 1

d. (x) (x + 1)

---

9. Which of the following unicellular organism causes kala-azar? **(+1, -0.33)**

a. Liver fluke

b. Leishmania

c. Tapeworm

d. Ascaris

---

10. The value of $4\cos\left(\frac{\pi}{6}-\alpha\right)\sin\left(\frac{\pi}{3}-\alpha\right)$ is equal to: **(+1, -0.33)**

a. $3 + 4\sin^2\alpha$

b. $3 + \sin 2\alpha$

c. 3 - sin 2 α

d. 3 - 4sin 2 α

---

11. Which of the following is known as the highest battlefield of the world? (+1, -0.33)

a. Gangotri glacier

b. Nanda Devi glacier

c. Siachin glacier

d. Rathong glacier

---

12. NITI Aayog is a policy Think Tank of the Government of India. It replaced: (+1, -0.33)

a. National Development Council

b. Finance Commission of India

c. Planning Commission of India

d. Election Commission of India

---

13. What is the value of the following expression? (+1, -0.33)

$\frac{1+\sec\theta+\tan\theta}{1+\sec\theta-\tan\theta}$

a. $\frac{1-\tan\frac{\theta}{2}}{1+\tan\frac{\theta}{2}}$

b. $\frac{1-\tan\frac{\theta}{2}}{\tan\frac{\theta}{2}}$

c. $\frac{1+\tan\frac{\theta}{2}}{\tan\frac{\theta}{2}}$

d. $\frac{1+\tan\frac{\theta}{2}}{1-\tan\frac{\theta}{2}}$

---

14. Which of the following countries became the first post-communist country of the EU to legalize same sex marriage? **(+1, -0.33)**

a. Albania

b. Croatia

c. Hungary

d. Czech Republic

---

15. Select the Venn diagram that best represents the relationship between the following classes. **(+1, -0.33)**

Day, Week, Year

a. A

b. C

c. B

d. D

---

16. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series. **(+1, -0.33)**

WFB, TGD, QHF, ?

a. NJK

b. NIK

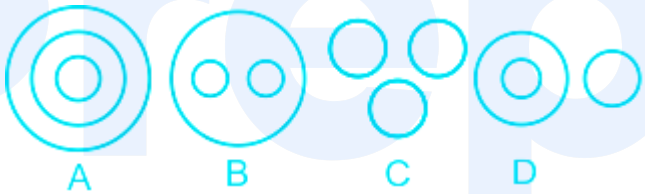
c. NIH

d. NIJ

---

17. Select the Venn diagram that best represents the relationship between the following classes: **(+1, -0.33)**

Vegetable, Carrot, Potato



a. B

b. A

c. C

d. D

---

18. In a certain code language, MODERN is coded as QSHIVR. Which of the given options would be coded as WMIRG in that language? **(+1, -0.33)**

a. SINEC

b. SEINC

c. SIENC

d. SNEIC

---

19. The first site discovered at the Indus Valley Civilisation is: (+1, -0.33)

a. Lothal

b. Mohenjo-Daro

c. Kalibangan

d. Harappa

---

20. Which of the following is not a voice assistant? (+1, -0.33)

a. Cortana

b. Alexa

c. Siri

d. Carvaan

---

21. Four cities have been listed, out of which three are alike in some manner and one is different. Select the odd one. (+1, -0.33)

a. Bhopal

b. Chandigarh

c. Gandhinagar

d. Kanpur

---

22. The value of $\left(\frac{32}{5}\right)$ × 92 + $\left(\frac{3}{5}\right)$ × 2 is: **(+1, -0.33)**

a. 502

b. 590

c. 401

d. 812

---

23. Which of the following options is equivalent to $\frac{(x^3-y^3)(x^2+5x+6)(x^4-16)}{(x-y)(x+3)(x-2)(x^2+4)}$? **(+1, -0.33)**

a. $(x+2)^2$

b. $(x^2+y^2-xy)(x+2)^2$

c. (x^2+y^2-xy)

d. $(x^2+y^2+xy)(x+2)^2$

---

24. What is the term used for the direct exchange of goods or services without the use of tokens, credit or money? **(+1, -0.33)**

a. Commodity money

b. Tallies

c. Balance of trade

d. Barter

---

25. What will be the area of a parallelogram with base 44 cm and height 22 cm? **(+1, -0.33)**

a. 988 cm^2

b. 978 cm^2

c. 958 cm^2

d. 968 cm^2

---

26. If a man travels at a speed of 15 km/h instead of travelling at a speed of 9 km/h, he travels 30 km more. The actual distance travelled by him is: **(+1, -0.33)**

a. 43 km

b. 45 km

c. 41 km

d. 42 km

---

27. Which of the following statements is INCORRECT? **(+1, -0.33)**

a. Blood protects the body from disease.

b. Blood carries oxygen from the lungs to the other parts of the body.
1,2

c. Blood helps in sensory inputs.

d. Blood carries carbon dioxide from the body cells to the lungs.

---

28. Which of the following fractions is greater than $\frac{8}{5}$ and less than $\frac{7}{4}$? **(+1, -0.33)**

a. $\frac{1}{4}$

b. $\frac{8}{3}$

c. $\frac{2}{7}$

d. $\frac{19}{11}$

---

29. Which of the following is the first large-scale iron and steel plants in India? **(+1, -0.33)**

a. Bhilai Steel Plant

b. Bokaro Steel Plant

c. Rourkela Steel Plant

d. TISCO

---

30. Among the four numbers given, three are alike in some manner and one is different. Select the number that is different from the rest. **(+1, -0.33)**

a. 49

b. 84

c. 50

d. 63

---

31. What will be the cost (in Rs.) of 15.2 kg of rice if the cost of 1 kg rice is Rs. 45? **(+1, -0.33)**

a. 425

b. 325

c. 684

d. 615

---

32. The General Agreement on Tariffs and Trade came into existence in the year: **(+1, -0.33)**

a. 1995

b. 1945

c. 1948

d. 1950

---

33. What is the value of the following expression? **(+1, -0.33)**

$\frac{(2.7)^2 - (0.8)^2}{2.7 - 0.8}$

a. 3.5

b. 2.5

c. 7.0

d. 0

---

34. If '+' means '÷', '-' means '×', '÷' means '+' and '×' means '-', then find the value of the following expression. **(+1, -0.33)**

11 - 2 × 4 ÷ 12 + 4

a. 18

b. 7.5

c. 26

d. 21

---

35. Which of the following books is written by Megasthenes? **(+1, -0.33)**

a. Yajnavalkya Smriti

b. Malvikagnimitram

c. Harshacharita

d. Indica

---

36. 8 boys A, B, C, D, E, F, G and H are sitting around a square table facing towards the centre (not necessarily in the same order). Two boys are sitting on each side. D is second to the right of A. H and D sit on the opposite sides. H is either third to the left of D or third to the right of D. A and B are sitting on the same side. E is not the neighbour of H or D. F is not the neighbour of E and H. **(+1, -0.33)**

Who are the neighbours of E?

a. B and D

b. A and D

c. H and A

d. C and G

---

37. What is contour ploughing? **(+1, -0.33)**

a. Ploughing on sloping land along the contour lines.

b. Ploughing on plains along the contour lines

c. Ploughing on barren land along the contour lines.

d. Ploughing in a zig-zag manner along the contour lines.

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38. As of Oct 2020, who is the Secretary-General of the UN? **(+1, -0.33)**

a. Boutros Boutros-Ghali

b. Ban Ki-Moon

c. Kofi Annan

d. Antonio Guterres

---

39. What is the name of the scheme launched by the Government of India to achieve a clean and open defecation-free India? **(+1, -0.33)**

a. Swachhata Hi Sewa

b. Clean India

c. Swachh Raho, Swastha Raho

d. Swachh Bharat Abhiyan

---

40. In the URL, https://www.d2h.com/login.php, which component identifies the path of a web page? **(+1, -0.33)**

a. /login.php

b. https:

c. //www

d. www.d2h.com

---

41. In a certain code language, R is written as 9 and D is written as 23. How will READY be written as in that language? **(+1, -0.33)**

a. 92234232

b. 92236232

c. 92226232

d. 92336232

---

42. The value of cos 75° + sin 15° is equal to: **(+1, -0.33)**

a. $\frac{\sqrt{3}}{\sqrt{2}}$

b. $\frac{\sqrt{2}}{\sqrt{3}}$

c. $\frac{\sqrt{3}+1}{\sqrt{2}}$

d. $\frac{\sqrt{3}-1}{\sqrt{2}}$

---

43. Who became the last governor-general and first viceroy of India during the rule of the British crown? **(+1, -0.33)**

a. Lord Canning

b. Lord William Bentinck

c. Sir John Macpherson

d. Lord Dalhousie

---

44. Excluding stoppage station, the speed of a train is 60 km/h and including stoppage station it travels at a speed of 45 km/h. For how many minutes does the train stop per hour? **(+1, -0.33)**

a. 15 min

b. 20 min h Question 1 options 1,2

c. 30 min

d. 10 min

---

45. Which of the following is the greatest three digit number that is divisible by 13? **(+1, -0.33)**

a. 575

b. 908

c. 990

d. 988

---

46. Which of the following nation has one of the largest domestic communication satellite systems in Asia-Pacific region? **(+1, -0.33)**

a. Bangladesh

b. Nepal

c. Sri Lanka

d. India

---

47. Dividing Rs. 742 into two parts in the ratio of 5 : 9 will give the two parts as: **(+1, -0.33)**

a. Rs. 290, Rs. 452

b. Rs. 260, Rs. 482

c. Rs. 275, Rs. 467

d. Rs. 265, Rs. 477

---

48. If 0.75 : x :: 2.5 : 8, then the value of x will be equal to: **(+1, -0.33)**

a. 2.4

b. 0.50

c. 1.5

d. 0.42

---

49. Which one of the following is NOT a wired broadband? **(+1, -0.33)**

a. Satellite

b. Dial-up

c. Cable

d. Digital Subscriber Line

---

50. Name the female weightlifter from Manipur who has received India's **(+1, -0.33)**

highest sporting honour, Rajiv Gandhi Khel Ratna for 2018.

a. Hima Das

b. Mary Kom

c. Saikhom Mirabai Chanu

d. Karnam Malleswari

---

51. Which of the following is responsible for dwarfism in humans? **(+1, -0.33)**

a. Thyroxin

b. Pituitary

c. Adrenaline

d. Pancreas

---

52. What is the value of the following expression? **(+1, -0.33)**

$\frac{\sqrt{7}-\sqrt{3}}{\sqrt{7}+\sqrt{3}} + \frac{\sqrt{7}+\sqrt{3}}{\sqrt{7}-\sqrt{3}} + \frac{\sqrt{3}+1}{\sqrt{3}-1} + \frac{\sqrt{3}-1}{\sqrt{3}+1}$

a. 9

b. 1

c. 0

d. $\frac{1}{2}$

---

53. _ _ _ _ _ _ is the first rapper to win Pulitzer Prize for music. **(+1, -0.33)**

a. Joyner Lucas

b. J. Cole

c. Eminem

d. Kendrick Lamar

---

54. The movement of a sunflower facing the sun is called: **(+1, -0.33)**

a. phototropism

b. rotation

c. locomotion

d. movement

---

55. If A is 80% more than B and B is 20% less than C, then what will be the value of A : B : C? **(+1, -0.33)**

a. 36 : 20 : 25

b. 36 : 5 : 20

c. 36 : 25 : 20

d. 20 : 25 : 36

---

56. If cot x = 3, then what will be the value of $\frac{(3+3\ \sin\ x)(1-\sin\ x)}{(2+2\ \cos\ x)(3-3\ \cos\ x)}$? **(+1, -0.33)**

a. 9

b. $\frac{9}{4}$

c. $\frac{9}{3}$

d. $\frac{9}{2}$

---

57. The UN Peacekeeping forces were awarded Nobel Prize for Peace in the year _ _ _ _ _ _ _ _. **(+1, -0.33)**

a. 2000

b. 1988

c. 1945

d. 1899

---

58. 9 persons A, B, C, D, E, F, G, H and I are sitting in a row facing towards north (not necessarily in the same order). G sits fourth to the right of B. F is fourth to the right of C and is second to the left of I. D is not the neighbour of I and B. There are only three persons between E and A. G is second to the right of C. I is fifth to the right of A. **(+1, -0.33)**

Which of the given options correctly identifies the seating position of three of the nine persons mentioned above?

a. B between C and H

b. D between F and G

c. C between A and G

d. B between E and I

---

59. As of Oct 2020, the longest railway platform in India is in _ _ _ _ _ _ _ _. It is around 1.3 km long. **(+1, -0.33)**

a. Jaipur

b. Gorakhpur

c. Delhi

d. Mumbai

---

60. The song of lament 'the life has gone out of the body' is associated with Nawab _ _ _ _ _ _ _ _ of the State of Awadh. (+1, -0.33)

a. Wazir Ali Khan

b. Muhammad Ali Shah

c. Wajid Ali Shah

d. Saadat Ali Khan

---

61. What is the product of LCM and HCF of 18 and 42? (+1, -0.33)

a. 736

b. 746

c. 756

d. 766

---

62. The sulphide ores are converted into oxides by heating strongly in the presence of excess air. This process is known as: (+1, -0.33)

a. burning

b. heating

c. roasting

d. Blazing

---

63. In a triangle, right angled at B, AB = 12 cm and BC = 5 cm. What will be the value of **(+1, -0.33)**

i) sin A cos A

ii) sin C cos C respectively?

