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Your Personal Exams Guide

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RRB Group D 2022 Prev. Yr. Paper (17 Aug 2022) (Shift 2)

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

Instructions

Sl No.	Section Name	No. of Question	Maximum Marks
1	CBT	100	100

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.

CBT

1. Find the median of the data 11, 16, 33, 15, 51, 18, 71, 75, 22, 17. **(+1, -0.33)**

a. 19

b. 20

c. 24

d. 18

---

2. Simplify $(32)^3 + (22)^2$. **(+1, -0.33)**

a. 729

b. 793

c. 379

d. 739

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3. Mawsynram is the wettest place on earth and it is situated in: **(+1, -0.33)**

a. Mahadeo Hills

b. Lushai Hills

c. Rajmahal Hills

d. Khasi Hills

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4. Last year, Ranjan's monthly salary was 34,500, and this year his monthly salary is 38,640. What is the percentage increase in Ranjan's monthly salary this year over last year? **(+1, -0.33)**

a. 10%

b. 12%

c. 15%

d. 20%

---

5. In January 2022, GAIL started India's maiden project of blending hydrogen into natural gas systems at which place? **(+1, -0.33)**

a. Gwalior

b. Indore

c. Ujjain

d. Bhopal

---

6. To reach point B from point A, Anita must walk 70 m towards the west, then take a right turn and walk 70 m, then take a left turn and walk 150 m, then take another left turn and walk 70 m, then take a left turn and walk 90 m, then take a right turn and walk 100 m, and finally take a left turn and walk 130 m. How far and in which direction is point B from point A? **(+1, -0.33)**

a. 130 m, North

b. 100 m, South

c. 130 m, South

d. 100 m, North

---

7. Which of the following numbers will replace the question mark (?) in the given series? 11, 21, 47, 97, 179, ? **(+1, -0.33)**

a. 281

b. 301

c. 231

d. 205

---

8. Three statements are given, followed by three conclusions numbered I, II, and III. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements. **(+1, -0.33)**

Statements:
All phones are tablets.
No tablet is a calculator.
All drives are calculators.
Conclusions:
I. Some drives are phones.
II. Some calculators are phones.
III. No tablet is a drive.

a. Only conclusion III follows

b. Only conclusions I and II follow

c. Only conclusions I and III follow

d. Only conclusion II follows

---

9. Which factor(s) led scientists towards the classification of elements? **(+1, -0.33)**

(i) Different methods of synthesis of elements

(ii) Different source of elements

(iii) Different properties of elements

a. Only i

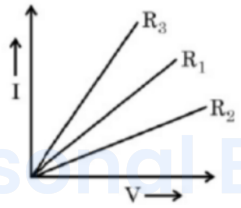
b. Only ii

c. i, ii, iii

d. only iii

---

10. The I-V graph of three resistances R_1, R_2, and R_3 is shown in the figure below. The correct relation between R_1, R_2, and R_3 is: **(+1, -0.33)**



a. $R_3 < R_1 < R_2$

b. $R_3 > R_1 > R_2$

c. $R_1 > R_2 > R_3$

d. $R_1 < R_2 < R_3$

---

11. Bharat Heavy Electricals Limited was registered as Heavy Electricals (India) Limited (HE(I)L) in the Public Sector under the Ministry of Industry and **(+1, -0.33)**

Commerce on 20th August in which year?

a. 1956

b. 1969

c. 1952

d. 1962

---

12. Which action taking place in the digestive system of humans is similar to the emulsifying action of soaps on dirt? **(+1, -0.33)**

a. Bile salts breaking large fat globules into smaller ones

b. Bile juice enzymes helping in digestion of starch

c. Bile juice providing acidic medium

d. Bile juice providing alkaline medium

---

13. The distance between the focus and the center of curvature of a spherical mirror, in terms of the radius of curvature R, is equal to: **(+1, -0.33)**

a. 2R

b. R/2

c. R/4

d. R

---

14. Seven friends, P, Q, R, S, T, U, and V, are sitting around a circular table. All are facing the center of the table. Only R is sitting between Q and S. Only T **(+1, -0.33)**

is sitting between P and V. V is sitting third to the right of Q. V is third to the left of U. Who is sitting to the immediate right of R?

a. S

b. T

c. P

d. V

---

15. Based on the given statement, two conclusions are drawn. Find out which conclusion is true based on the statement. **(+1, -0.33)**

Statement: Z > R > Y > P = Q = N < S

Conclusions:

I. P > S

II. Z < Q

a. Only conclusion I is true

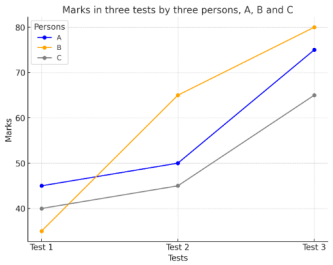
b. Only conclusion II is true

c. Both conclusions I and II are true

d. Neither conclusion I nor II is true

---

16. The graph and the table below show the marks obtained by three persons, A, B, and C, in three tests: Test 1, Test 2, and Test 3. If the maximum marks for both Test 1 and Test 2 are 80, and the maximum marks for Test 3 are 100, then how much percentage has A scored more than C considering the performance on all three tests? **(+1, -0.33)**



a. 7.69%

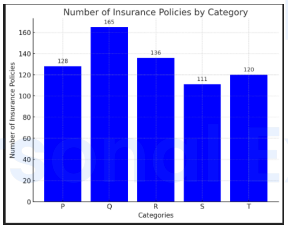
b. 8.2%

c. 5.56%

d. 6.92%

---

17. The following chart shows the numbers of insurance policies sold by five salespersons named P, Q, R, S, and T. What is the percentage share of insurance policies sold by Q in the total insurance policies sold by all five salespersons? **(+1, -0.33)**



a. 30%

b. 25%

c. 20%

d. 28%

---

18. When chlorination of dry slaked lime takes place, which compound will form as the main product? **(+1, -0.33)**

a. Hydrochloric acid

b. Calcium oxychloride

c. Quicklime

d. Acetic acid

---

19. In the given letter-cluster pairs, the first letter-cluster is related to the second letter-cluster following a certain logic. Study the pairs carefully, and from the options, select the pair that follows the same logic. **(+1, -0.33)**

COWBOY : WOCYOB

TANGLE : NATELG

a. PICKLE : CIPLKE

b. CROWDS : ORDWSC

c. FLOWER : OLFREW

d. MANGLE : NMALEG

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20. Which of the following schemes is the most beneficial for a customer? **(+1, -0.33)**

Scheme 1: Buy 5 get 3 free

Scheme 2: Buy 5 get 6

Scheme 3: Two successive discounts of 10% and 5%

a. Scheme 2 and 3 both

b. Scheme 1

c. Scheme 2

d. Scheme 1 and 2 both

---

21. What is the rank of India in the Human Development Index, 2020, prepared by the United Nations Development Programme (UNDP) as per the report released in 2021? **(+1, -0.33)**

a. 131st

b. 161st

c. 135th

d. 129th

---

22. Select the set in which the numbers are related in the same way as the following sets. **(+1, -0.33)**

(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers info its
constituent digits. E.g. 13 — Operations on 13 such as adding /deleting /multiplying etc. to 13 can be performed.
Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)

(12,15,18)
(45,35,25)

a. (13, 10, 17)

b. (19,18, 1)

c. (14, 28, 14)

d. (15,20, 25)

---

23. The Sangai deer is an endemic species found in which of the following Indian states? **(+1, -0.33)**

a. Rajasthan

b. Telangana

c. Manipur

d. Kerala

---

24. Express 0.420 as a fraction in the form of p/q, where p and q are integers and q ≠ 0. **(+1, -0.33)**

a. 21/50

b. 14/33

c. 13/33

d. 41/99

---

25. Study the given diagram carefully. Which option correctly explains the reason for the appearance of the blue-black color? **(+1, -0.33)**

a. Potato juice contains proteins, which turn blue-black with iodine.

b. Potato juice contains starch, which turns blue-black with iodine.

c. Potato juice contains glucose, which turns blue-black with iodine.

d. Potato juice contains fats, which turn blue-black with iodine.

