Prepp.in

Prepp

Your Personal Exams Guide

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RRB Group D 2022 Prev. Ye. Paper (18 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. What will come in place of the question mark (?) in the following equation, if '+' and '−' are interchanged and also '×' and '÷' are interchanged? **(+1, -0.33)**

   8 + 13 - 18 x 9 ÷ 3 = ?

   a. -33

   b. 33

   c. 32

   d. -32

---

2. Mendeleev's Periodic Law states that: **(+1, -0.33)**

   a. The properties of elements are the periodic function of their atomic masses

   b. The properties of elements are the periodic function of their atomic numbers

   c. The properties of elements are the periodic function of their colour

   d. The properties of elements are the periodic function of their magnetic properties

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3. To connect a number of resistors in parallel can be considered equivalent to: **(+1, -0.33)**

   a. Increasing cross-sectional area of the conductor

   b. Decreasing cross-sectional area of the conductor

c. Increasing length of the conductor

d. Increasing resistance of the conductor

---

4. In a certain code language, TRIP is written as WULS and SOME is written as VRPH. How will CLAN be written in the same language? **(+1, -0.33)**

a. FOEQ

b. FODQ

c. FODR

d. FPDQ

---

5. The fraction equivalent to 0.474747... is: **(+1, -0.33)**

a. 47/99

b. 11/27

c. 27/9

d. 27/100

---

6. The formation of water from hydrogen and oxygen is an example of _____. **(+1, -0.33)**

a. Combination reaction

b. Oxidation and reduction

c. Decomposition reaction

d. Displacement reaction

---

7. _____ is represented by the root apex's constantly dividing cells. (+1, -0.33)

a. Meristematic growth

b. Maturation

c. Increase in hormonal level

d. Germination

---

8. Which team won the Santosh Trophy 2021-22, the 75th edition of the Football tournament? (+1, -0.33)

a. Karnataka

b. Kerala

c. West Bengal

d. Meghalaya

---

9. Safflower, shisham, khair, arjun, and mulberry are the main trees of which vegetation? (+1, -0.33)

a. Tropical Evergreen Forests

b. Mangrove Forests

c. Tropical Deciduous Forests

d. Montane Forests

10. A class of 30 students appeared in a test. The average score of 12 students is 80, and that of the rest is 75. What is the average score of the class? (+1, -0.33)

a. 56

b. 67

c. 87

d. 77

11. Which of the following reactions represents symbolic combination reaction? (+1, -0.33)

a. XY → X + Y

b. A + B → C

c. AB + CD → AC + BD

d. PQ + R → PR + Q

12. In a certain code language, 'LEFT' is written as 'VGFN' and 'DESK' is written as 'MTFF'. How will 'HELP' be written in that language? (+1, -0.33)

a. SMFJ

b. RMFJ

c. QMFJ

d. RNFJ

13. Read the given statement and conclusions carefully. Assuming that the information given in the statements is true, decide which of the given conclusions logically follow(s) from the statement. **(+1, -0.33)**

Statement:

Cyclone Sepa is expected to make landfall by 3 p.m. today on the Balasore coast. Rough seas, heavy rain, and strong winds are expected to lash Balasore from 11 a.m. onwards. Power supply in Balasore is likely to be affected from 2 p.m. to 9 p.m.

Conclusions:

i) There could be power cuts in Balasore after 3 p.m. today.

ii) It would be unsafe for fishermen to venture out into the sea today, till the cyclone passes.

a. Only conclusion I follows

b. Both conclusions I and II follow

c. Only conclusion II follows

d. Neither conclusion I nor II follows

---

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

L @ S O J ^ B U # W R < E M @ N U # B * H ! A & L E W % H & G A * S A # L D

How many consonants are immediately preceded by a symbol and immediately followed by a vowel?

a. 5

b. 3

c. 4

d. 6

---

15. An optical device Y has a positive focal length. Y is: (+1, -0.33)

a. Either a concave lens or a concave mirror

b. Either a convex lens or a convex mirror

c. Either a convex lens or a concave mirror

d. Either concave lens or a convex mirror

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16. Which Article deals with the protection of life and personal liberty? (+1, -0.33)

a. Article 31

b. Article 12

c. Article 22

d. Article 21

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17. Which of the following events takes place during diastole in the human heart? (+1, -0.33)

a. Blood leaves the ventricle

b. Blood enters the aorta

c. Blood enters the ventricle

d. Blood enters the lungs

18. The diagonal and one side of a rectangular plot are 65 m and 63 m, respectively. What is the perimeter of the rectangular plot? **(+1, -0.33)**