a. $\frac{26}{169}, \frac{25}{169}$

b. $\frac{60}{169}, \frac{60}{169}$

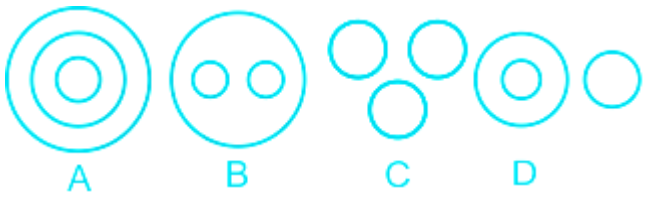
c. $\frac{25}{169}, \frac{60}{169}$

d. $\frac{60}{169}, \frac{25}{169}$

---

64. Select the Venn diagram that best represents the relationship between the following classes. **(+1, -0.33)**

Wheat, Rice, Grain



a. D

b. A

c. B

d. C

---

65. Which of the following Indian state has highest production from Viticulture? (+1, -0.33)

a. Uttar Pradesh

b. Jammu and Kashmir

c. Bihar

d. Maharashtra

---

66. Netaji Subhash Chandra Bose International Airport is situated in: (+1, -0.33)

a. Siliguri

b. Hyderabad

c. Kolkata

d. Bhubaneswar

---

67. Which of the following scientist have no contribution in the Nuclear field in India? (+1, -0.33)

a. Homi J Bhabha

b. Sekhar Basu

c. Raja Ramanna

d. C N R Rao

---

68. If the length and the breadth of a rectangle are in the ratio of 7 : 4 and its area is 12348 cm ^{2}, what will be the length of the rectangle? (+1, -0.33)

a. 147 cm

b. 105 cm

c. 84 cm

d. 120 cm

---

69. Lander of Chandrayaan-2 was named after the Scientist: (+1, -0.33)

a. K Kasturirangan

b. A P J Abdul Kalam

c. K Sivan

d. Vikram Sarabhai

---

70. Where and when was the first metro train introduced in India? (+1, -0.33)

a. Bombay on 26 January 1950

b. Delhi on 15 Aug 1947

c. Bangalore on 2 Oct 1945

d. Kolkata on 24 Oct 1984

---

71. Which of the following cities is known as Scotland of the East? (+1, -0.33)

a. Aizawl

b. Imphal

c. Silchar

d. Shillong

---

72. Which of the following dance forms does NOT belong to Rajasthan? **(+1, -0.33)**

a. Ghoomar

b. Kalbelia

c. Gangaur

d. Lavani

---

73. Dhanurveda is the upveda of the Yajurveda. It deals with: **(+1, -0.33)**

a. art of warfare

b. architecture

c. medicine

d. art and music

---

74. If radius of a sphere is 21 cm, what will be its volume? **(+1, -0.33)**

a. 38808 cm^3

b. 3500 cm^3

c. 37050 cm^3

d. 3800 cm^3

---

75. Which of the following is NOT generally the properties of non-metals? **(+1, -0.33)**

a. Dull and lackluster

b. Light substances

c. Conductors

d. Brittle

---

76. The value of 80.6 ÷ 4030 = ? **(+1, -0.33)**

a. 2

b. 0.02

c. 20

d. 0.2

---

77. A shopkeeper sells a chair for Rs. 639 and incurs a loss of 10%. What is the cost price (in Rs.) of the chair? **(+1, -0.33)**

a. 700

b. 600

c. 615

d. 710

---

78. Seats for Mathematics, Physics and Chemistry in a school are in the ratio of 7 : 8 : 9. There is a proposal to increase the seats by 30%, 40% and 50% respectively. What will be the ratio of increased seats? (+1, -0.33)

a. 112 : 91 : 135

b. 91 : 112 : 135

c. 135 : 112 : 91

d. 35 : 37 : 91

---

79. Read the given statement carefully and decide which of the given conclusions logically follows from the statement. (+1, -0.33)

Statement:

Every school has students.

a. Conclusion 1: Students are only in school.

b. Conclusion 3: No school is without students.

c. Conclusion 4: Some schools do not have teachers.

d. Conclusion 2: Schools are meant for students only.

---

80. The first Indian woman judge of the Supreme Court of India was: (+1, -0.33)

a. R Bhanumathi

b. Fatima Beevi

c. Indira Banerjee

d. Indu Malhotra

81. In certain code language, HONEY is coded as 8-12-13-5-2. How will PATCH be coded in that language? **(+1, -0.33)**

a. 11-1-20-3-8

b. 16-1-7-3-8

c. 16-1-20-3-18

d. 11-1-7-3-8

---

82. Select the option in which the numbers are related in the same way as are the numbers in the given set. **(+1, -0.33)**

4, 20, 28

a. 12, 60, 84

b. 6, 24, 48

c. 2, 18, 24

d. 8, 32, 64

---

83. A and B have together Rs. 2,300. If $\frac{2}{5}$ of A's amount is equal to $\frac{8}{26}$ of B's amount, what amount (in Rs.) does B have? **(+1, -0.33)**

a. 1,150

b. 1,300

c. 1,000

d. 1,200

---

84. Ram bought a cycle for Rs. 1,900 and sold it for Rs. 1,862. What was the percentage loss? **(+1, -0.33)**

a. 4%

b. 6%

c. 2%

d. 8%

---

85. Who is the highest Law Officer of the Government of India? **(+1, -0.33)**

a. Major General of the Gendarmerie

b. Attorney General for India

c. Advocate General of the State

d. Comptroller and Auditor General of India

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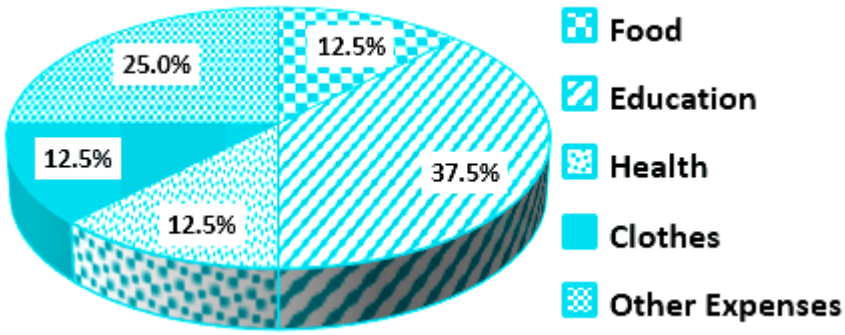
86. The following pie diagram shows the total expenditure (in percentage) incurred by 'X' in one month. Answer the given question based on the pie diagram. **(+1, -0.33)**



If X does not incur 'Other Expenses' and all other expenses remain the same, what would be the approximate percentage share of education expenses in X's total expenditure?

a. 37%

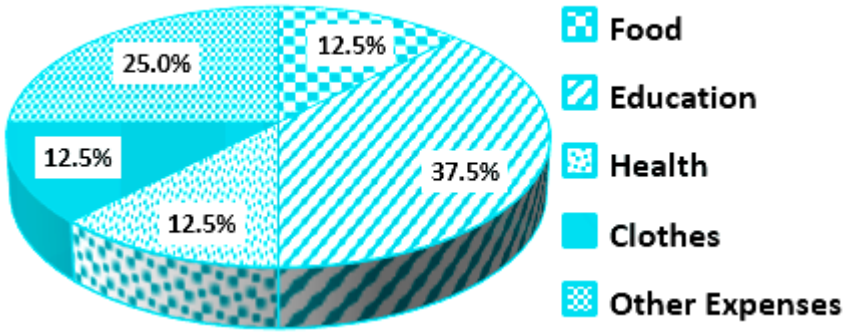
b. 50%

c. 33%

d. 28%

---

87. The following pie diagram shows the total expenditure (in percentage) incurred by 'X' in one month. Answer the given question based on the pie diagram. **(+1, -0.33)**



If X decides to save money and reduce expenditure uniformly by 20% on all heads, what would be the CHANGE in the percentage share of Education in

the total expenditure incurred by X?

a. 9.38%

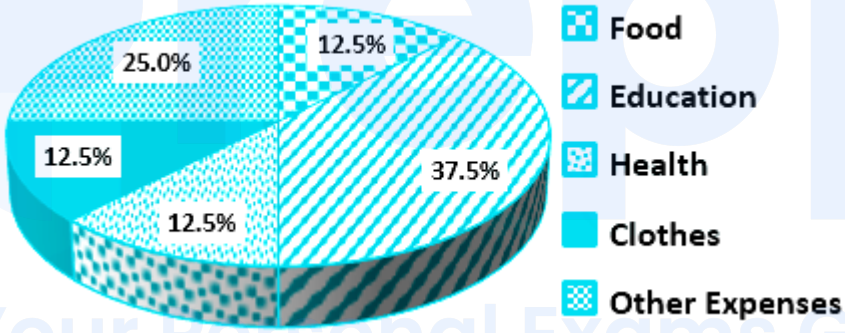
b. 7.5%

c. 20%

d. 0%

---

88. The following pie diagram shows the total expenditure (in percentage) incurred by 'X' in one month. Answer the given question based on the pie diagram. **(+1, -0.33)**



The expenditure incurred on education is as much as that incurred on:

a. Health and Food

b. Food and Other expenses

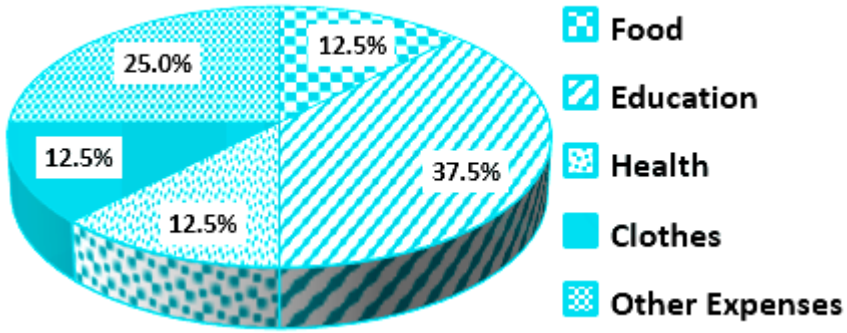
c. Food and Clothes

d. Clothes and Health

---

89. The following pie diagram shows the total expenditure (in percentage) incurred by 'X' in one month. Answer the given question based on the pie **(+1, -0.33)**

diagram.



The highest percentage of total expenditure is incurred on:

a. Food and Other Expenses

b. Clothes and Food

c. Health and Clothes

d. Food and Health

---

90. How many such digits are there in the following sequence, each of which is immediately preceded as well as immediately followed by a letter? **(+1, -0.33)**

A B 7 C D 9 Z Y * P 2 M © K S 3 ↑ 5 N T 9

a. Three

b. One

c. Two

d. Four

---

91. 'Supply' is related to 'Demand' in the same way as 'Production' is related to **(+1, -0.33)**

'_ _ _ _ _ _'.

a. Income

b. Inventory

c. Factory

d. Consumption

---

92. Four activities have been listed, out of which three are alike in some manner and one is different. Select the odd one. (+1, -0.33)

a. Exercise

b. Jog

c. Walk

d. Run

---

93. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series. (+1, -0.33)

EIM, QUY, CGK, ?

a. OSW

b. RVZ

c. DHL

d. FJN

---

94. Students of a particular class are standing in a line. If a student's serial number is twenty-three from the start of the line in that class of fifty-one, then what is her serial number from the last student in the line? (+1, -0.33)

a. Twenty-seven

b. Twenty-nine

c. Twenty-three

d. Twenty-five

---

95. Among the four words given, three are alike in some manner and one is different. Select the odd one. (+1, -0.33)

a. Companion

b. Partner

c. Rival

d. Colleague

---

96. Six students B, D, F, U, V and X are compared on the basis of their marks. X scored more marks than only two students. B scored marks more than F but less than U. If F scored more marks than X, then who scored the highest marks? (+1, -0.33)

a. V

b. B

c. U

d. D

97. In a certain code language, WELCOME is coded as ZHOFRPH. Which of the given options would be coded as DUSSRDFK in that language? (+1, -0.33)

a. ARPROACH

b. APPROACH

c. ARRPOACH

d. ARPPOACH

98. Select the letter from among the given options that can replace the question mark (?) in the following series. (+1, -0.33)

Z, V, R, ?, J, F

a. M

b. P

c. K

d. N

99. In a mid-term exam of class 11, 42% students failed in Mathematics, 54% students failed in Physics and 48% students failed in Chemistry. Only 10% students failed in all the three subjects. 20% students failed in both Physics and Chemistry, 15% students failed in both Chemistry and Mathematics, and 18% students failed in both Physics and Mathematics. What is the percentage of those students who failed in two subjects only? (+1, -0.33)

a. 53%

b. 43%

c. 23%

d. 33%

---

100. Read the given statements 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 follows from the statements. **(+1, -0.33)**

Statements:

(i) Ram is an artist.