---

26. Which of the following numbers will replace the question mark (?) in the given series: 124, 129, 136, 145, 156, ? **(+1, -0.33)**

a. 168

b. 169

c. 172

d. 165

---

27. A textbook has a total of 892 pages. It is divided into two parts. The second part of the book has 52 pages less than the first part. How many pages are there in the second part of the book? **(+1, -0.33)**

a. 464

b. 482

c. 472

d. 420

---

28. The presence of which bacteria is an indicator of water pollution? **(+1, -0.33)**

a. Salmonella typhi

b. Vibrio cholerae

c. E. coli (Coliform)

d. Mycobacterium tuberculosis

---

29. Which of the following parts helps in the exchange of gases in plants? **(+1, -0.33)**

a. Cell membrane

b. Nucleus

c. Stomata

d. Guard cells

---

30. Which of the following elements has the maximum number of atoms in its molecular form? **(+1, -0.33)**

a. P

b. S

c. Ar

d. Ne

---

31. When three parallel lines are cut by two transversals and the intercepts made by the first transversal are in the ratio 3 : 4, then the intercepts made by the second transversal are in the ratio: **(+1, -0.33)**

a. 2 : 4

b. 1 : 1

c. 3 : 4

d. 4 : 3

---

32. In this question, a group of numbers/symbols is coded using letters as per the table given below and the conditions which follow. The correct combination of codes following the conditions is your answer. **(+1, -0.33)**

Number/symbol	9	5	3	#	6	&	7	@	%	8	2
Code	L	K	J	H	G	F	D	S	A	P	B

Conditions:
(i) I the first two elements are numbers and the last is a symbol. then interchange the codes for the second mumber and the last symbol.
(ii) TF the second element is a symbol and the last is a symbol, then all the symbols are 1o be coded as C.
(i) If the question has any Number which is immediately preceded by a prime number, then interchange the codes of the first and last Number appearing in the question.

a. DL&P%#J

b. DLGPSJJ

c. SLFPAHJ

d. JLFPAHD

---

33. Cyclohexane contains ..... C-C bonds and,..... C-H bonds, so total ..... covalent bonds are **(+1, -0.33)**

a. 4, 8, 12

b. 4, 12, 16

c. 6, 12, 18

d. 6, 12, 11

---

34. The armature of an electric motor consists of which of the following parts? **(+1, -0.33)**

(i) Soft iron core

(ii) Coil

(iii) Magnets

a. Both (i) and (iii)

b. Only (i)

c. Only (ii)

d. Both (i) and (ii)

---

35. Study the given letter, symbol series and answer the question that follows. **(+1, -0.33)**

91@4*7^53#91<54@3S#2*6!42&9<36#2%2@7

If all even numbers in the given series are replaced with a number which is prime and even, how many numbers are there in the resultant series which are immediately preceded by a prime number and immediately followed by a symbol?

a. 4

b. 5

c. 2

d. 3

---

36. Which of the following rivers originates from Amarkantak Hills? **(+1, -0.33)**

a. Teesta

b. Sutlej

c. Narmada

d. Godavari

---

37. In a certain code language, 'FUEL' is written as '50' and 'JEER' is written as '44'. How will 'FARE' be written in that language? **(+1, -0.33)**

a. 36

b. 40

c. 34

d. 38

---

38. What fraction of the positions in all panchayat institutions is reserved for women? **(+1, -0.33)**

a. 1/4

b. 1/3

c. 1/2

d. 2/3

---

39. If '+' means '–', '–' means '×', '×' means '÷', and '–' means '+', what will come in place of the question mark (?) in the following equation? **(+1, -0.33)**

16 + 4 – 8 + 3 × 3 = ?

a. 9

b. 14

c. 22

d. 23

---

40. Which of the following is not an example of a redox reaction? **(+1, -0.33)**

(i) $ZnO + C \rightarrow Zn + CO$

(ii) $MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$

(iii) $4Na + O_2 \rightarrow 2Na_2O$

(iv) $AgNO_3 + NaCl \rightarrow AgCl + NaNO_3$

a. i

b. ii

c. iii

d. iv

---

41. Navroz festival is associated with which of the religious communities? **(+1, -0.33)**

a. Jain

b. Sikh

c. Parsi

d. Buddhist

---

42. The famous Haji Ali Dargah is located in which of the following cities? **(+1, -0.33)**

a. Hyderabad

b. Delhi

c. Mumbai

d. Ajmer

---

43. Consider the below statements and identify the correct answer. **(+1, -0.33)**

Statement I: Anhydrous sodium carbonate is used in soda-acid fire extinguishers.

Statement II: Anhydrous sodium carbonate is dissolved in water and recrystallized to get washing soda crystals containing 10 molecules of water of crystallization.

a. Both statements are true.

b. Both statements are false.

c. Statement I is true, and Statement II is false.

d. Statement II is true, and Statement I is false.

---

44. If 2 is added to each odd digit and 1 is subtracted from each even digit in the number 34135278, what will be the sum of the digits that are third from the Left and third from the right? **(+1, -0.33)**

a. 7

b. 3

c. 1

d. 4

---

45. Which part of the Indian Constitution has only one Article 51A, which deals with the Code of 11 Fundamental Duties for the Citizens? **(+1, -0.33)**

a. Part IV-A

b. Part V

c. Part IX-A

d. Part VII

---

46. Which of the following terms will replace the question mark (?) in the given series to make it logically complete? **(+1, -0.33)**

UCK-4, WFO-9, YIS-19, ALW-39, ?

a. COA-49

b. BOA-76

c. COA-77

d. CPB-79

47. Study the given arrangement carefully and answer the question that follows. (+1, -0.33)

(Left) 3 ^ % 7 2 4 £ 3 ¥ 4 ƒ @ 8 8 & 6 @ 1 (Right)

How many such numbers are there in the above arrangement each of which is immediately followed by a symbol and also immediately preceded by a symbol?

a. 9

b. 11

c. 4

d. 3

48. The mean of 36 numbers was found as 42. Later on, it was determined that a number 47 was misread as 41. Find the correct mean of the given numbers (rounded off to two decimal places). (+1, -0.33)

a. 43.74

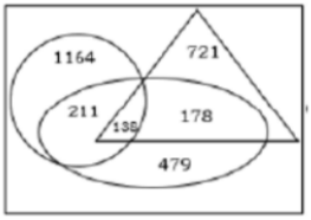
b. 42.17

c. 42.83

d. 43.62

49. The rectangle represents students, the circle represents girls, the oval represents arts stream, and the triangle represents sports. The numbers in different sections indicate the number of persons. How many girl students have taken arts stream and do NOT play sports, and what is the (+1, -0.33)

total number of students who play sports but are NOT girls and have taken arts stream?



a. 479 and 211, respectively

b. 211 and 178, respectively

c. 138 and 178, respectively

d. 138 and 479, respectively

---

50. A is twice as old as B. B is 1/3 as old as C. The sum of ages of A, B, and C is 42 years. Find the sum of the ages of A and B. **(+1, -0.33)**

a. 21 years

b. 23 years

c. 15 years

d. 12 years

---

51. Find the value of $(\sin^2 22^\circ + \sin^2 68^\circ) / (\cos^2 33^\circ + \cos^2 57^\circ)$. **(+1, -0.33)**

a. 1:4

b. 2:1

c. 1:2

d. 1:1

---

52. The LCM of 48, 72, and another number, X, is 576. Which of the values given below can be the value of X? **(+1, -0.33)**

a. 144

b. 195

c. 288

d. 192

---

53. Suneet walked 10 m towards the north, then turned left and walked 11 m, then from there he turned right and walked 13 m, and then he turned right again and walked 25 m. In which direction is Suneet facing now? **(+1, -0.33)**

a. North

b. West

c. South

d. East

---

54. In which year was The Indian Museum Act passed? **(+1, -0.33)**

a. 1909

b. 1910

c. 1921

d. 1915

55. In accordance with Fleming's left hand rule used to find the force on a current-carrying conductor placed inside a magnetic field, the thumb and the index finger represent the directions of ..... and ..... , respectively. (+1, -0.33)

a. Field, Current

b. Magnetic Field, Force

c. Force, Magnetic Field

d. Current, Field

56. If 15 March 2022 was a Tuesday, what day of the week was 15 March 2020? (+1, -0.33)

a. Friday

b. Sunday

c. Saturday

d. Monday

57. S, T, U, V, W, and X live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it is numbered 2, and so on until the topmost floor is numbered 6. V lives on the lowermost floor. X and U each live on an even-numbered floor. T lives exactly between U and W. W lives on floor number 2. Who lives on floor number 5? (+1, -0.33)

a. S

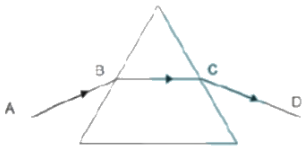
b. T

c. X

d. U

---

58. In the figure shown below, the incident ray and the emergent ray in the respective order are given by: **(+1, -0.33)**



a. AB and BC

b. AB and CD

c. CD and AB

d. BC and CD

---

59. If the volume of a sphere is 36π cm^3, then the diameter of the sphere is: **(+1, -0.33)**

a. 9 cm

b. 27 cm

c. 3 cm

d. 6 cm

---

60. What is the nature of the roots of $3x^2 + 6x - 5 = 0$? **(+1, -0.33)**

a. There are no real roots.