a. 196 m

b. 256 m

c. 225 m

d. 158 m

19. Calcium sulphate dihydrate is the chemical name of: **(+1, -0.33)**

a. Washing soda

b. Gypsum

c. Baking powder

d. Plaster of Paris

20. If AB = x + 3, BC = 2x, and AC = 4x - 5, then for what value of 'x' does B lie on AC? **(+1, -0.33)**

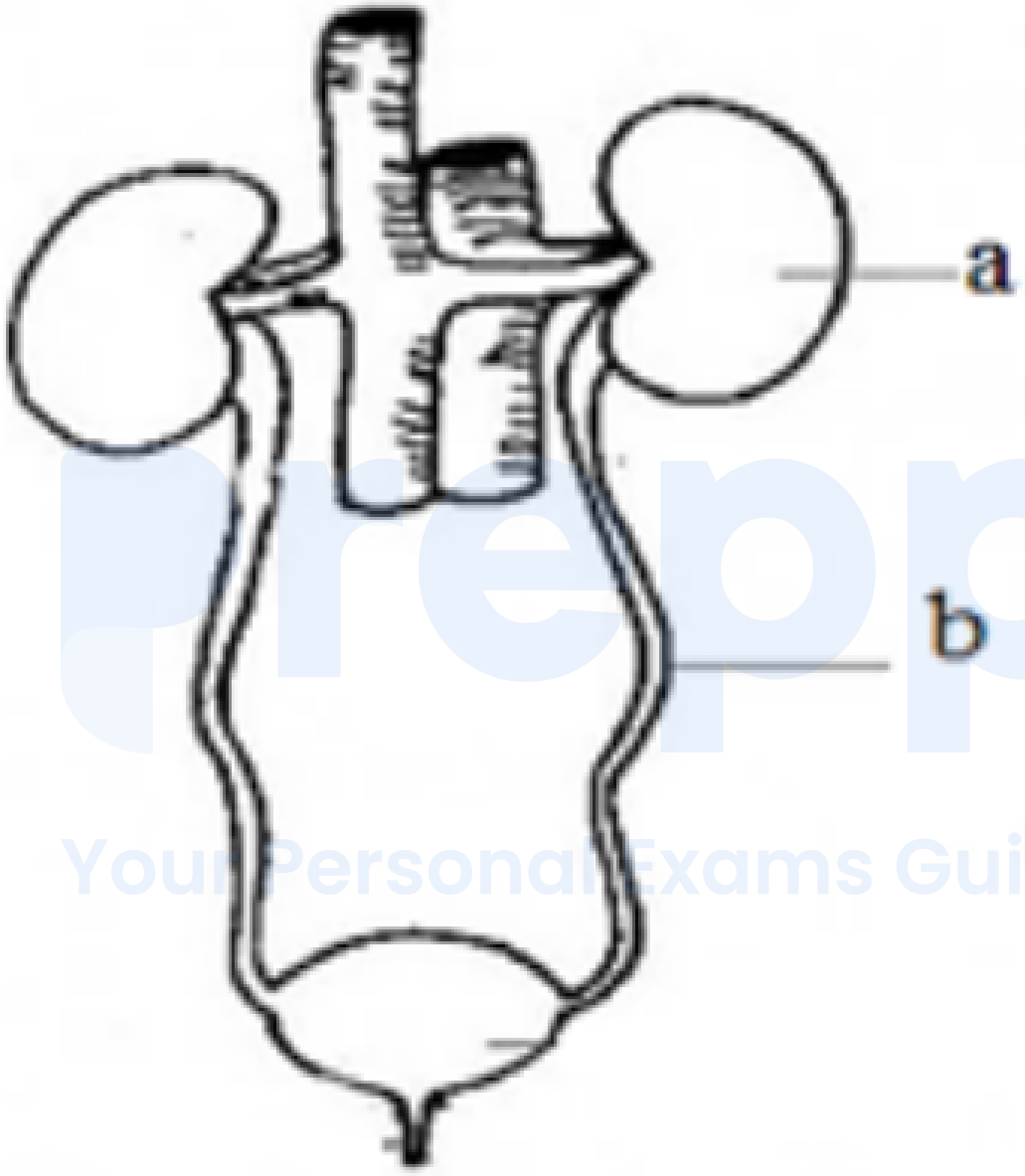
a. 2

b. 3

c. 5

d. 8

21. The diagram of the human excretory system is given below. Select the option that correctly shows the functions of parts 'a' and 'b'. **(+1, -0.33)**