(ii) Artists are beautiful.

a. Conclusion 2: Ram is beautiful.

b. Conclusion 3: Ram is not beautiful.

c. Conclusion 1: All beautiful persons are artists.

d. Conclusion 4: Beautiful persons are not artists.

Answers

1. **Answer: a**

Explanation:

The correct dictionary order is as follows:

- The first three letters are common to each word: P, R, A.
- So, we will compare the words from the fourth letter.

i) Pra**ctical**

ii) Pra**ctise**

iii) Pra**ise**

iv) Pra**nk**

v) Pra**yer**

Hence, '**Practical → Practise → Praise → Prank → Prayer** 'is the correct answer.

---

2. **Answer: d**

Explanation:

Given:

A can complete a task in the same time in which B and C together can complete it.

A and B together can complete it in 10 days

C alone can complete it in 60 days

Concept used:

Total work = Work done each day (Efficiency) × Total time taken (in days)

Calculation:

Let the entire work be the LCM of 10 and 60.

Hence, total work = LCM (10, 60) = 60 units

Efficiency of C = 60 ÷ 60 = 1 units

Let the efficiencies of A and B are P units and Q units a day respectively.

B and C together do each day = (Q + 1) units of work

According to the question,

60 ÷ P = 60 ÷ (Q + 1)

⇒ P = Q + 1 ....(1)

(P + Q) × 10 = 60

⇒ (P + Q) = 6

⇒ Q + 1 + Q = 6

⇒ Q = 2.5

Hence, time taken by B to complete the work alone = 60 ÷ 2.5 = 24 days

∴ B will take 24 days to complete the work alone.

---

3. Answer: d

Explanation:

Given:

LCM and HCF of two numbers are 70 and 7 respectively

One of the numbers is 35

Concept used:

LCM × HCF = The Product of two numbers

Calculation:

The second number = $\frac{70\times7}{35}$ = 14

∴ The second number will be 14.

---

4. Answer: b

Explanation:

The correct answer is **November 2013.**

⭐ **Important Points**

- NOTA option was first used in **November 2013.**
- In 2013, SC passed a landmark judgement, approving the **'Right to Negative Vote'** by exercising the NOTA option in EVMs (Electronic Voting Machines) and ballots.
- It is also known as **"against all" or a "scratch" vote** , is a ballot option in some jurisdictions or organizations, designed to allow the voter to indicate disapproval of all of the candidates in a voting system.
- It is based on the principle that consent requires the ability to withhold consent in an election, just as they can by voting no on ballot questions.

⭐ **Additional Information**

- The first time it was used was during the Assembly elections held in Rajasthan, Madhya Pradesh, Chhattisgarh, Mizoram and Delhi.
- The option of NOTA in Rajya Sabha polls was introduced by the EC in 2014.

---

5. **Answer: c**

Explanation:

The correct answer is **Rafael Nadal Parera.**

⭐ **Key Points**

- Rafael "Rafa" Nadal Parera is a Spanish professional tennis player .
- He is also known as King of Clay.
- The Royal Spanish Tennis Federation (RFET) , the national governing body for the sport in Spain, decided to celebrate Rafael Nadal's birthday as 'National Tennis Day' .
- The federation approved the proposal to celebrate Rafael Nadal's birthday - 3 June - as 'National Tennis Day' in his home country.

⭐ **Additional Information**

- **Roy Stanley Emerson** is an Australian former tennis player who won 12 Grand Slam singles titles and 16 Grand Slam doubles titles.
- **Roger Federer** is a Swiss professional tennis player. He has been ranked world No. 1 by the Association of Tennis Professionals for 310 weeks, including a record 237 consecutive weeks.

---

6. **Answer: d**

Explanation:

Given:

$\theta = 45°$

Concept used:

	0°	30°	45°	60°	90°
sin	0	1/2	1/√2	√3/2	1
cos	1	√3/2	1/√2	1/2	0
tan	0	1/√3	1	√3	∞
cosec	∞	2	√2	2/√3	1
sec	1	2/√3	√2	2	∞
cot	∞	√3	1	1/√3	0

Calculation:

$\frac{sin\,\theta + \cos\,\theta}{\sin\,\theta - \cos\,\theta}$

$\Rightarrow \frac{(Sin\ 45^\circ + Cos\ 45^\circ)}{(Sin\ 45^\circ - Cos\ 45^\circ)}$

$\Rightarrow \frac{(\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}})}{(\frac{1}{\sqrt{2}} - \frac{1}{\sqrt{2}})}$

$\Rightarrow \infty$

$\therefore$ The required answer is ∞ .

---

7. Answer: d

Explanation:

The correct answer is **Requires advanced technological skills**.

⭐ **Key Points**

- **Requiring advanced technological skills is NOT true for the cottage industry.**
- **A cottage industry is a small-scale** , decentralised manufacturing operation that is usually run from a house rather than a purpose-built facility.
- The amount of capital required to start a cottage industry, as well as the number of people employed, are used to characterise it.

- They frequently concentrate on the production of labour-intensive commodities, but they are at a major disadvantage when competing with **factory-based mass producers.**
- The cottage industry is defined as tiny, mostly family-run businesses whose profits are primarily utilised to support the household's daily requirements. As a result, it is also referred to as a small-scale industry.
- Many successful instances of small-scale companies may be seen in Japan, Germany, Italy, and other developed countries, with India displaying one of the oldest and largest expansions of such businesses.

---

8. Answer: d

Explanation:

Given:

Given numbers are X and (X + 1)

Concept used:

Co-prime numbers are a set of numbers or integers which have only 1 as their common factor i.e. their highest common factor (HCF) will be 1.

LCM is the smallest common multiple of two or more numbers.

Calculation:

Two consecutive positive integers are always co-primes.

Hence, their LCM should be their product only.

Thus, LCM (X, X + 1) = X(X + 1)

∴ **The L.C.M. of any two consecutive positive integers x and x + 1 is (x) (x + 1)**

---

9. **Answer: b**

Explanation:

The correct answer is **Leishmania.**

⭐ **Key Points**

- Kala-Azar is a slow progressing indigenous disease caused by a protozoan parasite of the genus Leishmania .
- The parasite primarily infects the reticuloendothelial system and may be found in abundance in bone marrow, spleen, and liver.
- There is only one sand fly vector of Kala-Azar in India i.e. Phlebotomus argentipes.
- Sandflies are small insects, about one-fourth of the size of a mosquito.
- The symptoms of Kala-Azar are-
    - Loss of appetite, pallor, and weight loss with progressive emaciation, weakness, and anaemia which develops rapidly.

⭐ **Additional Information**

- **Liver fluke** belongs to the phylum "Platyhelminthes".
- **Tapeworm** belongs to class-Platyhelminthes of Kingdom-Animalia.
- **Ascaris** is a genus of parasitic nematode worms known as the "small intestinal roundworms," a kind of parasitic worm.

---

10. **Answer: d**

Explanation:

Given:

$4\cos\left(\frac{\pi}{6}-\alpha\right)\ \sin\left(\frac{\pi}{3}-\alpha\right)$

Concept used:

Cos (θ - α) = (Cos θ Cosα + Sin θ Sinα)

Sin (θ - α) = (Sinθ Cosα - Cosθ Sinα)

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

$\text{Sin}^2\theta + \text{Cos}^2\theta = 1$

π = 180°

	0°	30°	45°	60°	90°
sin	0	1/2	1/√2	√3/2	1
cos	1	√3/2	1/√2	1/2	0
tan	0	1/√3	1	√3	∞
cosec	∞	2	√2	2/√3	1
sec	1	2/√3	√2	2	∞
cot	∞	√3	1	1/√3	0

Calculation:

$4\cos\left(\frac{\pi}{6} - \alpha\right) \sin\left(\frac{\pi}{3} - \alpha\right)$

⇒ 4 × Cos (30° - α) Sin (60° - α)

⇒ 4 × (Cos 30° Cosα + Sin 30° Sinα) × (Sin60° Cosα - Cos60° Sinα)

$\Rightarrow 4 \times \left(\frac{\sqrt{3}}{2}\text{Cos}\alpha + \frac{1}{2}\text{Sin}\alpha\right) \times \left(\frac{\sqrt{3}}{2}\text{Cos}\alpha - \frac{1}{2}\text{Sin}\alpha\right)$

$\Rightarrow \left(\sqrt{3}\,\text{Cos}\alpha + \text{Sin}\alpha\right) \times \left(\sqrt{3}\,\text{Cos}\alpha - \text{Sin}\alpha\right)$

$\Rightarrow (\sqrt{3}\,\text{Cos}\alpha)^2 - \text{Sin}^2\alpha$

$\Rightarrow 3\text{Cos}^2\alpha - \text{Sin}^2\alpha$

⇒ 3 × (1 - Sin 2 α) - Sin 2 α

⇒ 3 - 4sin 2 α

∴ The required answer is 3 - 4sin 2 α.

11. **Answer: c**

Explanation:

The correct answer is **Siachin glacier**.

- The Siachen Glacier is located in the Eastern Karakoram range in the Himalayas, just northeast of Point NJ9842 where the Line of Control between India and Pakistan ends.
- The Siachen Glacier is the world's highest battlefield.

⭐ Additional Information

- It is the Second-Longest glacier in the World's Non-Polar areas.
- Fedchenko Glacier, located in Yazgulem Range, Tajikistan is the Longest glacier in the World's Non-Polar areas.
- The Siachen Glacier lies immediately south of the great drainage divide that separates the Eurasian Plate from the Indian subcontinent in the extensively glaciated portion of the Karakoram sometimes called the "Third Pole".
- The Siachen Glacier is part of Ladakh and has now been converted into a Union Territory.
- The entire Siachen Glacier has been under the administration of India since 1984 (Operation Meghdoot).

12. **Answer: c**

Explanation:

The correct answer is **Planning Commission of India.**

⭐ **Key Points**

- NITI Aayog (abbreviation for National Institution for Transforming India) was established in 2015 to replace the Planning Commission which followed a top-down model .
- It is a policy think tank of the Government of India, established with the aim to achieve sustainable development goals with cooperative federalism by fostering the involvement of State Governments of India in the economic policy-making process using a bottom-up approach.

⭐ **Additional Information**

- The Planning Commission was set up by a Resolution of the Government of India in March 1950 in pursuance of declared objectives of the Government to promote a rapid rise in the standard of living of the people by efficient exploitation of the resources of the country, increasing production and offering opportunities to all for employment in the service of the community.
- The Planning Commission was charged with the responsibility of making assessments of all resources of the country, augmenting deficient resources, formulating plans for the most effective and balanced utilization of resources, and determining priorities.
- The Prime Minister is the Chairman of the Planning Commission , which works under the overall guidance of the National Development Council.
- Jawaharlal Nehru was the first Chairman of the Planning Commission.

---

13. Answer: d

Explanation:

Given:

$\frac{1+\sec\theta+\tan\theta}{1+\sec\theta-\tan\theta}$

Concept used:

Sin2θ = 2Sinθ Cosθ

Cos2θ = $Cos^2\theta$ - $Sin^2\theta$

$Sin^2\theta + Cos^2\theta = 1$

$\tan\theta = \frac{Sin\theta}{Cos\theta}$

Calculation:

$\frac{1+\sec\theta+\tan\theta}{1+\sec\theta-\tan\theta}$

$\Rightarrow \frac{1+\frac{1}{Cos\,\theta}+\frac{Sin\,\theta}{Cos\,\theta}}{1+\frac{1}{Cos\,\theta}-\frac{Sin\,\theta}{Cos\,\theta}}$

$\Rightarrow \frac{Cos\,\theta + 1 + Sin\,\theta}{Cos\,\theta + 1 - Sin\,\theta}$

$\Rightarrow \frac{(Cos^2\frac{\theta}{2} - Sin^2\frac{\theta}{2}) + (Sin^2\frac{\theta}{2} + Cos^2\frac{\theta}{2}) + 2Sin\frac{\theta}{2}Cos\frac{\theta}{2}}{(Cos^2\frac{\theta}{2} - Sin^2\frac{\theta}{2}) + (Sin^2\frac{\theta}{2} + Cos^2\frac{\theta}{2}) - 2Sin\frac{\theta}{2}Cos\frac{\theta}{2}}$

$\Rightarrow \frac{(2Cos^2\frac{\theta}{2} + 2Sin\frac{\theta}{2}Cos\frac{\theta}{2})}{(2Cos^2\theta - 2Sin\frac{\theta}{2}Cos\frac{\theta}{2})}$

$\Rightarrow \frac{2Cos^2\frac{\theta}{2} \times (1 + tan\frac{\theta}{2})}{2Cos^2\frac{\theta}{2} \times (1 - tan\frac{\theta}{2})}$

$\Rightarrow \frac{1 + \tan\frac{\theta}{2}}{1 - \tan\frac{\theta}{2}}$

$\therefore$ The required answer is $\frac{1 + \tan\frac{\theta}{2}}{1 - \tan\frac{\theta}{2}}$

---

14. Answer: d

Explanation:

The correct answer is **Czech Republic.**

⭐ **Important Points**

- **The Czech Republic** became the first post-communist country in the EU to legalize same-sex marriage.
- On 23rd May 2015, the Republic of Ireland became the first-ever country to constitutionally legalize same-sex marriage in the world.
- On 24 May 2019, Taiwan became the first Asian country to legalize same-sex marriage .
- The constitutional court ruled that same-sex couples also have the right to legally marry as per the constitutional right to freedom and equality.
- Article 377 of the Indian constitution legalized the status of Same-Sex marriage and the legal status of the LGBT community.