b. The roots are real and equal.

c. The roots are real and distinct.

d. The roots are real and more than 2.

---

61. At simple interest, a certain sum of money amounts to RS 1,250 in 2 years and to Rs 2,000 in 5 years. Find the rate of interest per annum (rounded off to two decimal places). **(+1, -0.33)**

a. 16.67%

b. 33.33%

c. 27.27%

d. 11.11%

---

62. Which of the following is divisible by both 4 and 8? **(+1, -0.33)**

a. 4382

b. 3824

c. 8342

d. 3842

---

63. An object placed at a distance of 25 cm from a converging lens forms a real and inverted image at 30 cm from the lens. The magnification produced by the lens is equal to: **(+1, -0.33)**

a. -5/6

b. -6/5

c. 6/5

d. 5/6

---

64. Formation of urine in the kidneys involves the given three processes in which of the following sequences? **(+1, -0.33)**

a. Filtration, elimination, selective reabsorption

b. Filtration, selective reabsorption, elimination

c. Selective reabsorption, filtration, elimination

d. Selective reabsorption, elimination, filtration

---

65. Which of the following "state — major language" pairs has been INCORRECTLY matched? **(+1, -0.33)**

a. Andhra Pradesh — Telugu

b. Manipur — Meitei

c. Meghalaya — Khasi

d. Kerala — Kannada

---

66. Which of the following is NOT an example of asexual reproduction? **(+1, -0.33)**

a. Budding

b. Fragmentation

c. Grafting

d. Binary Fission

---

67. In the context of Consumer Rights, what is the full form of COPRA? **(+1, -0.33)**

a. Consumer Protection Agency

b. Consumer Protection Alliance

c. Consumer Protection Act

d. Consumer Protection Association

---

68. Refer to the following number series and answer the question. **(+1, -0.33)**

51263565365325695172

How many such numbers are there in the series each of which is immediately preceded by an even number and also immediately followed by an even number?

a. 3

b. 5

c. 4

d. 2

---

69. P, Q, R, S, T, U, and V live on seven different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it is number 2, and so on up to the topmost floor numbered 7. Q lives on floor number 2. R lives on the floor immediately above U. S is on the floor immediately below V's floor. Only three persons live between the floors of T and P. R

lives on the topmost floor. Only one person lives between the floors of R and P. On which floor does P live?

a. Floor 4

b. Floor 5

c. Floor 3

d. Floor 2

---

70. Select the set in which the numbers are related in the same way as the numbers of the following sets. **(+1, -0.33)**

(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 — Operations on 13 such as adding /subtracting /multiplying etc. to 13 can be performed.
Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 s not allowed)

(35, 12, 29), (23, 16, 31)

a. (21, 25, 29)

b. (33, 30, 27)

c. (18, 12, 21)

d. (19, 8, 23)

---

71. The product of the roots of $3x^2 - 13x + 6 = 0$ is: **(+1, -0.33)**

a. 5

b. 4

c. 3

d. 2

---

72. What is the total number of shells involved in the electronic configuration of carbon? **(+1, -0.33)**

a. One

b. Four

c. Three

d. Two

---

73. 5 men and 6 women can do a piece of work in 6 days while 3 men and 5 women can do the same work in 9 days. In how many days can 3 men and 2 women do the same work? **(+1, -0.33)**

a. $11^{5}/_{11}$ days

b. $13^{1}/_{2}$ days

c. $10^{1}/_{4}$ days

d. $12^{1}/_{7}$ days

---

74. Who prepared the first estimates of the national income of India in 1876? **(+1, -0.33)**

a. Dadabhai Naoroji

b. P. C. Mahalanobis

c. V. K. R. V. Rao

d. William Digby

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75. Find the amount of water contained in a cylindrical tank of radius 7 m and height 20 m. It is known that the tank is completely filled. **(+1, -0.33)**

a. 4250 m^3

b. 3125 m^3

c. 5110 m^3

d. 3080 m^3

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76. According to data from the Centre for Monitoring the Indian Economy, which state witnessed the highest unemployment rate in January 2022? **(+1, -0.33)**

a. Haryana

b. Punjab

c. Himachal Pradesh

d. Rajasthan

---

77. Any reaction that produces an insoluble precipitate can be called a: **(+1, -0.33)**

a. Redox reaction

b. Displacement reaction

c. Precipitation reaction

d. Decomposition reaction

---

78. A given resistance R is cut into 2 equal parts. The resistance of each part is: **(+1, -0.33)**

a. 2R

b. R/4

c. R

d. R/2

---

79. 14 years ago, the age of a father was three times the age of his son. Now, the father is twice as old as his son. What is the sum of the present ages of the father and the son? **(+1, -0.33)**

a. 84 years

b. 56 years

c. 42 years

d. 98 years

---

80. In this question, a statement is followed by two conclusions. Which of the two conclusions is/are true with respect to the statement? **(+1, -0.33)**

Statement: H > Y ≥ S = X = A > W

Conclusions:

I. H < S

II. A ≤ Y

a. Both conclusions I and II are true

b. Only conclusion I is true

c. Neither conclusion I nor II is true

d. Only conclusion II is true

---

81. A statement is given followed by two arguments I and II. Read the statement and the arguments carefully and select the appropriate answer from the given options. **(+1, -0.33)**

Statement: Apartment complexes have decided to charge a heavy penalty on residents who do not segregate their dry waste and wet waste.

Arguments:

I. The government has mandated segregation of wet waste and dry waste by all homeowners.

II. All apartments have been provided with separate bins for dry waste and wet waste to facilitate garbage segregation.

a. Both arguments I and II strengthen the statement

b. Both arguments I and II weaken the statement

c. Argument II weakens, while argument I strengthens the statement

d. Argument I weakens, while argument II strengthens the statement

---

82. The percentage profit earned by James by selling an article for 1,920 equals the percentage loss suffered by selling it at 1,500. What should be the selling price if he wants to earn a 10% profit? (+1, -0.33)

a. 17,000

b. 22,000

c. 1,881

d. 21,881

---

83. Article 279A is related to which of the following constitutional bodies? (+1, -0.33)

a. Goods and Service Tax Council

b. Election Commission of India

c. Finance Commission

d. UPPSC

---

84. In May 2022, which of the following state Chief Ministers, Basavaraj Bommai, launched a new health and wellness scheme app named "AAYU"? (+1, -0.33)

a. Andhra Pradesh

b. Kerala

c. Karnataka

d. Tamil Nadu

---

85. For outstanding contribution in which of the following sports did T. P. Ouseph win the Dronacharya Award in 2021? **(+1, -0.33)**