a. a - Formation of urine, b - Collection of urine

b. a - Formation of urine, b - Carrying urine for storage

c. a - Formation of urine, b - Throwing urine outside the body

d. a - Collection of urine, b - Formation of urine

---

22. The Panchayati Raj Institutions DO NOT exist in which of the following states as on June 2022? (+1, -0.33)

a. Manipur

b. Tripura

c. Nagaland

d. Arunachal Pradesh

---

23. The rate of increase in ex-ante consumption due to a unit increment in income is called _____. (+1, -0.33)

a. Marginal propensity to consume

b. Average propensity to save

c. Average propensity to consume

d. Marginal propensity to save

---

24. As of January 2022, which country has become the world's top exporter of cucumber? (+1, -0.33)

a. India

b. America

c. Canada

d. China

25. Magnification produced by a lens is equal to: **(+1, -0.33)**

a. u/v

b. -v/u

c. v/u

d. -u/v

---

26. How many such pairs of letters are there in the word 'CAPITAL' (in both forward and backward directions) each of which have as many letters between them in the word as there are in the English alphabetical order? **(+1, -0.33)**

a. 3

b. 4

c. 1

d. 2

---

27. Select the option that is related to the fifth letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster and the fourth letter-cluster is related to the third letter-cluster. **(+1, -0.33)**

SMILE : ELIMS :: MASTE : ETSAM :: STARV : ?

a. VRATS

b. VTARS

c. VRTAS

d. SRVAT

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28. Select the correct group of scientists who are the recipients of the Shanti Swarup Bhatnagar Prize for Science and Technology, 2021. **(+1, -0.33)**

a. Dr. Subimal Ghosh, Dr. Neena Gupta, and Dr. Dhiraj Kumar

b. Dr. Vatsasla Thirumalai, Dr. Abhijit Mukharjee, and Dr. Subi Jacob George

c. Dr. Bushra Ateeq, Dr. Ritesh Agarwal, and Dr. Surajit Dhara

d. Dr. Amit Singh, Dr. Kanishka Biswas, and Dr. Anish Ghosh

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29. Q started from a point and walked towards the south for 42 m, then from there he turned right and walked 2 m, then he turned right again and walked 30 m, and then turned left and walked 10 m. In which direction is Q facing now? (All turns are 90 degree turns only) **(+1, -0.33)**

a. North

b. West

c. East

d. South

---

30. A vendor sold 25 laptops at a profit of 12% and 15 laptops at a profit of 20%. If he had sold all the 40 laptops at a profit of 18%, his profit would have increased by Rs. 30,000. What is the cost price of each laptop, if the cost price of all the 40 laptops is the same? **(+1, -0.33)**

a. Rs. 28,000

b. Rs. 25,000

c. Rs. 26,000

d. Rs. 27,000

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31. The table given below shows the record of the number of students who got selected in the entrance exam of M.Phil. in a particular central university from five different states of India over the years. Study the table and answer the question. **(+1, -0.33)**

Years	Kashmir	Bihar	MP	Punjab	Delhi
2017	300	440	250	350	280
2018	400	400	280	400	320
2019	450	350	240	260	260
2020	500	380	400	320	400
2021	430	420	540	280	350

number of students who got selected in 2020 from Bihar was approximately what percentage of the total number of students who got selected from Delhi for all the years together?

a. 15.0%

b. 20.5%

c. 23.6%

d. 15.5%

---

32. Which of the following is the greatest number that divides 72 and 119 and leaves 3 and 4 as respective remainders? **(+1, -0.33)**

a. 23

b. 21

c. 19

d. 17

---

33. A statement is given, followed by four conclusions given in the options. Find out which conclusion is true based on the given statement. **(+1, -0.33)**

Statement: K = U = R > N > E > G < W

a. G < R

b. W < N

c. K = N

d. K < N

---

34. Who is the Controller General of Accounts (CGA) as on 15th June 2022? **(+1, -0.33)**

a. Girraj Prasad Gupta

b. Sonali Singh

c. Deepak Das

d. Soma Roy

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35. In which of the following years was The Indian Official Language Act passed? **(+1, -0.33)**

a. 1973

b. 1953

c. 1936

d. 1963

---

36. What is the angle traced by the hour hand in 18 minutes? **(+1, -0.33)**

a. 7°

b. 8°

c. 12°

d. 9°

---

37. If each interior angle of a regular polygon is 135°, then the number of sides that polygon has is: **(+1, -0.33)**

a. 8

b. 15

c. 12

d. 10

---

38. A metallic wire having resistivity ρ is cut into four equal parts. The resistivity of each part is: **(+1, -0.33)**

a. ρ

b. 4ρ

c. ρ/2

d. ρ/4

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39. Which of the following was the first city planned by the Mughal Empire? **(+1, -0.33)**

a. Delhi

b. Agra

c. Islamabad

d. Fatehpur Sikri

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40. Who is the Chief Election Commissioner of India as on March 2022? **(+1, -0.33)**

a. KK Menon

b. Sushil Chandra

c. Rajiv Kumar

d. Anup Chandra Pandey

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41. The first and second members, respectively, of the ketone homologous series are: **(+1, -0.33)**

a. Propanone, Butanone

b. Methanone, Ethanone

c. Ethanone, Propanone

d. Butanone, Propanone

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42. Which of the following options is the closest approximate value which will come in place of question mark (?) in the following equation? **(+1, -0.33)**