---

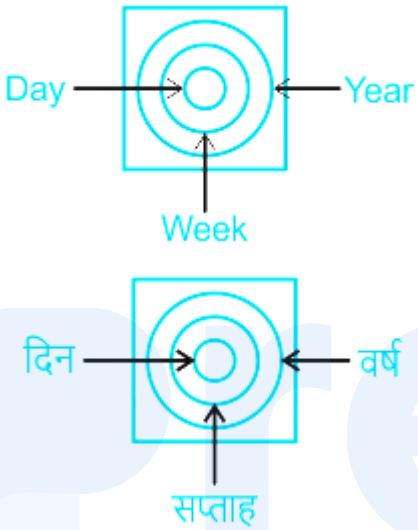
15. Answer: a

Explanation:

The correct Venn diagram is:

i) All Days are present in Week.

ii) All Weeks are present in Year



Hence, the **figure A** is the correct answer.

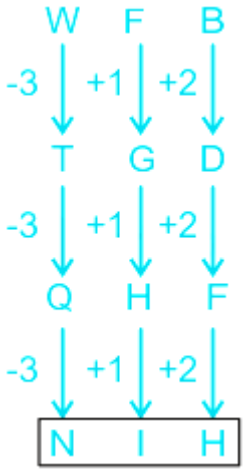
---

16. Answer: c

Explanation:

The logic followed here is:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N



So, the next term in the given series is NIH.

Hence, the correct answer is **"NIH".**

---

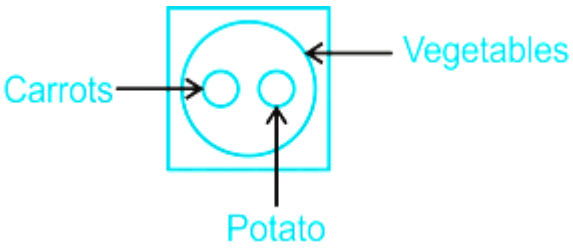
17. **Answer: a**

Explanation:

The logic followed here is:

- All carrots are Vegetables
- All Potato are Vegetables.

Therefore the least possible Venn Diagram is as follows:



Hence, the answer **figure 2** is the correct answer.

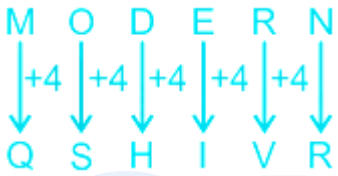
---

18. **Answer: c**

Explanation:

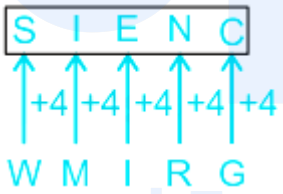
Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The logic followed here is:



Similarly,

? = WMIRG



Hence, '**SIENC**' is the correct answer.

---

19. Answer: d

Explanation:

The correct answer is **Harappa.**

Key Points

- Harappa is t he earliest city discovered in India was Harappa.
  - It was excavated in 1921 in the Punjab province of British India.

- After the excavation of Harappa as the first site, the Indus Valley Civilisation is also known as Harappan Civilisation hereafter.
- It was excavated by Daya Ram Sahni in 1921.
- It lies on the bank of river Ravi.
- It is in the Sahiwal District of Punjab (Pakistan) .

⭐ **Additional Information**

Indus Valley Civilization -

- It was one of the major civilizations of the ancient river valley civilizations of the world.
- It is also known as Harappan Civilization and Indus-Saraswati Civilization.
- It developed on the banks of the Indus and Ghaggar/Hakra (ancient Saraswati).
- Mohenjodaro, Kalibanga, Lothal, Dholavira, Rakhigarhi, and Harappa were its main centres.

---

20. Answer: d

Explanation:

The correct answer is **Carvaan.**

⭐ **Important Points**

- A Voice Assistant is an intelligent personal assistant or a connected speaker, is a new type of product marketed by Apple, Amazon and Google and is based on natural language speech recognition.
- **Cortana** is a virtual assistant developed by Microsoft, which uses the Bing search engine to perform tasks such as setting reminders and answering questions for the user.
- **Alexa** is a voice-controlled virtual assistant.
  - She can play audio, control your smart home, answer questions and engage your favourite services to keep you organized, informed, safe, connected and entertained.

- **Siri** is an intelligent assistant that offers a faster, easier way to get things done on your Apple devices.
- **Caravaan** is a music player.
- **Hence Carvaan is the correct answer.**

---

21. Answer: d

Explanation:

The logic followed here is:

Bhopal, Gandhinagar and Chandigarh are capital of states Madhya Pradesh, Gujarat and Punjab/ Haryana respectively.

Whereas,

Kanpur is in Uttar Pradesh but not the capital of Uttar Pradesh.

State	Capital
Madhya Pradesh	Bhopal
Gujarat	Gandhinagar
Punjab/ Haryana	Chandigarh
Kanpur	**City in UP**

Hence , **'Kanpur'** is the odd one.

---

22. Answer: b

Explanation:

Concept used:

B	Brackets in order (), {}, []	ब्रैकेट (), {}, [] क्रम में
O	of	का
D	Division (÷)	विभाजन (÷)
M	Multiplication (×)	गुणा (×)
A	Addition (+)	जोड़ (+)
S	Subtraction (–)	घटाव (–)

Calculation:

$\left(\frac{32}{5}\right) \times 92 + \left(\frac{3}{5}\right) \times 2$

$\Rightarrow \frac{1}{5} (32 \times 92 + 3 \times 2)$

$\Rightarrow \frac{1}{5} \times 2950$

$\Rightarrow 590$

∴ The required answer is 590.

23. Answer: d

Explanation:

Concept used:

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

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

Middle Term Factor

Calculation:

$\frac{(x^3 - y^3)(x^2 + 5x + 6)(x^4 - 16)}{(x - y)(x + 3)(x - 2)(x^2 + 4)}$

$\Rightarrow \frac{(x - y)(x^2 + y^2 + xy)\,(x + 2)(x + 3)\,(x^2 - 4)\,(x^2 + 4)}{(x - y)\,(x + 3)\,(x - 2)\,(x^2 + 4)}$

$\Rightarrow \frac{(x - y)(x^2 + y^2 + xy)\,(x + 2)(x + 3)\,(x - 2)\,(x + 2)\,(x^2 + 4)}{(x - y)\,(x + 3)\,(x - 2)\,(x^2 + 4)}$

$\Rightarrow (x\,2 + y\,2 + xy)\,(x + 2)\,2$

∴ The required answer is $(x\,2 + y\,2 + xy)\,(x + 2)\,2$.

---

24. Answer: d

Explanation:

The correct answer is **Barter**.

⭐ **Key Points**

- In the Barter system, the direct exchange of goods or services is done without the use of tokens, credit or money.
- Trading goods and services without the use of money are known as a Barter system.

⭐ **Additional Information**

- **Balance of trade** or BoT is a financial statement that captures the nation's import and export of commodities with the rest of the world.
- Commodity money was used immediately after the Barter system.
- A type of money in which Physical Goods are used instead of money . Some of the examples arealcohol, cocoa beans, copper, gold, silver, salt, seashells, tea, and tobacco

---

25. Answer: d

Explanation:

Given:

Base = 44 cm

Height = 22 cm

Concept used:

Area of a parallelogram = Base × Height

Calculation:

The area of the parallelogram = $44 \times 22 = 968$ cm ^{2}

∴ The area of the parallelogram will be 968 cm ^{2}.

---

26. Answer: b

Explanation:

Given:

The man travels at a speed of 15 km/h instead of travelling at a speed of 9 km/h, he travels 30 km more.

Concept used:

Time × Speed = Distance

Calculation:

Let's suppose he travelled for T hours.

According to the question, (15 - 9) = 6 kmph extra speed speed made him cover 30 km more distance.

Hence

$6 \times T = 30$

$\Rightarrow T = 5$

Thus, the actual distance traveled by him = $9 \times 5 = 45$ km

∴ The actual distance travelled by him is 45 km.

---

27. Answer: c

Explanation:

The correct answer is **Blood helps in sensory inputs**.

⭐ **Important Points**

- Bone is the mainconnective tissue that provides the structural frame of the body.
- Bones support and protect softer tissues and organs.
- Blood is a fluid connective tissue containing plasma, red blood cells (RBC), white blood cells (WBC) and platelets.
- **Blood protects the body from disease.**
- **It is the main circulating fluid that helps in the transport of various substances.**
- **Blood carries oxygen from the lungs to the other parts of the body .**
- **Blood carries carbon dioxide from the body cells to the lungs.**
- **But Blood does not help with sensory inputs.**
  - **So Statement 3 is the correct answer.**

---

28. Answer: d

Explanation:

Given:

$\frac{8}{5}$ = 1.60

$\frac{7}{4}$ = 1.75

Calculation:

Given options are

$\frac{1}{4}$ = 0.25

$\frac{8}{3}$ ≈ 2.67

$\frac{2}{7}$ ≈ 0.2857

$\frac{19}{11}$ ≈ 1.73

Hence, only $\frac{19}{11}$ fits.

∴ **Among the following fractions, $\frac{19}{11}$ is greater than $\frac{8}{5}$ and less than $\frac{7}{4}$.**

---

29. Answer: d

Explanation:

The correct answer is **TISCO.**

⭐ **Key Points**

- TISCO is the first large-scale iron and steel plant in India.
- Tata Iron and Steel Company or TISCO is the first iron and steel manufacturing plant in India which was founded and established by Jamsetji Tata and Dorabji Tata respectively on 26th August 1907 at Jamshedpur, Jharkhand.
- The industry is located on the banks of the Subarnarekha and Kharkai rivers.
- These rivers help in the industrial uses and water treatment for the industry.

⭐ **Additional Information**

Steel Plant	Description
Rourkela Steel Plant	• Rourkela Steel Plant (RSP), in Rourkela, Odisha is the first integrated steel plant in the public sector in India. • It was set up with West Germany collaboration with an installed capacity of 1 million tonnes. • On 3 February 1959, then president Rajendra Prasad inaugurated RSP's first blast furnace named 'Parvati'.
Bhilai Steel Plant	• Bhilai Steel Plant is situated in Chhattisgarh. • Bhilai is a city in the district of Durg. • The Bhilai Steel Plant (BSP) is India's first and main producer of steel rails. • It was established in the year 1955.
Bokaro Steel Plant	• Bokaro Steel plant is located in Bokaro, Jharkhand and was the fourth public sector plant which was established in 1964 with the help of Russia. • It was later merged with SAIL. • It is the first Indian steel plant which has been built by using maximum products like equipment, raw material and other things from India itself. • Currently, it operates 5 blast furnaces and has the capacity to produce 5.8 MT of liquid steel. • The major products of this plant are hot rolled and cold rolled coils, galvanized clean sheets, hot rolled plates and sheets.

30. **Answer: c**

Explanation:

The logic followed here is:

Numbers 49, 84 and 63 are multiples of 7 whereas 50 is not a multiple of 7.

Option 1 → 49 ÷ 7 = 7

Option 2 → 84 ÷ 7 = 12

Option 3 →50 ÷ 7 = 7.14

Option 4 → 63 ÷ 7 = 9

Hence, **50** is different from the rest.

---

31. Answer: c

Explanation:

Given:

The cost of 1 kg rice is Rs. 45

Calculation:

the cost of 15.2 kg rice = 15.2 × 45 = Rs. 684

∴ The cost of 15.2 kg rice is Rs. 684.

---

32. Answer: c

Explanation:

The correct answer is **1948.**

⭐ Key Points

- The General Agreement on Tariffs and Trade came into existence in the year **1948** .
- **The World Trade Organization (WTO) was earlier known as GATT (General Agreement on Tariffs and Trade)**
- The General Agreement on Tariffs and Trade (GATT) was signed by **23 countries in October 1947, after World War II, and became law on Jan. 1, 1948.**

⭐ Additional Information

- **The GATT's purpose was to make international trade easier.**
- In 1995 the GATT was absorbed into the World Trade Organization (WTO), which came into effect on 1 January 1955 which extended it.
- The council chair is Swedish Ambassador Mikael Anzén.
- The World Trade Organization (WTO) is the only global international organization dealing with the rules of trade between nations.
- The goal is to help producers of goods and services, exporters, and importers conduct their business.
- India has been a WTO member since 1 January 1995 and a member of GATT since 8 July 1948.