a. Weightlifting

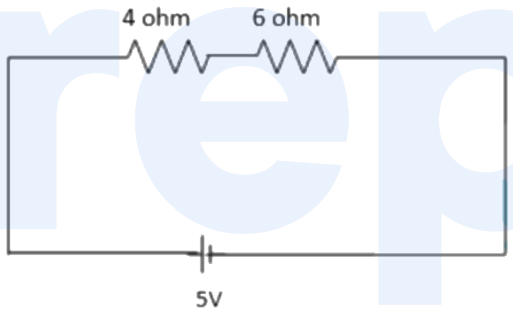
b. Athletics

c. Boxing

d. Table Tennis

---

86. The potential drop across the 4 Ω resistor in the given circuit is: **(+1, -0.33)**



a. 2 V

b. 4 V

c. 3 V

d. 5 V

---

87. The expansion of $(3a - 4b - 2c)^2$ is: **(+1, -0.33)**

a. $9a^2 + 16b^2 + 4c^2 - 24ab + 8bc + 12ac$

b. $9a^2 + 16b^2 + 4c^2 + 12ab - 8bc + 6ac$

c. $9a^2 + 16b^2 + 4c^2 - 24ab + 16bc - 12ac$

d. $9a^2 + 16b^2 + 4c^2 - 24ab + 16bc - 6ac$

---

88. Soil erosion is one of the major threats to the environment. Which of the following can help to prevent erosion of soil? **(+1, -0.33)**

a. Poor irrigation practices

b. Over-cultivation

c. Cattle grazing

d. Contour ploughing

---

89. Sandhya Gurung received the Dronacharya Award, 2021, for coaching in the field of: **(+1, -0.33)**

a. Kabaddi

b. Swimming

c. Boxing

d. Shooting

---

90. There are four different points on a plane such that no three are collinear. The number of distinct straight lines that can be drawn through them is: **(+1, -0.33)**

a. 8

b. 4

c. 2

d. 6

---

91. The distance between the pole and the center of curvature of a spherical mirror, in terms of its focal length f, is equal to: **(+1, -0.33)**

a. f

b. 2f

c. f/2

d. f/4

---

92. Divij, Palak, Ravneet, Sejal, and Tapan are sitting around a circular table facing the center of the table. Only Palak is sitting between Ravneet and Tapan. Tapan is second to the right of Sejal. Only Sejal is between Ravneet and Divij. Who is sitting to the immediate left of Tapan? **(+1, -0.33)**

a. Palak

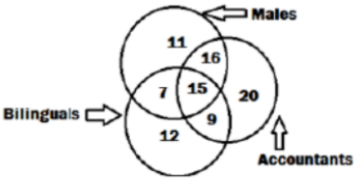
b. Divij

c. Ravneet

d. Sejal

---

93. Study the given diagram carefully and answer the question. The numbers in different sections indicate the number of persons. How many such accountants are there who are also bilinguals? **(+1, -0.33)**



a. 9

b. 24

c. 22

d. 15

---

94. During adolescence, several changes occur in the human body. Which of the following changes is associated with sexual maturation only in girls? **(+1, -0.33)**

a. Oily skin with pimples

b. Growth of hair on different parts of the body

c. Consciousness of their looks

d. Growth of mammary glands

---

95. A, B, and C started a business. They partnered for 6 months, 12 months, and 14 months respectively. If their profit is in the ratio 5 : 4 : 7, then the ratio of their respective investments is: **(+1, -0.33)**

a. 5 : 2 : 3

b. 1 : 5 : 3

c. 2 : 3 : 7

d. 2 : 3 : 5

96. Select the correct combination of mathematical signs that can sequentially replace * to balance the following equation. **(+1, -0.33)**

20 * 4 6 * 2 * 14 = 18

a. +, = , ÷, × , +

b. ÷, × , +, = ,+

c. ×, +, ÷

d. ÷, -, +

97. Reena reaches a birthday party 20 minutes late if she walks at 3 km/h from her house. If she increases her speed to 4 km/h, she would reach 30 minutes early. What is the distance between her house and the party venue? **(+1, -0.33)**

a. 4 km

b. 9 km

c. 10 km

d. 7 km

98. In December 2021, which state government inaugurated the "Pink Force" of Police to enhance safety and security for women and children? **(+1, -0.33)**

a. Kerala

b. Sikkim

c. Goa

d. Meghalaya

---

99. 6124.8 × 625.5 × 0.0043 is equal in value to: **(+1, -0.33)**

a. 612.48 × 625.5 × 0.43

b. 6.1248 × 62.55 × 0.043

c. 6.1248 × 62.55 × 0.43

d. 61.248 × 6255 × 0.043

---

100. O, P, Q, R, S, T, and U are seven boxes that are kept one over the other but not necessarily in the same order. Only one box is kept between R and P. Only one box is kept between S and T. Only one box is kept between P and Q. Q is kept at the lowermost position. T is kept immediately above Q. How many boxes are kept between S and Q? **(+1, -0.33)**

a. One

b. Two

c. Three

d. Four

Answers

1. **Answer: b**

Explanation:

To find the median, arrange the data in ascending order: 11, 15, 16, 17, 18, 22, 33, 51, 71, 75. The median is the average of the two middle numbers, 18 and 22, which equals 20.

---

2. **Answer: b**

Explanation:

$(32)^3$ = 32768 and $(22)^2$ = 484. Adding these gives 32768 + 484 = 793.

---

3. **Answer: d**

Explanation:

Mawsynram, located in Meghalaya, India, is situated in the Khasi Hills and receives the highest average rainfall on Earth.

---

4. **Answer: b**

Explanation:

To calculate the percentage increase in Ranjan's monthly salary, we can use the following formula:

Percentage Increase=(New Salary-Old SalaryOld Salary)×100\text{Percentage Increase} = \left(\frac{\text{New Salary} - \text{Old Salary}}{\text{Old Salary}}

\right) \times 100Percentage Increase=(Old SalaryNew Salary-Old Salary)×100

Here:

- Old Salary = 34,500
- New Salary = 38,640

Plugging in the values:

Percentage Increase=(38,640-34,50034,500)×100\text{Percentage Increase} = \left(\frac{38,640 - 34,500}{34,500} \right) \times 100Percentage Increase= (34,50038,640-34,500)×100 =(4,14034,500)×100= \left(\frac{4,140}{34,500} \right) \times 100=(34,5004,140)×100 =0.12×100= 0.12 \times 100=0.12×100 =12%= 12\%=12%

Answer: Ranjan's monthly salary has increased by **12%** this year over last year.

---

5. **Answer: b**

Explanation:

GAIL initiated the project in Indore to blend hydrogen with natural gas, marking a step towards cleaner energy in India.

---

6. **Answer: b**

Explanation:

To solve this problem, let's break down Anita's journey step by step and calculate her final position relative to her starting point, point A.

Step-by-Step Journey:

1. **70 m West:** Anita moves 70 m west from point A.
2. **Right Turn, 70 m:** A right turn from west means she is now facing north. She walks 70 m north.

3. **Left Turn, 150 m:** A left turn from north means she is now facing west. She walks 150 m west.
4. **Left Turn, 70 m:** A left turn from west means she is now facing south. She walks 70 m south.
5. **Left Turn, 90 m:** A left turn from south means she is now facing east. She walks 90 m east.
6. **Right Turn, 100 m:** A right turn from east means she is now facing south. She walks 100 m south.
7. **Left Turn, 130 m:** A left turn from south means she is now facing east. She walks 130 m east.

Calculating Net Displacement:

Let's add up Anita's movements in the east-west and north-south directions separately.

East-West Movements:

- **West:** 70 m + 150 m = 220 m west.
- **East:** 90 m + 130 m = 220 m east.

The total movement in the east-west direction cancels out to **0 m**.

North-South Movements:

- **North:** 70 m.
- **South:** 70 m + 100 m = 170 m south.

The net north-south displacement is 70 m north−170 m south=100 m south70 \, \text{m north} - 170 \, \text{m south} = 100 \, \text{m south}70m north−170m south=100m south.

Final Answer:

Anita is **100 meters south** of point A.

7. **Answer: b**

Explanation:

The series follows a pattern where each subsequent term increases by an incrementally larger number: 10, 26, 50, 82, and so on. Following this pattern, the next term after 179 is 301.

---

8. **Answer: a**

Explanation:

Based on the statements, conclusion III is the only one that logically follows. There is no logical basis for conclusions I and II.

---

9. **Answer: c**

Explanation:

The classification of elements was primarily driven by their distinct properties, which allowed scientists to organize elements with similar characteristics together.