---

33. Answer: a

Explanation:

Concept used:

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

Calculation:

$\frac{(2.7)^2 - (0.8)^2}{2.7 - 0.8}$

$\Rightarrow \frac{(2.7 + 0.8)(2.7 - 0.8)}{(2.7 - 0.8)}$

$\Rightarrow \frac{(2.7+0.8)(2.7-0.8)}{(2.7-0.8)}$

$\Rightarrow 3.5$

$\therefore$ The required answer is 3.5.

---

34. Answer: d

Explanation:

B	Brackets in order (), {}, []	ब्रैकेट (), {}, [] क्रम में
O	of	का
D	Division (÷)	विभाजन (÷)
M	Multiplication (×)	गुणा (×)
A	Addition (+)	जोड़ (+)
S	Subtraction (–)	घटाव (–)

Code	+	–	×	÷
Symbol	÷	×	–	+

Given : 11 – 2 × 4 ÷ 12 + 4

On replacing the codes: 11 × 2 – 4 + 12 ÷ 4

→ 11 × 2 – 4 +12 ÷ 4

→11 × 2 – 4 + 3

→22 – 4 + 3

→ 2 5 - 4

→ 21

Hence, **21** is the correct answer.

---

35. Answer: d

Explanation:

The correct answer is **Indica.**

⭐ **Key Points**

- Megasthenes compiled information about India in the book Indika/Indica , which is now a lost work and only survives in quotes quoted by later writers in their books.
- Megasthenes visited India sometime between circa 302 BCE and 288 BCE.
- Megasthenes was an ancient Greek historian, diplomat, and Indian ethnographer.
- He was an ambassador of Seleucus Nicator I, in the court of Chandragupta Maurya.

⭐ **Additional Information**

- Vigyaneshwar composed a book called Mitakshara which is a commentary on **Yajnavalkya Smriti** .
- It is also called a legal book.
- Kalidasa wrote Megadutam, **Malvikagnimitram.**
- Banabhatta is the author of **Harshacharita and Parvatiparinay.**

---

36. Answer: d

Explanation:

Eight Boys: A, B, C, D, E, F, G and H;

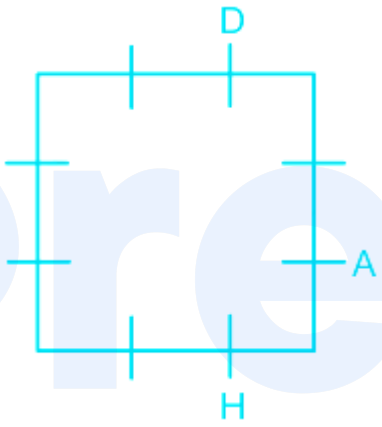
i) Two boys are sitting on each side.

ii) D is second to the right of A.

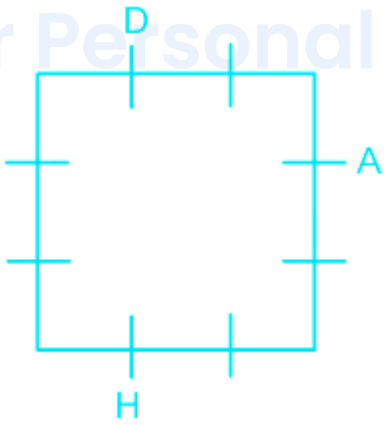
iii) H and D sit on the opposite sides.

iv) H is either third to the left of D or third to the right of D.

Case 1:



Case 2:

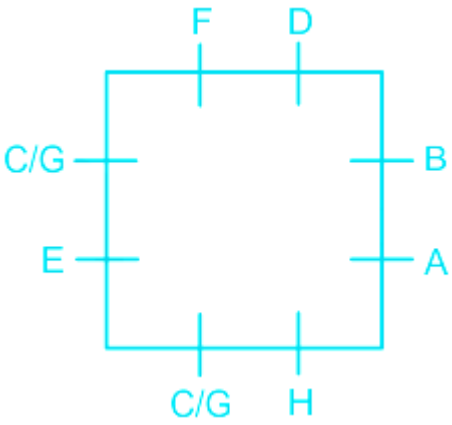


v) A and B are sitting on the same side.

vi) E is not the neighbour of H or D.

This eliminates Case 2.

vii) F is not the neighbour of E and H.



Here, C and G are neighbours of E.

Hence, C and G is the correct answer.

---

37. **Answer: a**

Explanation:

The correct answer is **Ploughing on sloping land along the contour lines.**

- **Contour ploughing** is the farming practice of plowing and/or planting across a slope following its elevation contour lines.
- In this method, **water doesn't erode the soil but rather socks** into it.

⭐ **Additional Information**

- Terrace farming: it is the practice of cutting steps in the hill slopes to provide flat land for cultivation and check the soil erosion.
- Mulching: the bare grounds between plants is Covered with a layer of organic matter like straw. It helps to retain soil moisture.

---

38. **Answer: d**

Explanation:

The correct answer is **Antonio Guterres.**

- **Antonio Guterres** is the Secretary-General of the UN.
- Current General Assembly President is Tijjani Muhammad Bande.
- The United Nations General Assembly is one of the six principal organs of the United Nations (UN).
- The UN General Assembly is the only UN organ wherein all member states have equal representation.

⭐ **Additional Information**

- The United Nations (UN) is the largest intergovernmental organisation that aims to maintain international peace and security.
  - Established on 24 October 1945 .
  - The main organs of the UN are:
    1. The General Assembly.
    2. The Security Council.
    3. The Economic and Social Council.
    4. The Trusteeship Council.
    5. The International Court of Justice.
    6. The UN Secretariat.
  - Headquarters of UN: New York , New York, United States.

---

39. Answer: d

Explanation:

The correct answer is **Swachh Bharat Abhiyan**.

⭐ **Key Points**

- **Swachh Bharat Mission, Swachh Bharat Abhiyan** , or Clean India Mission is a country-wide campaign initiated by the Government of India in 2014 to eliminate

open defecation and improve solid waste management.

- Swachh Bharat Mission campaign was introduced by Prime Minister Narendra Modi and was launched on 2nd October 2014 in memory of Mahatma Gandhi's vision of a Clean India.
- Even the logo of the Swachh Bharat Mission is inspired by Mahatma Gandhi.

⭐ **Additional Information**

- Swachh Bharat Abhiyan Major Objectives:
  - The major objective of the Swachh Bharat Abhiyan is to spread awareness about cleanliness and its importance of it.
  - The concept of Swachh Bharat Abhiyan is to provide basic sanitation facilities like toilets, solid and liquid waste disposal systems, village cleanliness, and a safe and adequate drinking water supply to every person.
- Swachh Bharat Mission was planned separately for Rural areas and Urban areas.

---

40. Answer: a

Explanation:

The correct answer is **/login.php.**

⭐ **Key Points**

- **/login.php** identifies the path of a web page.
- " .com " is short for commercial , many personal, educational, and non-profit websites have a .com domain name since it is the most recognizable.
- **HTTPS** : ensures data security over the network - mainly public networks like Wi-Fi. HTTP is not encrypted and is vulnerable to attackers who are eavesdropping and can g>ain access to website databases and sensitive information.
- " **www.d2h.com** " is a complete web address.

⭐ **Additional Information**

- URL stands for Uniform Resource Locator.
- A URL is nothing more than the address of a given unique resource on the Web.
- A URL has two main components
    - Protocol identifier: For the URL http://example.com, the protocol identifier is HTTP.
    - Resource name: For the URL http://example.com, the resource name is example.com.

---

41. Answer: c

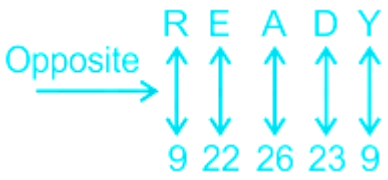
Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The logic followed here is :

- **Each letter is coded with the number that represents its place value in reverse alphabetical order.**
- R → 9
- D → 23

Here, the code for READY will be



Hence, the code for 'READY' will be **'92226232'.**

---

42. Answer: d

Explanation:

Concept used:

Cos (90 ° - θ) = Sin θ

Sin (α - β) = Sinα Cosβ - Sinβ Cosα

Calculation:

cos 75° + sin 15°

⇒ Cos (90° - 15°) + sin 15°

⇒ sin 15° + sin 15°

⇒ 2 × sin 15°

⇒ 2 × Sin (45° - 30°)

⇒ 2 × (Sin 45° Cos 30° - Sin 30° Cos45°)

⇒ 2 × ($\frac{1}{\sqrt{2}} \times \frac{\sqrt{3}}{2} - \frac{1}{2} \times \frac{1}{\sqrt{2}}$)

⇒ 2 × $\frac{\sqrt{3}-1}{2\sqrt{2}}$

⇒ $\frac{\sqrt{3}-1}{\sqrt{2}}$

∴ The required answer is $\frac{\sqrt{3}-1}{\sqrt{2}}$.

---

43. Answer: a

Explanation:

The correct answer is Lord Canning.

⭐ Key Points

- **Lord Canning became the last governor-general and first viceroy of India during the rule of the British crow**
- His tenure lasted for 6 years from 1856-to 62.
- After 1858, the post of the Governor-General came to be known as the Viceroy.
- Lord Canning was the Governor-General of India during the Revolt of 1857 and he is admired for his calm demeanour and for ensuring that the various government departments and the administration worked smoothly even during the revolt.
- He succeeded Lord Dalhousie as the Governor-general.

⭐ Additional Information

- Lord William Bentinck is also known as the father of western education in India.
  - He was the first Governor-General of India who was in office from 1833-to 1835 (earlier as Governor-General of Bengal from 1828-1833).
- Lord Dalhousie was the youngest Governor-General of India from 1848 to 1856.
  - He started the policy of Doctrine of Lapse.
  - He is credited for the formation of the Gurkha regiment.

---

44. Answer: a

Explanation:

Given:

Excluding stoppage station, the speed of a train is 60 km/h and including stoppage station it travels at a speed of 45 km/h.

Concept used:

Time × Speed = Distance

1 hour = 60 minutes

Calculation:

Let the distance be D

So, the time required to cover the distance without stoppage will be = (D/60) hours

Time required for the same distance to cover with stoppage = (D/45) hours

Then, the train stop for {(D/45) - (D/60)} hours ⇒ D/180 hours

So,

the stoppage time of the train per hour

= {(D/180) ÷ (D/45)} hours

⇒ 1/4 hours

⇒ (1/4 × 60) minutes

⇒ 15 minutes

∴ For 15 minutes the train stops per hour.

---

45. Answer: d

Explanation:

Concept used:

Multiply the last digit of a number by 9, and subtract it from the rest of the number. If the outcome is divisible by 13 then the number N is divisible by 13.

Calculation:

According to the divisibility rule of 13,

988 ⇒ 98 - (8 × 9) = 26, which is divisible by 13.

Only, 988 turns out to be a multiple of 13.

∴ 988 among**the following is the greatest three-digit number that is divisible by 13.**

---

46. Answer: d

Explanation:

The correct answer is **India.**

⭐ **Key Points**

- India has one of the largest domestic communication satellite systems in the Asia-Pacific region.
- **Communication satellites** possibly form the greatest number of satellites that are in orbit.
- They are used for communicating over large distances.

⭐ **Additional Information**

- **INSAT and GSAT** of India come under communication satellite.
- The Indian National Satellite (INSAT) systems which are placed in Geo-stationary orbits are one of the largest domestic communication satellite systems in the Asia-Pacific region.
- The height of the satellite above the Earth enables the satellites to communicate over vast distances and thereby overcoming the curvature of the Earth's surface.
- The data is used for several applications covering agriculture, water resources, urban development, mineral prospecting, environment, forestry, drought and flood forecasting, ocean resources and disaster management.
- Using these satellites it is possible to see many features that are not obvious from the earth's surface, or even at the altitudes at which aircraft fly.
- Using these earth observation satellites many geographical features have become obvious and they have even been used in mineral search and exploitation.

47. **Answer: d**

Explanation:

Given:

Rs. 742 is being divided into two parts in the ratio of 5 : 9

Concept used:

Ratio and Proportion

Calculation:

First part = $742 \times \frac{5}{(5+9)}$ = Rs. 265

First part = $742 \times \frac{9}{(5+9)}$ = Rs. 477

∴ **Dividing Rs. 742 into two parts in the ratio of 5 : 9 will give the two parts as Rs. 265, Rs. 477.**

48. **Answer: a**

Explanation:

Given:

0.75 : x :: 2.5 : 8

Concept used:

In the case of a proportion, the product of the extreme terms is equal to the product of the middle terms.

Calculation:

0.75 : x :: 2.5 : 8

⇒ 2.5x = 0.75 × 8

⇒ x = 2.4

∴ The required value of x is 2.4.