---

10. **Answer: a**

Explanation:

To find the correct relation between R1R_1R1, R2R_2R2, and R3R_3R3, let's analyze the I-V graph provided:

1. In an I-V graph (current vs. voltage), the slope of each line represents the inverse of resistance (1R\frac{1}{R}R1) because V=IRV = IRV=IR, and thus R=VIR

= \frac{V}{I}R=IV.

2. A steeper slope (closer to the vertical axis) indicates a lower resistance, while a gentler slope (closer to the horizontal axis) indicates a higher resistance.

From the graph:

- R3R_3R3 has the steepest slope, meaning it has the lowest resistance.
- R1R_1R1 has a moderate slope, meaning it has a resistance higher than R3R_3R3 but lower than R2R_2R2.
- R2R_2R2 has the gentlest slope, meaning it has the highest resistance.

Conclusion:

The correct relationship between the resistances is:

R2>R1>R3

---

11. Answer: a

Explanation:

Bharat Heavy Electricals Limited (BHEL) was initially registered as Heavy Electricals (India) Limited (HE(I)L) on **20th August 1956** under the Ministry of Industry and Commerce in the Public Sector.

---

12. Answer: a

Explanation:

Bile salts in the digestive system emulsify fats, breaking down large fat globules into smaller droplets, similar to how soap emulsifies and removes dirt.

---

13. **Answer: b**

Explanation:

For a spherical mirror, the focal length (f) is R/2. Therefore, the distance between the focus and the center of curvature is R/2.

---

14. **Answer: a**

Explanation:

Given Information:

1. **Seven friends P, Q, R, S, T, U, and V** are sitting around a circular table, facing the center.
2. **Only R is sitting between Q and S.**
3. **Only T is sitting between P and V.**
4. **V is sitting third to the right of Q.**
5. **V is third to the left of U.**

Step-by-Step Arrangement:

Step 1: Place R, Q, and S

- According to clue 2, **only R is sitting between Q and S**. This implies the arrangement **Q - R - S** or **S - R - Q**.

Step 2: Place V Relative to Q

- Clue 4 states that **V is sitting third to the right of Q**. Since they are facing the center, count three seats clockwise from Q to place V.

Step 3: Place T, P, and V

- Clue 3 mentions that **only T is sitting between P and V**. This fixes T's position once we place P and V accordingly.

Step 4: Place U Relative to V

- Clue 5 says **V is third to the left of U**. This helps in determining U's position in relation to V.

Solution:

Following these clues carefully, we determine that **S** is sitting to the immediate right of **R**.

Answer:

The person sitting to the immediate right of **R** is **S**.

---

15. **Answer: d**

Explanation:

Let's analyze the statement and each conclusion step-by-step.

Given Statement:

The given inequality is:

Z>R>Y>P=Q=N<SZ > R > Y > P = Q = N < SZ>R>Y>P=Q=N<S

This means:

1. ZZZ is greater than RRR, YYY, PPP, QQQ, and NNN.
2. SSS is greater than NNN, QQQ, and PPP.
3. P=Q=NP = Q = NP=Q=N, so PPP, QQQ, and NNN are equal in value.

Conclusions:

Conclusion I: P>SP > SP>S

- From the statement, we know that P=Q=N<SP = Q = N < SP=Q=N<S. Therefore, PPP is actually **less than SSS**, not greater.
- **Conclusion I is false**.

Conclusion II: Z<QZ < QZ<Q

- From the statement, we have Z>R>Y>P=Q=NZ > R > Y > P = Q = NZ>R>Y>P=Q=N. This shows that ZZZ is greater than QQQ.
- **Conclusion II is false**.

Answer:

Both **Conclusion I** and **Conclusion II are false** based on the given statement.

---

16. **Answer: a**

Explanation:

Calculating the scores of A and C across all three tests and comparing them, A scores 7.69% more than C.

---

17. **Answer: b**

Explanation:

To find the percentage share, divide the number of policies sold by Q by the total number of policies sold by all five and multiply by 100. This results in a 25% share.

---

18. **Answer: b**

Explanation:

When dry slaked lime reacts with chlorine, it produces calcium oxychloride (also known as bleaching powder) as the main product.

---

19. **Answer: c**

Explanation:

The logic involves reversing segments of letters. The third option, FLOWER : OLFREW, follows the same pattern.

---

20. **Answer: c**

Explanation:

Scheme 2 offers the highest benefit as it provides the greatest quantity increase per purchase.

---

21. **Answer: a**

Explanation:

India was ranked 131st in the Human Development Index in 2020, as per the UNDP's 2021 report.

---

22. **Answer: d**

Explanation:

The numbers in each set are related in a specific pattern. Option 4 follows the same relational pattern as the given sets.

23. **Answer: c**

Explanation:

The Sangai deer, also known as the brow-antlered deer, is found exclusively in Manipur and is known for its unique appearance and cultural significance.

---

24. **Answer: b**

Explanation:

0.42 can be expressed as the fraction 14/33 after simplifying.

---

25. **Answer: b**

Explanation:

The blue-black color appears due to the presence of starch in the potato juice, which reacts with iodine to produce this color.

---

26. **Answer: b**

Explanation:

Given series:

124,129,136,145,156,?124, 129, 136, 145, 156, ?124,129,136,145,156,?

Step 1: Calculate the Differences

- 129-124=5129 - 124 = 5129-124=5
- 136-129=7136 - 129 = 7136-129=7
- 145-136=9145 - 136 = 9145-136=9
- 156-145=11156 - 145 = 11156-145=11

The differences are: 5,7,9,115, 7, 9, 115,7,9,11.

Step 2: Identify the Pattern

The differences between the numbers increase by 2 each time (5, 7, 9, 11). Therefore, the next difference should be 11+2=1311 + 2 = 1311+2=13.

Step 3: Calculate the Next Term

Add 13 to the last term in the series (156):

156+13=169156 + 13 = 169156+13=169

Answer:

The number that will replace the question mark is **169**.

---

27. Answer: d

Explanation:

Let's set up an equation to solve this problem.

1. Let the number of pages in the first part be xxx.
2. The second part has 52 pages less than the first part, so it has x-52x - 52x-52 pages.

Since the total number of pages in the book is 892, we can write the equation:

x+(x-52)=892x + (x - 52) = 892x+(x-52)=892

Solve for xxx:

Combine like terms:

1. 2x-52=8922x - 52 = 8922x-52=892

Add 52 to both sides:

1. 2x=9442x = 9442x=944

Divide by 2:

1. x=472x = 472x=472

So, the first part has **472 pages**.

Find the pages in the second part:

The second part has x-52x - 52x-52 pages:

472-52=420472 - 52 = 420472-52=420

Answer:

The second part of the book has **420 pages**.

---

28. Answer: c

Explanation:

The presence of E. coli in water indicates contamination and pollution, often due to fecal matter.

---

29. Answer: c

Explanation:

Stomata are small openings on leaves that facilitate the exchange of gases like oxygen and carbon dioxide in plants.

---

30. **Answer: b**

Explanation:

To determine which element has the maximum number of atoms in its molecular form, we need to consider the form in which each element naturally exists:

Sulfur (S) - Sulfur typically exists as an S8S_8S8 molecule, meaning each molecule contains **8 atoms**.

Phosphorus (P) - Phosphorus commonly exists as P4P_4P4, meaning each molecule contains **4 atoms**.

Argon (Ar) - Argon is a noble gas and exists as monatomic ArArAr atoms, meaning each molecule (or atom) contains **1 atom**.

Neon (Ne) - Neon is also a noble gas and exists as monatomic NeNeNe atoms, meaning each molecule (or atom) contains **1 atom**.

Conclusion:

The element with the maximum number of atoms in its molecular form is **Sulfur (S)**, with **8 atoms** per molecule in S8S_8S8.

---

31. **Answer: c**

Explanation:

The intercepts made by the first transversal are in the ratio 3:43 : 43:4.

Conclusion:

The intercepts made by the second transversal will also be in the ratio **3 : 4**, because the intercepts remain proportional.

Answer:

The intercepts made by the second transversal are in the ratio **3 : 4**.

---

32. Answer: d

Explanation:

Applying the coding rules to the given sequence, the correct code is JLFPAHD.