---

49. Answer: a

Explanation:

The correct answer is**Satellite.**

⭐ Important Points

- An artificial satellite is an object that people have made and launched into orbit using rockets.
- Aryabhata was the first unmanned artificial Earth satellite indigenously built by India.
- **Hence Satellite is NOT wired broadband.**

⭐ Additional Information

- A dial-upconnection uses a standard phone line and analog modem to access the Internet.
  - A dial-up connection is established when two or more communication devices use a public switched telephone network (PSTN) to connect to an Internet service provider (ISP).
- A cableis a hardware device that allows your computer to communicate with an Internet service provider over a landline connection.
  - A cable modem is a device that modulates and demodulates an analog carrier signal to encode and decode digital information that is transmitted.
- A digital subscriber line (DSL) is a technology that transports high-bandwidth data over a simple telephone line that is directly connected to a modem.
  - This allows for file-sharing , and the transmission of pictures and graphics, multimedia data, audio and video conferencing, and much more.

- DSL uses the analog medium , which is reliable and prevents interruptions and heavy packet loss.

---

50. Answer: c

Explanation:

The correct answer is **Saikhom Mirabai Chanu.**

⭐ **Key Points**

- Saikhom Mirabai Chanu is an Indian weightlifter.
- She is the female weightlifter from Manipur who has received India's highest sporting honour, Rajiv Gandhi Khel Ratna for 2018.
- She is the winner of the silver medal at the 2020 Tokyo Olympics in the Women's 49 kg category.
- She belongs to Nongpok Kakching village in Manipur's Imphal East district.

⭐ **Additional Information**

- Hima Das , an Indian sprint runner from Dhing, Assam was nicknamed "Dhing Express" .
  - Currently, she holds the Indian National Record for 400 metres with a timing of 50.79 seconds which she won in the 2018 Asian Games in Jakarta, Indonesia.
- Mangte Chungneijang Mary Kom is an Indian Olympic boxer from the state of Manipur.
  - She is the only woman to become World Amateur Boxing champion for a record six times.
  - She has been nicknamed 'Magnificent Mary'.
- **Karna Malleswari** is a former Indian weightlifter born in Andhra Pradesh.
  - She is the first Indian woman to fetch a medal at Olympics,
  - She won a Bronze medal at Sydney Olympics, 2000 .
  - She was honoured with Rajiv Gandhi to help Ratna in 1995 and Padma Shri in 1999 .

51. **Answer: b**

Explanation:

The correct answer is **Pituitary.**

⭐ **Key Points**

- **The pituitary is responsible for dwarfism in humans.**
- Growth hormone is released into the bloodstream from the anterior pituitary gland.
- The pituitary gland also produces other hormones that have different functions from growth hormones.
- Growth hormone is produced by the pituitary gland.
  - It has many functions including maintaining normal body structure and metabolism.
  - It is a small pea-sized gland that plays a major role in regulating vital body functions.
  - It is also referred to as the 'master gland' of the human body as it controls the activity of most of the other hormone-secreting glands.

⭐ **Additional Information**

- **Thyroxine** is the main hormone secreted into the bloodstream by the thyroid gland.
  - It is also called tetraiodothyronine . It maintains the basic metabolism of the body.
- **Adrenaline hormone** is secreted by the adrenal gland.
  - Adrenaline hormones are rapidly secreted in response to the stress of any kind and during emergency situations and are called emergency hormones or hormones of Fight or Flight.
- **The pancreas** functions as both endocrine and exocrine functions.
  - The pancreas has exocrine glands that produce enzymes that are useful for digestion.

- These are released from the acinar cells that act as exocrine cells.

---

52. Answer: a

Explanation:

Given:

$\frac{\sqrt{7}-\sqrt{3}}{\sqrt{7}+\sqrt{3}} + \frac{\sqrt{7}+\sqrt{3}}{\sqrt{7}-\sqrt{3}} + \frac{\sqrt{3}+1}{\sqrt{3}-1} + \frac{\sqrt{3}-1}{\sqrt{3}+1}$

Concept used:

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

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

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

Calculation:

$\frac{\sqrt{7}-\sqrt{3}}{\sqrt{7}+\sqrt{3}} + \frac{\sqrt{7}+\sqrt{3}}{\sqrt{7}-\sqrt{3}} + \frac{\sqrt{3}+1}{\sqrt{3}-1} + \frac{\sqrt{3}-1}{\sqrt{3}+1}$

$\Rightarrow \frac{(\sqrt{7}-\sqrt{3})^2+(\sqrt{7}+\sqrt{3})^2}{(\sqrt{7}-\sqrt{3})(\sqrt{7}+\sqrt{3})} + \frac{(\sqrt{3}+1)^2+(\sqrt{3}-1)^2}{(\sqrt{3}-1)(\sqrt{3}+1)}$

$\Rightarrow \frac{7+3-2\sqrt{21}+7+3+2\sqrt{21}}{7-3} + \frac{3+1+2\sqrt{3}+3+1-2\sqrt{3}}{3-1}$

$\Rightarrow 5 + 4$

$\Rightarrow 9$

$\therefore$ The required value is 9.

---

53. Answer: d

Explanation:

The correct answer is **Kendrick Lamar.**

⭐ **Key Points**

- **Kendrick Lamar** is the first rapper to win Pulitzer Prize for music.
- Kendrick Lamar received the Pulitzer Prize for his 2017 album **"DAMN".**
- Lamar became the first non-classical or jazz musician to win a Pulitzer for music.
- Lamar had also notched four Grammys including the best rap album this year for **"DAMN".**

⭐ **Additional Information**

- The **Pulitzer Prize** is an award for achievements in newspaper, magazine, and online journalism, literature, and musical composition within the United States.
- First awarded: In 1917.
- Awarded for: Excellence in newspaper journalism, literary achievements, and musical composition.
- Presented by: Columbia University.

---

54. Answer: a

Explanation:

The correct answer is **phototropism.**

⭐ **Key Points**

- Phototropism is a directed response in plants that permits them to grow towards, or away from, a light source.
- The modulation of physiology or development in relation to day length is known as photoperiodism.
- Positive phototropism is the plant's reaction to the light source.
- Sunflower is an example.
- Negative phototropism occurs when a plant grows in the opposite direction of the light source.

⭐ Important Points

- In 1880, Charles Darwin studied phototropism in canary grass and oat coleoptiles with the help of his son, and published his findings in the book ' The Power of Movement in Plants .' They noticed seedlings bending towards the light.
- They showed this by covering the tops of the oat coleoptiles, preventing photosynthesis.
- They became phototropic when they covered the lower portion of these coleoptiles. From this and other trials, he determined that the grass's tip (called coleoptiles) has a strong perception of light and bends towards it, but the central region activates protons, lowering the pH in the cells.

---

55. Answer: a

Explanation:

Given:

A is 80% more than B and B is 20% less than C

Concept used:

Application of Percentage

Calculation:

Let be C be 100Q

Hence,

B = 100Q - 100Q × 20% = 80Q

A = 80Q + 80% × 80Q = 144Q

Thus,

A : B : C

⇒ 144Q : 80Q : 100Q

⇒ 36 : 20 : 25

∴ The value of A : B : C is 36 : 20 : 25.

---

56. Answer: d

Explanation:

Given:

cot x = 3

Concept used:

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

Cot θ = $\frac{Cos\theta}{Sin\theta}$

Calculation:

$\frac{(3+3\ \sin\ x)(1-\sin\ x)}{(2+2\ \cos\ x)(3-3\ \cos\ x)}$

⇒ $\frac{3\times(1+sinx)(1-sinx)}{6\times(1+cosx)(1-cosx)}$

⇒ $\frac{(1-sin^2x)}{2\times(1-cos^2x)}$

⇒ $\frac{cos^2x}{2\times sin^2x}$

⇒ $\frac{cot^2x}{2}$

⇒ $\frac{3^2}{2}$

⇒ $\frac{9}{2}$

∴ The required value is $\frac{9}{2}$

57. **Answer: b**

Explanation:

The correct answer is 1988.

⭐ Key Points

- The UN Peacekeeping forces were awarded Nobel Prize for Peace in the year 1988 .
- UN Peacekeeping helps countries navigate the difficult path from conflict to peace. The UN peacekeepers provide security and political and peacebuilding support to help countries make the difficult, early transition from conflict to peace.
- UN Peacekeeping is guided by three basic principles:-
  - Consent of the parties
  - Impartiality
  - Non-use of force except in self-defence and defence of the mandate.
- Indian soldiers had been awarded the 'UN Medal' recently for their peacekeeping works in South Sudan.

58. **Answer: b**

Explanation:

9 persons : A, B, C, D, E, F, G, H and I.

i) G sits fourth to the right of B.

ii) F is fourth to the right of C and is second to the left of I.

iii) G is second to the right of C.

iv) There are only three persons between E and A.

v) I is fifth to the right of A.

vi) D is not the neighbour of I and B.

Hence, ' D between F and G' is the correct answer.

---

59. Answer: b

Explanation:

The correct answer is **Gorakhpur**.

⭐ **Important Points**

- Presently Gorakhpur railway station in Uttar Pradesh has the longest platform (1366 m) in the world.
- Kharagpur Junction railway station is the third-longest railway platform in India, located in the state of West Bengal and its length is 1,072 meters.
- Sonpur railway statio n is listed as one of the longest railway platforms in India with a length of 738 m and is known for India's longest road-cum-rail bridge (Ganga Rail-Road Bridge).
- Deen Dayal Upadhyaya railway station (Mughalsarai) contains the largest railway marshalling yard in Asia.

60. **Answer: c**

Explanation:

The correct answer is **Wajid Ali Shah.**

⭐ **Key Points**

- The song of lament 'the life has gone out of the body' is associated with Nawab**Wajid Ali Shah of the State of Awadh.**
- The exile of the ruler of the Awadh kingdom was termed as "The life has gone out of the body".
- Awadh is known in British historical texts as Avadh or Oudh.
- Awadh is a region of Uttar Pradesh
- The traditional capital ofAwadh was Lucknow , also the station of the British Resident, which now is the capital of Uttar Pradesh.

⭐ **Additional Information**

- Why it was termed as "The life has gone out of the body"?
- Awadh was annexed by the British on the plea that the region was being misgoverned
- The British thought that the Nawab was not popular but on the contrary, he was very popular.
- People considered it as “the life has gone out of the body”.
- The removal led to an emotional upheaval among the people of Awadh.

---

61. **Answer: c**

Explanation:

Given:

Numbers = 18 and 42

Concept used:

LCM × HCF = The Product of two numbers

Calculation:

The product of LCM and HCF of 18 and 42 = 18 × 42 = 756

∴ **The product of LCM and HCF of 18 and 42 is 756.**

---

62. **Answer: c**

Explanation:

The correct answer is **roasting**.

⭐ **Key Points**

- In this roasting process, the ores are generally converted into Metal oxides.
- It is the process in which ore is converted into its oxide by heating it strongly in excess of air.
- This method is commonly used for sulfide ores .
- During the roasting process, moisture and non-metallic impurities are removed as volatile gases .
- For example, Zinc sulfide is converted into zinc oxide by roasting.

⭐ **Additional Information**

- In calcination, the ore is heated above its melting point in the absence of air or a very limited amount of oxygen supply.
- Calcination is mostly applied in the decomposition of carbonate ores.
- Calcination can be used to drive out moisture from an ore.

---

63. **Answer: b**

Explanation:

Given:

In a triangle, right angled at B, AB = 12 cm and BC = 5 cm.

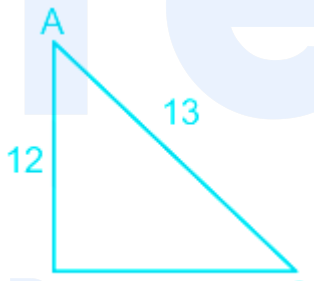
Concept used:

Pythagoras Theorem

Sin θ = $\frac{Height}{Hypotenuse}$

Cos θ = $\frac{Base}{Hypotenuse}$

Calculation:



Thus, AC = $\sqrt{12^2 + 5^2}$ = 13 cm

Sin A = $\frac{5}{13}$

Cos A = $\frac{12}{13}$

Hence, Sin A Cos A = $\frac{60}{169}$

Sin C = $\frac{12}{13}$

Cos C = $\frac{5}{13}$

Hence, Sin C Cos C = $\frac{60}{169}$

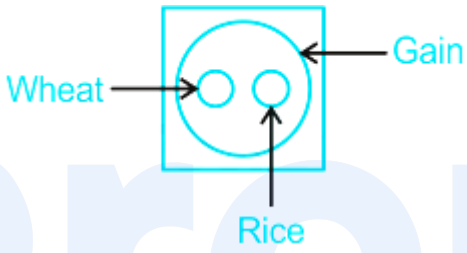
∴ Option 2 is the answer.

64. **Answer: c**

Explanation:

The relationship between Wheat, Rice and Grain is as follows:

- All wheat are grain.
- All Rice are grain.



Hence, the answer figure is **B.**

---

65. **Answer: d**

Explanation:

The correct answer is **Maharashtra**.