---

33. Answer: c

Explanation:

Cyclohexane has the chemical formula C6H12\text{C}_6\text{H}_{12}C6H12.

Number of C-C bonds:

- Cyclohexane has a six-carbon ring structure where each carbon atom is bonded to two other carbon atoms.
- Therefore, it has **6 C-C bonds** in a closed ring structure.

Number of C-H bonds:

- Each carbon atom in cyclohexane is also bonded to two hydrogen atoms.
- With 6 carbons, there are 6×2=126 \times 2 = 126×2=12 C-H bonds.

Total number of covalent bonds:

- The total covalent bonds are the sum of C-C and C-H bonds.

Answer:

Cyclohexane contains **6 C-C bonds** and **12 C-H bonds**, so there are a total of **18 covalent bonds**.

---

34. **Answer: a**

Explanation:

The armature of an electric motor includes a soft iron core and magnets to create a magnetic field.

---

35. **Answer: a**

Explanation:

After applying the transformation, 4 numbers meet the criteria of being immediately preceded by a prime number and immediately followed by a symbol.

---

36. **Answer: c**

Explanation:

The Narmada River originates from the Amarkantak Hills in Madhya Pradesh, India.

---

37. **Answer: a**

Explanation:

The code sums the alphabetical positions of each letter. For 'FARE', the sum is 36.

---

38. **Answer: b**

Explanation:

In India, one-third (1/3) of the positions in panchayat institutions are reserved for women.

---

39. **Answer: d**

Explanation:

Using the given operations replacements, the expression evaluates to 23.

---

40. **Answer: d**

Explanation:

The reaction $AgNO_3 + NaCl \rightarrow AgCl + NaNO_3$ is a double displacement reaction, not a redox reaction.

---

41. **Answer: c**

Explanation:

Navroz is a festival celebrated by the Parsi community to mark the Persian New Year.

---

42. **Answer: c**

Explanation:

Haji Ali Dargah is a popular mosque and dargah (tomb) located on an islet off the coast of Mumbai, Maharashtra.

---

43. Answer: d

Explanation:

Statement I:

Anhydrous sodium carbonate is used in soda-acid fire extinguishers.

- This statement is **incorrect**. Soda-acid fire extinguishers use **sodium bicarbonate ($NaHCO_3$)**, not sodium carbonate (Na_2CO_3). Sodium bicarbonate reacts with acid to release carbon dioxide, which helps extinguish the fire.

Statement II:

Anhydrous sodium carbonate is dissolved in water and recrystallized to get washing soda crystals containing 10 molecules of water of crystallization.

- This statement is **correct**. When anhydrous sodium carbonate (Na_2CO_3) is dissolved in water and recrystallized, it forms washing soda crystals (Na2CO3·10H2O\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}Na2CO3·10H2O) with 10 molecules of water of crystallization.

Conclusion:

- **Statement I is incorrect.**
- **Statement II is correct.**

Answer:

The correct answer is that **Statement I is false, and Statement II is true**.

44. **Answer: d**

Explanation:

To solve this, let's apply the transformation to each digit in the number **34135278**:

Identify odd and even digits:

- Odd digits: 3, 1, 3, 5, 7
- Even digits: 4, 2, 8

Apply the transformations:

- For odd digits: **add 2**
- For even digits: **subtract 1**

Transform each digit:

- 3 (odd) → 3+2=53 + 2 = 53+2=5
- 4 (even) → 4-1=34 - 1 = 34-1=3
- 1 (odd) → 1+2=31 + 2 = 31+2=3
- 3 (odd) → 3+2=53 + 2 = 53+2=5
- 5 (odd) → 5+2=75 + 2 = 75+2=7
- 2 (even) → 2-1=12 - 1 = 12-1=1
- 7 (odd) → 7+2=97 + 2 = 97+2=9
- 8 (even) → 8-1=78 - 1 = 78-1=7

Identify the third digit from the left and third from the right:

- Third from the left: **3**
- Third from the right: **1**

Calculate the sum of these two digits:

1. 3+1=43 + 1 = 43+1=4

Answer:

The sum of the digits that are third from the left and third from the right is **4**.

---

45. Answer: a

Explanation:

Part IV-A of the Indian Constitution contains only Article 51A, which enumerates the Fundamental Duties of citizens.

---

46. Answer: a

Explanation:

The pattern involves a logical sequence in letters and numbers. Following this pattern, the correct answer is COA-49.

---

47. Answer: d

Explanation:

Counting based on the specified condition, there are 3 numbers each followed and preceded by a symbol.

---

48. Answer: b

Explanation:

Correct mean = (sum of 36 numbers + 6) / 36 = 42.17 (after correcting the misread value).

49. **Answer: b**

Explanation:

From the diagram, the number of girl students in arts who do not play sports is 138, and the students who play sports but are not girls and have taken arts is 178.

50. **Answer: a**

Explanation:

Let's solve this problem step-by-step.

Step 1: Define the Variables

Let:

- BBB's age be xxx.
- Since AAA is twice as old as BBB, AAA's age is 2x2x2x.
- BBB is 1/3 as old as CCC, so CCC's age is 3x3x3x.

Step 2: Set Up the Equation

The sum of the ages of AAA, BBB, and CCC is 42 years.

$2x+x+3x=42$2x + x + 3x = 422x+x+3x=42

Step 3: Simplify the Equation

Combine like terms:

$6x=426x = 426x=42$

Step 4: Solve for xxx

x=426=7x = \frac{42}{6} = 7x=642=7

Step 5: Find the Ages of AAA and BBB

- BBB's age =x=7= x = 7=x=7
- AAA's age =2x=2×7=14= 2x = 2 \times 7 = 14=2x=2×7=14

Step 6: Calculate the Sum of the Ages of AAA and BBB

A+B=14+7=21A + B = 14 + 7 = 21A+B=14+7=21

Answer:

The sum of the ages of AAA and BBB is **21 years**.

---

51. Answer: d

Explanation:

Using trigonometric identities, we find that (sin² 22° + sin² 68°) / (cos² 33° + cos² 57°) simplifies to 1.

---

52. Answer: d

Explanation:

To find the possible value of XXX given that the least common multiple (LCM) of 484848, 727272, and XXX is 576576576, let's go through the steps systematically.

Step 1: Prime Factorization

First, let's factorize each number involved:

1. **48**: 48=24×348 = 2^4 \times 348=24×3
2. **72**: 72=23×3272 = 2^3 \times 3^272=23×32

3. **576**: 576=26×32576 = 2^6 \times 3^2576=26×32

Step 2: Analyze the LCM Requirement

The LCM of 484848, 727272, and XXX must be 576=26×32576 = 2^6 \times 3^2576=26×32.

For the LCM to equal 576576576:

- The highest power of 222 among 484848, 727272, and XXX must be 262^626.
- The highest power of 333 among 484848, 727272, and XXX must be 323^232.

Step 3: Determine Possible Values for XXX

1. Since 484848 provides 242^424 and 727272 provides 232^323, XXX must provide at least 262^626 to meet the LCM requirement for the factor of 222.
2. Similarly, for the factor of 333, XXX should not exceed 323^232, as 323^232 is already covered by 727272.

Step 4: Find the Smallest Possible XXX that Meets These Requirements

To satisfy both conditions:

- XXX must have a factor of 262^626, since neither 484848 nor 727272 alone has this power.
- XXX can include 303^030, 313^131, or 323^232, as adding more would exceed the required 323^232 for the LCM.

This gives possible values of XXX as:

1. 26=642^6 = 6426=64
2. 26×3=1922^6 \times 3 = 19226×3=192
3. 26×32=5762^6 \times 3^2 = 57626×32=576

Conclusion

The possible values for XXX that satisfy the condition of an LCM of 576576576 are:

- 64

- 192
- 576

Among these, the answer will depend on the specific options provided.

---

53. Answer: d

Explanation:

To determine the direction Suneet is facing after his movements, let's go through each step in detail.

Initial Position:

- Suneet starts facing north.

First Move:

- He walks **10 meters north**.

Second Move:

- He turns **left** and walks **11 meters**.
- Since he was initially facing north, turning left means he is now facing **west**.

Third Move:

- He turns **right** and walks **13 meters**.
- Since he was facing west, turning right means he is now facing **north**.