⭐ **Key Points**

- The cultivation and harvesting of grapes are called viticulture .
- Viticulture is the speciality of the Mediterranian region .
- The best quality wines in the world with distinctive flavours are produced from this region such as Port wine is famous in Portugal, Sherry in Southern Spain , etc.
- **In India, Maharashtra state has the highest production of Viticulture.**

⭐ **Additional Information**

Terminology	Explanation
Horticulture	The branch of plant agriculture deals with garden crops, generally fruits, vegetables, and ornamental plants.
Sericulture	Commercial rearing of silkworms for the production of silk.
Pisciculture	The rearing and controlled breeding of fishes.

66. **Answer: c**

Explanation:

The correct answer is Kolkata.

- Netaji Subhash Chandra Bose International Airport is located in Kolkata.
- Netaji Subhas Chandra Bose airport is one of the oldest airports in India.
- Netaji Subhas Chandra Bose International Airport which was earlier known as "Dum Dum Airport" is situated i n Kolkata.
- It was opened in 1924 AD and it is the fifth-busiest airport in India.

Additional Information

List of some important airports in India and their location:

Airport	City
Sri Guru Ram Dass Jee International Airport.	Amritsar
Lokpriya Gopinath Bordoloi International Airport.	Guwahati
Veer Savarkar International Airport.	Port Blair
Kempegowda International Airport.	Bengaluru
Calicut International Airport.	Kerala
Raja Bhoj Airport.	Bhopal
Devi Ahilyabai Holkar Airport.	Indore
Dr. Babasaheb Ambedkar International Airport.	Nagpur
Lal Bahadur Shastri International Airport.	Varanasi
Chaudhary Charan Singh Airport.	Lucknow

67. **Answer: d**

Explanation:

The correct answer is **C N R Rao.**

⭐ **Key Points**

- Prof Rao is an **Indian chemist,** who currently serves as the Head of the Scientific Advisory Council to the PM of India.
- He is the third scientist after C.V.Raman and A.P.J.Abdul Kalam to receive the Bharat Ratna award.
- He has worked mainly in **solid-state and structural chemistry.**
- **Hence he has no contribution to Nuclear Field.**

⭐ **Additional Information**

- **Homi Jahangir Bhabha** was the founding director of the Tata Institute of Fundamental Research which is located in Mumbai.
    - Tata Institute of Fundamental Research comes under the aegis of the Department of Atomic Energy.
    - He was also known as the " Father of the Indian nuclear programme ".
- **Sekhar Basu** served as the chairman of the Atomic Energy Commission of India.
    - He has also served as the Director of Bhabha Atomic Research Centre.
    - He has also worked as the Project Director of the Nuclear Submarine Programme and the Chief Executive of the Nuclear Recycle Board at the same institute.
- **Raja Ramanna** (28 January 1925 – 24 September 2004) was an Indian physicist who is best known for his role in India's nuclear program during its early stages.
    - Having joined the nuclear program in 1964, Ramanna worked under Homi Jehangir Bhabha and later became the director of this program in 1967.

---

68. **Answer: a**

Explanation:

Given:

The length and the breadth of a rectangle are in the ratio of 7 : 4 and its area is 12348 cm 2 ,

Concept used:

Area of a rectangle = Length × Breadth

Calculation:

Let the common ratio be Q

Hence, length = 7Q and breadth = 4Q

According to the question,

$7Q \times 4Q = 12348$

$\Rightarrow Q^2 = 441$

$\Rightarrow Q = 21$

$\Rightarrow 7Q = 147$

$\therefore$ The length of the rectangle is 147cm.

---

69. **Answer: d**

Explanation:

The correct answer is **Vikram Sarabhai.**

⭐ **Key Points**

- The Lander was named Vikram after Dr Vikram A Sarabhai who is known as the Father of the Indian Space Programme.
- It was designed to function for one lunar day, which is equivalent to **14 Earth days.**
- Lander Vikram weighs **1471 kg.**

⭐ **Additional Information**

- Chandrayaan-2 is India's 2nd moon mission which was successfully launched by GSLV-MkIII-M1 from Second Launch Pad at Satish Dhawan Space Centre, Sriharikota in Andhra Pradesh .
- In 2019, Chandrayaan-2 was launched with an orbiter and a lander named Vikram , and a six-wheeled rover named Pragyaan ISRO. The orbiter is still functional and the lander crashed before its induction in any research operation.
- Rover- Pragyan :
  - Pragyan in Sanskrit means wisdom .

- It is a 6-wheeled robotic vehicle, weighing 27-kg. It will set out on its job of collecting information on the lunar surface.

---

70. Answer: d

Explanation:

The correct answer is **Kolkata on 24 Oct 1984.**

⭐ **Key Points**

- The Kolkata Metro is a rapid transit system serving the city of Kolkata in West Bengal, India.
  - The Kolkata Metro is the first planned and operational rapid transit system in India. Its construction started in the 1970 s.
  - The train ran on 24th October 1984.
  - The first stretch, from Bhawanipore (now Netaji Bhawan) to Esplanade , opened in 1984 .
- The first metro train in the country ran from **Esplanade to Bhowanipur.**
- Bhowanipur is now called Netaji Bhawan Station.
- The foundation of the project was laid by Prime Minister Indira Gandhi.

---

71. Answer: d

Explanation:

The correct answer is **Shillong.**

⭐ **Key Points**

- Shillong is known as " Scotland of the east".
- Shillong City, the capital of Meghalaya state is located in Khasi Hills.
- Shillong City is the district headquarters of East Khasi Hills District.

⭐ Additional Information

- Coorg is known as Scotland of India because of the beautiful landscape similar to that in Scotland.
- Coorg is situated in Karnataka.
- It is also the largest Coffee producer district in India.
- Another name for Coorg is Kodagu.

---

72. Answer: d

Explanation:

The correct answer is **Lavani**.

⭐ Key Points

- **Ghoomar** is a traditional folk dance of Rajasthan.
  - It was earlier performed by the Bhil tribe to worship Goddess Sarasvati which was later embraced by other Rajasthani communities.
- **Kalbelia** is a folk dance performed by women of the Kalbelia tribe of Rajasthan.
  - The costumes and dance movements are similar to that of serpents.
- **Gangaur** is the folk dance form of Rajasthan.
  - It is celebrated during the Gangaur festival in Rajasthan.
- **Lavani** is a popular music genre in Maharashtra, India.
  - It is a traditional song that is done to the rhythms of the Dholki, a percussion instrument.
- **Hence Lavani does not belong to Rajasthan.**

⭐ Additional Information

- Folk dances of Rajasthan are as follows:
- Gidar dance is one of the famous folk dances of Rajasthan.
  - It is a famous dance of the Shekhawati region performed on the occasion of ' Holi '.

- Dhol Dance : This is the famous dance of Jalore which is done by men. Four or five dhols are beaten together in it. Dhol dance is generally performed at a wedding ceremony.
- Bamarsia Dance : A large Nagada is used in this dance. Holi song and Rasia are also sung along with dance. This is performed in the regions of Bharatpur and Alwar .
- Dandiya Dance : It is a popular dance of Marwar . In this dance, a group of men dances with long sticks in their hands.

---

73. Answer: a

Explanation:

The correct answer is **art of warfare.**

- Dhanurveda is related to Archery(Weapon).
- The word Dhanurveda comes from "Dhanus" meaning bow and "Veda" meaning knowledge means the science of archery .
- Dhanurveda is an ancient treatise on the science of archery and the art of warfare .
- Dhanurveda is the upveda of the Yajurveda

Other Important Upavedas:

⭐ **Additional Information**

Upavedas	Associated with
Gandharva Veda	Sam Veda
Ayurveda	Rig Veda
Shilpveda	Atharva Veda

---

74. **Answer: a**

Explanation:

Given:

R adius of a sphere is 21 cm.

Concept used:

Area of a Sphere = $\frac{4\pi}{3} \times Radius^3$

Calculation:

Volume of the sphere = $\frac{4\pi}{3} \times 21^3$ = 38808 cm ^{3}

∴ Its volume is 38808 cm ^{3}.

---

75. **Answer: c**

Explanation:

The correct answer is Conductors.

Physical Properties of Metals and Non-metals

Physical Properties	Metals	Non - Metals
Electrical conductivity	**Conducts electricity**	**Do not conduct electricity.**
Thermal conductivity	Conducts heat	Do not conduct heat
Hardness	Hard	Soft
Lustrous	Metals are lustrous and have a shiny appearance.	Non-metals have a dull appearance.
Ductility	Ductile (Can be drawn into wires)	Non - Ductile cannot be drawn into wires.
Malleability	Malleable (Can be drawn into thin sheets)	Non - Malleable
Sonority	Sonorous (produces ringing sound on getting hit)	Non - Sonorous

Hence Conductors are not the property of Non-metals.

⭐ Additional Information

- Some of the exceptions are:
  - **Iodine is lustrous.**
    - This is an exception to the physical properties of non-metals. Iodine is non-metal and non-metals have a dull appearance.
  - **Sodium is metal** .
    - Metals are usually hard so this is also an exception.
  - **Graphite conducts electricity** .
    - This is an exception as graphite is a form of carbon and it is non-metal.

76. **Answer: b**

Explanation:

Calculation:

80.6 ÷ 4030

⇒ 0.02

∴ The required value is 0.02.

---

77. **Answer: d**

Explanation:

Given:

A shopkeeper sells a chair for Rs. 639 and incurs a loss of 10%.

Concept used:

Selling Price = Cost Price (1 - Loss%)

Calculation:

Cost price of the chair = 639 ÷ (1 - 10/100) = Rs. 710

∴ The cost price of the chair is Rs. 710.

---

78. **Answer: b**

Explanation:

Given:

Seats for Mathematics, Physics and Chemistry in a school are in the ratio of 7 : 8 : 9

There is a proposal to increase the seats by 30%, 40% and 50% respectively.

Concept used:

Incremented value = Initial value (1 + Increased%)

Calculation:

Let the common ratio be Q.

Hence, the seats of Mathematics, Physics and Chemistry are 7Q, 8Q and 9Q respectively.

After the increment,

Seats of Mathematics = 7Q × 1.3 = 9.1Q

Seats of Physics = 8Q × 1.4 = 11.2Q

Seats of Chemistry = 9Q × 1.5 = 13.5Q

Hence, the new ratio = 9.1 : 11.2 : 13.5 = 91 : 112 : 135

∴ The ratio of the increased seats will be 91 : 112 : 135.

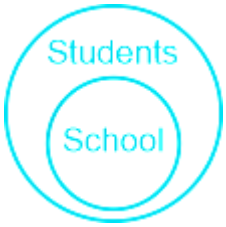
---

79. Answer: b

Explanation:

Statement: Every school has students.

The least possible Venn diagram is as follows:



This implies that **no school is without students.**

Conclusion 1: Students are only in school.→ False (as it is possible but not definite)

Conclusion 3: No school is without students. → True

Conclusion 4: Some schools do not have teachers. → False (as no information is given about teachers)

Conclusion 2: Schools are meant for students only. → False (as it is possible but not definite)

Hence, **'No school is without students'** is the correct answer.

---

80. Answer: b

Explanation:

The correct answer is **Fatima Beevi.**

⭐ **Key Points**

- M. Fathima Beevi is the first female judge of the Supreme Court of India.
  - She was appointed to Supreme Court as a Judge on 6 October 1989 where she retired on 29 April 1992.
  - She becomes the 11th Governor of Tamil Nadu on 25 January 1997.

⭐ **Additional Information**

- So far, no woman has been appointed as the Chief Justice of India.
- As per seniority, B. V. Nagarathna is assumed to become the first femaleChief Justice of India in 2027.

- Leila Seth was an Indian judge who served as the first woman judge on the Delhi High Court and later, she became the first woman Chief Justice of a state High Court , Himachal Pradesh High Court , on 5 August 1991.
- Recently on 24th January 2022, Ayesha A. Malik took the oath to become the first female judge of the Supreme Court of Pakistan.

---

81. Answer: d

Explanation:

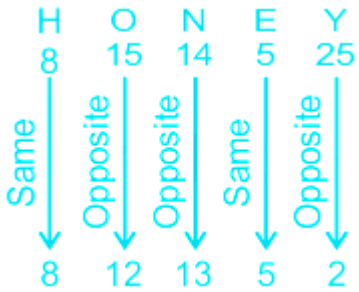
Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The logic followed here is:

Step 1: The first half of the general alphabet series is coded as per alphabetical order.

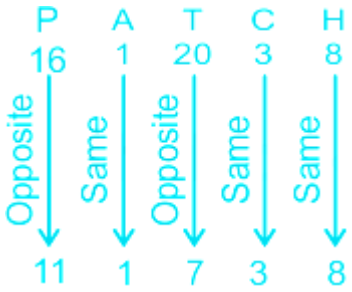
Step 2: The second half i.e.(N to Z) of the general alphabet series is coded in reverse alphabetical order from 13 to 1.

HONEY → 8 -12 - 13 - 5 - 2.



Similarly,

PATCH = ?