Fourth Move:

- He turns **right** again and walks **25 meters**.
- Since he was facing north, turning right means he is now facing **east**.

Conclusion:

After completing all the moves, Suneet is facing **east**.

54. **Answer: b**

Explanation:

The Indian Museum Act was passed in the year 1910.

55. **Answer: c**

Explanation:

According to Fleming's left hand rule, the thumb represents the force, and the index finger represents the magnetic field direction.

56. **Answer: b**

Explanation:

From 2020 to 2022, two years passed, including one leap year, which shifts the day backward by two days. Thus, 15 March 2020 was a Sunday.

57. **Answer: a**

Explanation:

Given Information:

V lives on the lowermost floor, which is floor number 1.

- So, VVV is on floor 1.

X and U each live on an even-numbered floor.

- This means that XXX and UUU could be on floors 2, 4, or 6.

T lives exactly between U and W.

- This implies that TTT is on a floor that is exactly between the floors of UUU and WWW.

W lives on floor number 2.

- So, WWW is on floor 2.

Step-by-Step Deduction:

Since VVV is on floor 1 and WWW is on floor 2, we have:

- Floor 1: VVV
- Floor 2: WWW

XXX and UUU must live on even-numbered floors. With floor 2 already occupied by WWW, XXX and UUU can only be on floors 4 or 6.

TTT lives exactly between UUU and WWW. Since WWW is on floor 2, TTT must be on floor 3 (one floor above WWW), and UUU must be on floor 4.

- Floor 3: TTT
- Floor 4: UUU

This leaves floor 5 and floor 6. Since XXX must live on an even-numbered floor, XXX must be on floor 6.

- Floor 6: XXX

Finally, floor 5 is the only floor left, so SSS must live on floor 5.

Floor Arrangement:

- Floor 1: VVV
- Floor 2: WWW
- Floor 3: TTT
- Floor 4: UUU

- Floor 5: SSS
- Floor 6: XXX

Answer:

The person who lives on floor number 5 is **S**.

---

58. Answer: b

Explanation:

The incident ray is identified as AB, and the emergent ray is CD in the given figure.

---

59. Answer: d

Explanation:

Using the formula for volume of a sphere ($V = (4/3)\pi r^3$), we find the radius to be 3 cm, so the diameter is 6 cm.

---

60. Answer: c

Explanation:

The discriminant of the equation is positive, indicating that the roots are real and distinct.

---

61. Answer: b

Explanation:

To find the rate of interest per annum, we can use the information given about the amounts in 2 years and 5 years.

Given:

1. The sum of money becomes **Rs 1,250 in 2 years**.
2. The sum of money becomes **Rs 2,000 in 5 years**.

Step 1: Calculate the Interest for the Additional 3 Years

The difference between the amounts in 5 years and 2 years is the interest earned in the additional 3 years.

Interest for 3 years=2000−1250=750\text{Interest for 3 years} = 2000 - 1250 = 750Interest for 3 years=2000−1250=750

Step 2: Calculate the Annual Interest

Since this interest is for 3 years, the interest per year is:

Annual Interest=7503=250\text{Annual Interest} = \frac{750}{3} = 250Annual Interest=3750=250

Step 3: Determine the Principal

In 2 years, the total amount is Rs 1,250, and we know the annual interest is Rs 250. Therefore, the interest for 2 years is:

Interest for 2 years=250×2=500\text{Interest for 2 years} = 250 \times 2 = 500Interest for 2 years=250×2=500

Now, we can find the principal (PPP) by subtracting the interest from the total amount in 2 years:

P=1250−500=750P = 1250 - 500 = 750P=1250−500=750

Step 4: Calculate the Rate of Interest

Now that we have the principal P=750P = 750P=750 and the annual interest =250= 250=250, we can use the simple interest formula to find the rate RRR:

Simple Interest=P×R×T100\text{Simple Interest} = \frac{P \times R \times T}{100}Simple Interest=100P×R×T

Since we know that the interest for 1 year is Rs 250, we can substitute:

250=750×R×1100250 = \frac{750 \times R \times 1}{100}250=100750×R×1

Solving for RRR:

R=250×100750=25000750=33.33R = \frac{250 \times 100}{750} = \frac{25000}{750} = 33.33R=750250×100=75025000=33.33

Answer:

The rate of interest per annum is **33.33%.**

---

62. **Answer: b**

Explanation:

3824 is divisible by both 4 and 8, as it meets the divisibility criteria for both.

---

63. **Answer: b**

Explanation:

Magnification (m) is given by -v/u. Substituting v = 25 cm and u = 30 cm, we get m = -6/5.

---

64. **Answer: b**

Explanation:

The correct sequence of urine formation in the kidneys is filtration, selective reabsorption, and then elimination.

---

65. **Answer: d**

Explanation:

In Kerala, the major language is Malayalam, not Kannada. Kannada is primarily spoken in Karnataka.

---

66. **Answer: c**

Explanation:

Grafting is a method of artificial vegetative propagation, not natural asexual reproduction, as it involves human intervention.

---

67. **Answer: c**

Explanation:

COPRA stands for Consumer Protection Act, which was enacted to protect the rights of consumers in India.

---

68. **Answer: c**

Explanation:

By analyzing the sequence, there are 4 numbers that meet the criteria of being immediately preceded and followed by an even number.

---

69. **Answer: b**

Explanation:

Given Information:

1. **Q** lives on floor number **2**.
2. **R** lives on the floor immediately above **U**.
3. **S** is on the floor immediately below **V**'s floor.
4. There are **three persons** living between the floors of **T** and **P**.
5. **R** lives on the **topmost floor** (floor number **7**).
6. Only **one person** lives between the floors of **R** and **P**.

Step-by-Step Deduction:

Since **R** is on the topmost floor (floor 7), we can write:

- Floor 7: **R**

Since **Q** is on floor 2, we write:

- Floor 2: **Q**

The only person who can live immediately below **R** (on floor 6) is **U**, so:

- Floor 6: **U**
- Therefore, RRR lives above UUU as mentioned.

Now we know **R** is on floor 7 and **U** is on floor 6. We still need to place **S** and **V**.

- **S** is immediately below **V**, meaning if **V** is on floor nnn, then **S** is on floor n-1n-1n-1.

T and **P** must have **three persons** living between them. This means they cannot be on adjacent floors. The possible pairs for **T** and **P** (considering floors 1 to 7) could be:

- (1, 5), (2, 6), (3, 7) or their reverses. However, since QQQ is on floor 2, it rules out **2** for either **T** or **P**.

Since **R** is on floor 7 and **U** is on floor 6, we can also determine the only possible positions for **T** and **P**:

- **T** can only be on floors 1, 3, or 4, leading to the following arrangements:
  - If **T** is on 1, then **P** must be on 5.
  - If **T** is on 3, then **P** must be on 7 (not possible since R is there).
  - If **T** is on 4, then **P** must be on 1 (which is valid).

However, since **R** is on floor 7, the only arrangement left would be if **T** were on floor 4 and **P** were on floor 1.

With that arrangement, we can also place **S** and **V**. The only floor left is floor 3 for **V**, leading to **S** being on floor 2:

- Floor 1: **P**
- Floor 2: **Q**
- Floor 3: **S**
- Floor 4: **T**
- Floor 5: **U**
- Floor 6: **V**
- Floor 7: **R**

Conclusion:

From the deductions above, we can determine that **P** lives on **floor 1**.

---

70. Answer: d

Explanation:

Option 4 follows the same pattern of number relationships as the provided sets.

---

71. **Answer: d**

Explanation:

The product of the roots of the equation $ax^2 + bx + c = 0$ is given by c/a. Here, $c = 6$ and $a = 3$, so the product of the roots is $6/3 = 2$.

---

72. **Answer: d**

Explanation:

Carbon has an electronic configuration of $1s^2\ 2s^2\ 2p^2$, which involves two shells.

---

73. **Answer: a**

Explanation:

Using simultaneous equations based on work done by men and women per day, 3 men and 2 women will complete the work in approximately $11^5/11$ days.

---

74. **Answer: a**

Explanation:

Dadabhai Naoroji was the first to estimate the national income of India in 1876, advocating economic reform through his work.