Hence, The code for "PATCH" will be **"11 - 1 - 7 - 3 - 8".**

⭐ Alternate Method

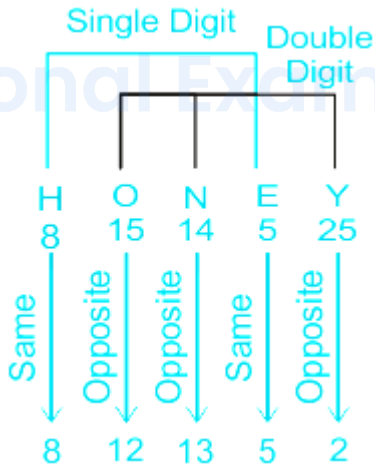
The logic followed here is:

- Unit digit place value → Same
- Double digit place value → Opposite letter place value

The code for HONEY will be as follows:

HONEY → 8 -12 - 13 - 5 - 2.

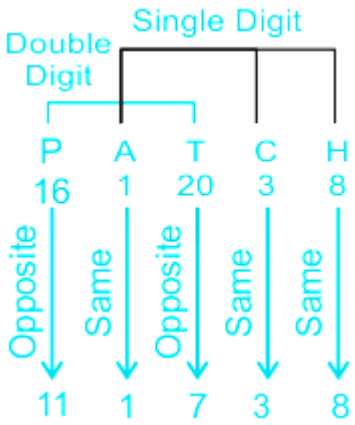
- Unit digit place value → Same
- Double digit place value → Opposite letter place value



Similarly,

PATCH = ?

- Unit digit place value → Same
- Double digit place value → Opposite letter place value



Hence, The code for "PATCH" will be "11 - 1 - 7 - 3 - 8".

---

82. Answer: a

Explanation:

The logic followed here is:

4 × 5 = 20;

4 × 7 = 28;

Similarly,

12 × 5 = 60;

12 × 7 = 84;

Hence, '12, 60, 84' is the correct answer.

---

83. Answer: b

Explanation:

Given:

A and B have together Rs. 2,300.

$\frac{2}{5}$ of A's amount is equal to $\frac{8}{26}$ of B's amount

Calculation:

Let A has Rs. Q.

Hence, B has Rs. (2300 - Q).

According to the question,

$\frac{2}{5} \times Q = \frac{8}{26} \times (2300 - Q)$

$\Rightarrow 13Q = 23000 - 10Q$

$\Rightarrow Q = 1000$

$\Rightarrow (2300 - Q) = 1300$

$\therefore$ B has Rs. 1300.

---

84. Answer: c

Explanation:

Given:

Ram bought a cycle for Rs. 1,900 and sold it for Rs. 1,862.

Concept used:

Loss = Cost Price - Selling Price

Loss% = $\frac{Loss}{Cost\ Price} \times 100\%$

Calculation:

Loss incurred = 1900 - 1862 = Rs. 38

Loss% = $\frac{38}{1900} \times 100\% = 2\%$

∴The percentage loss is 2%.

---

85. Answer: b

Explanation:

The correct answer is **Attorney General for India.**

⭐ **Key Points**

- The Attorney General (AG) of India is a part of the Union Executive.
- AG is the highest law officer in the country.
- Article 76 of the Constitution provides for the office of AG of India.

⭐ **Additional Information**

- **Appointment and Eligibility:**
  - AG is appointed by the President on the advice of the government.
  - S/he must be a person who is qualified to be appointed a judge of the Supreme Court, i.e. s/he must be a citizen of India and must have been a judge of some high court for five years or an advocate of some high court for ten years or an eminent jurist, in the opinion of the President.
- **Term of the Office:** Not fixed by the Constitution.
- **Removal:** Procedures and grounds for the removal of AG are not stated in the Constitution. S/he holds office during the pleasure of the President (may be removed by the President at any time).
- 1st AGI of India was M C Setalvad.
- The central government has extended the term of K.K. Venugopal as Attorney General (AG) for one year.
- Venugopal was appointed the 15th AG of India in 2017.

---

86. **Answer: b**

Explanation:

Calculation:

Share of the education expenses = 37.5%

Share of the other expenses = 25%

The approximate percentage share of education expenses in X's total expenditure = $\frac{37.5}{(100-25)} \times 100\%$ = 50%

∴ The approximate percentage share of education expenses in X's total expenditure would be 50%.

---

87. **Answer: d**

Explanation:

Calculation:

The percentage share of Education in the total expenditure incurred by X = $\frac{37.5 - 37.5 \times 80\%}{100 - 100 \times 80\%} \times 100\%$ = 37.5%

The CHANGE in the percentage share of Education in the total expenditure incurred by XT = 37.5 - 37.5 = 0%

Since the reduction is being made uniformly across all the sections, the resultant shares in terms of percentage will not change.

∴ The CHANGE in the percentage share of Education in the total expenditure incurred by XT would be 0%.

---

88. **Answer: b**

Explanation:

Calculation:

Share of Food and Other expenses = 12.5 + 25 = 37.5%

Share of education expenses = 37.5%

∴ The expenditure incurred on education is as much as that incurred on Food and Other expenses.

---

89. Answer: a

Explanation:

Calculation:

Share of Food and Other Expenses = 12.5 + 25 = 37.5%

Share of Clothes and Food = 12.5 + 12.5 = 25%

Share of Health and Clothes = 12.5 + 12.5 = 25%

Share of Food and Health = 12.5 + 12.5 = 25%

∴ The highest percentage of total expenditure is incurred on Food and Other Expenses.

---

90. Answer: a

Explanation:

Given:

Left : A B 7 C D 9 Z Y * P 2 M © K S 3 ↑ 5 N T 9 : Right

Condition to be checked:

i) **Digits which is immediately preceded as well as immediately followed by a letter:**

Letter → Digit → Letter

Left : A**B 7 CD 9 Z**Y *__P 2 M__© K S 3 ↑ 5 N T 9 : Right

Thus, there are three such digits, each of which is immediately preceded as well as immediately followed by a letter.

Hence, the correct answer is **"Three".**

⭐ Mistake Points

- Immediately preceded by means immediately before or to come just before.
- Immediately followed by means immediately after or to come just after.

---

91. Answer: d

Explanation:

The logic followed here is:

- An increase in demand can be met through an increase in supply.
- Similarly, an increase in consumption can be met through an increase in production.

Hence, the correct answer is **Consumption**.

⭐ Key Points

- **'Supply' is related to 'Demand' in the same way as 'Production' is related to 'Consumption'.**
- **Production** is the process of merging numerous **material and immaterial inputs (plans, information) to create a consumable item (output)** .

- It is the process of producing a valuable product, such as a good or service, that adds to people's utility.
- Production theory, which is interwoven with the **consumption (or consumer)** theory of economics, is a branch of economics that focuses on production.
- The output and production process are intimately related to the productive use of the original inputs (or factors of production).

⭐ Additional Information

- **Land, labour, and capital** are considered the three fundamental production inputs and are referred to as primary producer commodities or services. In the output phase, these fundamental inputs are not greatly changed, and they do not form a complete component of the result.
- Materials and energy are classified as secondary elements in classical economics since they are bi-products of land, labour, and capital.
- A consumer's desire to purchase a commodity is characterised as demand for goods or services.
- The overall availability of a commodity in the market is the supply of **commodities or services.**

---

92. **Answer: a**

Explanation:

The logic followed here is:

Jog, Walk, and Run is a type of exercise done with the help of legs.

Whereas,

'Exercise' is a common term used for all types of activities done keep oneself fit.

Hence, Exercise is the odd one.

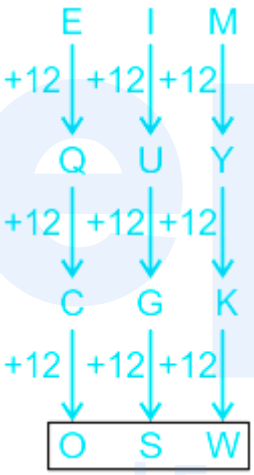
---

93. **Answer: a**

Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The logic followed here is:



Hence, the next term in the series is **OSW.**

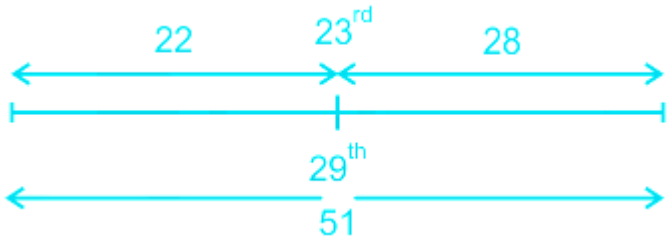
---

94. **Answer: b**

Explanation:

The logic followed here is:

If a student's serial number is twenty-three from the start of the line in that class of fifty-one, then



The number of students after the student = 51 - 23 = 28

Here, her serial number from the last student in the line is 28 + 1 = **29th.**

Hence, **"Twenty-nine"** is the correct answer.

---

95. Answer: c

Explanation:

The logic followed here are:

Companion, Partner and Colleague are synonym for a mate or friend.

Whereas Rival is antonym of friend.

Hence, **Rival** is the odd one.

---

96. Answer: c

Explanation:

Six Students : B, D, F, U, V and X.

i) X scored more marks than only two students.

_ _ > _ _ > _ _ > X > _ _ > _ _.

ii) B scored marks more than F but less than U.

U > B > F; _ _ > _ _ > _ _ > X > _ _ > _ _.

iii) If F scored more marks than X.

U > B > F > X > _ _ > _ _

Here, U scored the highest marks.

Hence, **U**is the correct answer.

---

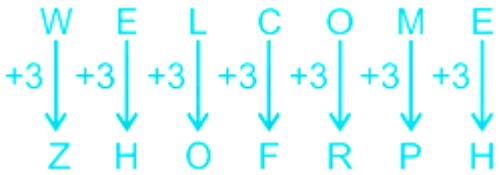
97. Answer: d

Explanation:

The logic followed here is:

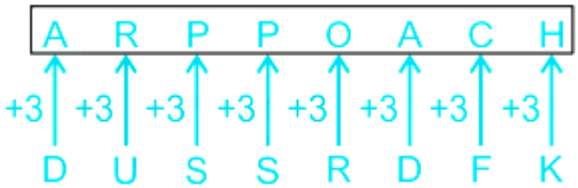
Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The code for WELCOME is :



Similarly, DUSSRDFK is the code of :

- **? = DUSSRDFK**



Hence, **"ARPPOACH"** will be coded as DUSSRDFK.

---

98. Answer: d

Explanation:

The logic followed here is:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

$$Z \xrightarrow{-4} V \xrightarrow{-4} R \xrightarrow{-4} N \xrightarrow{-4} J \xrightarrow{-4} F$$

Hence, **'N'** will replace the question mark.

---

99. Answer: c

Explanation:

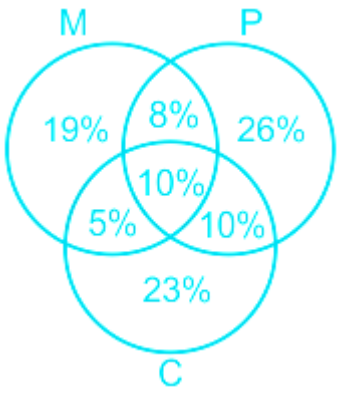
Given:

In a mid-term exam of class 11, 42% of students failed in Mathematics, 54% of students failed in Physics and 48% of students failed in Chemistry. Only 10% of students failed in all three subjects. 20% of students failed in both Physics and Chemistry, 15% of students failed in both Chemistry and Mathematics, and 18% of students failed in both Physics and Mathematics.

Concept used:

Venn Diagram

Calculation:



Here, Mathematics, Physics, and Chemistry are denoted by M, P, and C respectively.

According to the question,

M = 42%

P = 54%

C = 48%

M + P + C = 10%

M + C = 15%

P + M = 18%

P + C = 20%

Hence,

Only (M + C) = 15 - 10 = 5%

Only (P + M) = 18 - 10 = 8%

Only (P + C) = 20 - 10 = 10%

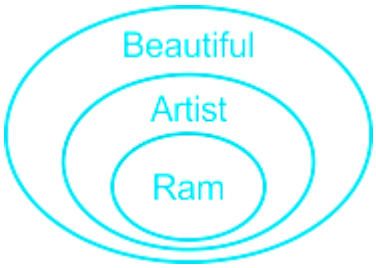
Thus, the percentage of those students who failed in two subjects only = 5 + 8 + 10 = 23%

∴ T he percentage of those students who failed in two subjects only is 23%.

100. **Answer: a**

Explanation:

The least possible Venn diagram is as follows:



Conclusion 2: Ram is beautiful.→ **True**(as Ram is an Artist and Artists are beautiful.)

Conclusion 3: Ram is not beautiful. → False (as Ram is an Artist and Artists are beautiful.)

Conclusion 1: All beautiful persons are artists. → False (as its is possible but not definite)

Conclusion 4: Beautiful persons are not artists. → False (as Ram is an Artist and Artists are beautiful.)

Hence, '**Ram is beautiful**' is the correct answer.