---

75. **Answer: d**

Explanation:

The volume of a cylinder is given by $V = \pi r^2 h$. Substituting r = 7 m and h = 20 m, the volume (and thus the water amount) is 3080 m^3.

---

76. Answer: a

Explanation:

In January 2022, Haryana had the highest unemployment rate among Indian states, according to CMIE data.

---

77. Answer: c

Explanation:

A reaction that results in the formation of an insoluble precipitate is termed a precipitation reaction.

---

78. Answer: d

Explanation:

When resistance R is halved, each part has a resistance of R/2.

---

79. Answer: a

Explanation:

Setting up equations based on the age conditions, we find that the current sum of the father's and son's ages is 84 years.

---

80. Answer: b

Explanation:

Given Statement:

H>Y≥S=X=A>WH > Y \geq S = X = A > WH>Y≥S=X=A>W

This implies the following relationships:

- HHH is greater than YYY.
- YYY is greater than or equal to SSS.
- SSS is equal to XXX and AAA.
- AAA is greater than WWW.

Step 1: Analyze the Conclusions

Conclusion I: H<SH < SH<S

- From the statement, we have H>Y≥SH > Y \geq SH>Y≥S.
- Therefore, HHH is definitely greater than SSS.
- Thus, **Conclusion I is false**.

Conclusion II: A≤YA \leq YA≤Y

- From the statement, we have A=X=SA = X = SA=X=S and Y≥SY \geq SY≥S.
- Since AAA (which equals SSS) is not greater than YYY and can be equal to YYY, we have A≤YA \leq YA≤Y.
- Therefore, **Conclusion II is true**.

Final Evaluation

- **Conclusion I:** False
- **Conclusion II:** True

Answer:

Only **Conclusion II is true.**

---

81. Answer: a

Explanation:

Both arguments support the statement, as they provide justification for implementing penalties to enforce waste segregation.

---

82. Answer: c

Explanation:

Step 1: Set Up the Problem

Let CPCPCP be the cost price of the article.

When James sells the article for 1,9201,9201,920, he makes a profit. The profit percentage can be expressed as:

1. Profit=SP1-CP=1920-CP\text{Profit} = SP_1 - CP = 1920 - CPProfit=SP1 -CP=1920-CP Profit Percentage=(1920-CPCP)×100\text{Profit Percentage} = \left(\frac{1920 - CP}{CP}\right) \times 100Profit Percentage=(CP1920-CP)×100

When James sells the article for 1,5001,5001,500, he incurs a loss. The loss percentage can be expressed as:

1. Loss=CP-SP2=CP-1500\text{Loss} = CP - SP_2 = CP - 1500Loss=CP-SP2 =CP-1500 Loss Percentage=(CP-1500CP)×100\text{Loss Percentage} = \left(\frac{CP - 1500}{CP}\right) \times 100Loss Percentage=(CPCP-1500)×100

Step 2: Equate the Profit Percentage and Loss Percentage

According to the problem, the percentage profit earned by selling at 1,9201,9201,920 equals the percentage loss suffered by selling at 1,5001,5001,500:

1920−CPCP×100=CP−1500CP×100\frac{1920 - CP}{CP} \times 100 = \frac{CP - 1500}{CP} \times 100CP1920−CP×100=CPCP−1500×100

Step 3: Simplify the Equation

We can cancel out 100100100 from both sides:

1920−CPCP=CP−1500CP\frac{1920 - CP}{CP} = \frac{CP - 1500}{CP}CP1920−CP=CPCP−1500

Cross-multiplying gives:

1920−CP=CP−15001920 - CP = CP - 15001920−CP=CP−1500

Rearranging terms leads to:

1920+1500=2CP1920 + 1500 = 2CP1920+1500=2CP CP=34202=1710CP = \frac{3420}{2} = 1710CP=23420=1710

Step 4: Calculate the Selling Price for a 10% Profit

To find the selling price for a 10% profit:

Selling Price=CP+Profit\text{Selling Price} = CP + \text{Profit}Selling Price=CP+Profit

Where profit is:

Profit=10% of CP=10100×1710=171\text{Profit} = 10\% \text{ of } CP = \frac{10}{100} \times 1710 = 171Profit=10% of CP=10010×1710=171

Thus, the selling price should be:

Selling Price=1710+171=1881\text{Selling Price} = 1710 + 171 = 1881Selling Price=1710+171=1881

Answer:

The selling price if he wants to earn a 10% profit should be **Rs 1,881**.

---

83. **Answer: a**

Explanation:

Article 279A of the Indian Constitution establishes the Goods and Services Tax (GST) Council.

---

84. **Answer: c**

Explanation:

In May 2022, the Chief Minister of Karnataka, Basavaraj Bommai, launched the AAYU app for health and wellness.

---

85. **Answer: a**

Explanation:

T. P. Ouseph was awarded the Dronacharya Award in 2021 for his coaching and contributions to weightlifting.

---

86. **Answer: a**

Explanation:

The correct answer is calculated based on Ohm's law and the circuit configuration, yielding a 2 V potential drop across the 4 Ω resistor.

---

87. Answer: c

Explanation:

Expanding $(3a - 4b - 2c)^2$ correctly yields $9a^2 + 16b^2 + 4c^2 - 24ab + 16bc - 12ac$.

---

88. Answer: d

Explanation:

Contour ploughing helps to prevent soil erosion by reducing water runoff and promoting water absorption into the soil.

---

89. Answer: c

Explanation:

Sandhya Gurung was honored with the Dronacharya Award in 2021 for her contributions as a boxing coach.

---

90. Answer: d

Explanation:

With four points, each pair of points determines a unique line. Therefore, the number of distinct straight lines is 6.

91. **Answer: b**

Explanation:

The distance between the pole and the center of curvature of a spherical mirror is twice the focal length, or 2f.

92. **Answer: a**

Explanation:

Based on the seating arrangement, Palak is to the immediate left of Tapan.

93. **Answer: b**

Explanation:

According to the diagram, 24 accountants are also bilinguals.

94. **Answer: d**

Explanation:

The growth of mammary glands is a change specific to sexual maturation in girls.

95. **Answer: a**

Explanation:

The profit ratio aligns with their investment and time periods, resulting in a simplified investment ratio of 5 : 2 : 3.

---

96. **Answer: b**

Explanation:

Replacing the signs with -, +, and ÷ balances the equation, making it correct.

---

97. **Answer: c**

Explanation:

Let the distance between Reena's house and the party venue be ddd km.

When she walks at 3 km/h:

- Time taken to reach the venue =d3= \frac{d}{3}=3d hours.
- She arrives 20 minutes late, so the actual time to reach on time =d3-2060= \frac{d}{3} - \frac{20}{60}=3d-6020.

When she walks at 4 km/h:

- Time taken to reach the venue =d4= \frac{d}{4}=4d hours.
- She arrives 30 minutes early, so the actual time to reach on time =d4+3060= \frac{d}{4} + \frac{30}{60}=4d+6030.

Since both times are equal, we can set up the equation:

d3-13=d4+12\frac{d}{3} - \frac{1}{3} = \frac{d}{4} + \frac{1}{2}3d-31=4d+21

Let's solve for ddd.

The distance between Reena's house and the party venue is 10 km.

---

98. **Answer: c**

Explanation:

The Goa government launched the "Pink Force" to improve safety for women and children in December 2021.

---

99. **Answer: d**

Explanation:

Multiplying 6124.8 by 625.5 and then by 0.0043 yields the same result as 61.248 × 6255 × 0.043

---

100. **Answer: b**

Explanation:

To determine the number of boxes between SSS and QQQ, let's analyze the arrangement based on the clues provided:

Q is kept at the lowermost position.

T is kept immediately above Q.

So, the order at the bottom is:

- **Position 7**: Q (bottom-most)
- **Position 6**: T

Only one box is kept between R and P.

Only one box is kept between S and T.

Only one box is kept between P and Q.

Since Q is at position 7 and T is at position 6, there should be only one box between S and T. Therefore, SSS should be positioned at **Position 4**.

Thus, the arrangement from top to bottom would likely be:

- **Position 4**: S
- **Position 7**: Q

Answer

There are **two boxes** between SSS and QQQ.