$26.52 \times 3.89 - 7.79 \times 2 + 27.39 = ?$

a. 136

b. 181

c. 119

d. 82

---

43. A man buys 15 identical articles for a total of Rs. 15. If he sells each of them for Rs. 1.23, then his profit percentage is: **(+1, -0.33)**

a. 23%

b. 8%

c. 50%

d. 32%

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44. Which of the following established by Raja Rammohan Roy was a precursor in socio-religious reforms in Bengal? **(+1, -0.33)**

a. Prarthana Samaj

b. Arya Samaj

c. Atmiya Sabha

d. Dharma Sabha

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45. Find the roots of $^{6}/_{x} - {}^{2}/_{x-1} - {}^{1}/_{x-2} = 0$ **(+1, -0.33)**

a. $\frac{4}{5} and 3$

b. $\frac{4}{3} and \frac{3}{2}$

c. $\frac{4}{5} and \frac{3}{2}$

d. $\frac{4}{3}\ and\ 3$

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46. Which of the following was the guest nation at the Hyderabad Literary Festival 2022? **(+1, -0.33)**

a. China

b. Canada

c. United Kingdom

d. Australia

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

Statement:

B ≥ M > G, G ≥ Y = L

Conclusions:

B > Y, M = L

a. Only conclusion 1 is true

b. Only conclusion 2 is true

c. Both conclusions 1 and 2 are true

d. Neither conclusion 1 nor 2 is true

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48. The country's first commercial-scale biomass-based hydrogen plant is coming up in which district of Madhya Pradesh? **(+1, -0.33)**

a. Khandwa

b. Agar Malwa

c. Betul

d. Anuppur

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49. About 85% of the Indian population of colonial India depended on which of the following sectors of the economy? **(+1, -0.33)**

a. Hospitality and real estate

b. Handicraft industries

c. Transport

d. Agriculture

---

50. Two wires A and B are made of the same material and have the same length but different cross-sectional areas. If the resistance of wire A is 9 times the resistance of wire B, the ratio of the radius of wire A to that of wire B is: **(+1, -0.33)**

a. 3 : 1

b. 1 : 9

c. 1 : 3

d. 9 : 1

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51. Which of the following pairs of numbers are co-primes? **(+1, -0.33)**

a. 34 and 35

b. 12 and 18

c. 7 and 14

d. 17 and 170

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52. If $x^2 + 2x + 9 = (x - 2)(x - 3)$, then the resultant equation is: **(+1, -0.33)**

a. a cubic equation

b. a cubic polynomial

c. a quadratic equation

d. not a quadratic equation

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53. What is the assistance to be given to the elderly, per person per month, after the age of 60 years, under the 'Jiyo Parsi' Scheme with effect from 22 October 2021? **(+1, -0.33)**

a. Rs. 20,000

b. Rs. 15,000

c. Rs. 10,000

d. Rs. 25,000

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54. A magnet, when moved near a coil, produces an induced current. Which of the following method(s) can be used to increase the magnitude of the induced current? **(+1, -0.33)**

(i) Increasing the number of turns in the coil

(ii) Increasing the speed of the magnet

(iii) Increasing the resistivity of the wire of the coil

a. Only (i)

b. Only (iii)

c. Both (ii) and (iii)

d. Both (i) and (ii)

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55. Three of the following statements pertaining to non-biodegradable plastics indicate their implications on animals, plants, and our surroundings. Choose the odd one out. **(+1, -0.33)**

a. Plastic bags are durable carry bags

b. Choke the drains

c. Reduce the fertility of the soil

d. Can prove fatal when eaten by animals

---

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

Statements:

All toys are plastics. All plastics are disposables. Some toys are fibres.

Conclusions:

I) Some fibres are plastics.

II) Some disposables are fibres.

III) No fibre is a disposable.

a. Only conclusions I and II follow

b. Only conclusions II and III follow

c. Either conclusion I or conclusion III follows

d. None of the conclusions follow

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57. How many seconds will a boy take to run one complete round around a square field of side 38 metres, if he runs at a speed of 6 km/h? **(+1, -0.33)**

a. 50.1

b. 91.2

c. 61.2

d. 71.2

---

58. Two pipes X and Y can fill a cistern in 21 hours and 24 hours, respectively. The pipes are opened simultaneously, and it is found that due to a leakage in the bottom, it takes 48 minutes more to fill the cistern. When the cistern is full, in how much time will the leak empty it if no pipe is open during that time? **(+1, -0.33)**

a. 168 hours

b. 120 hours

c. 130 hours

d. 144 hours

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59. L, K, J, H, G, F, D, and S live on eight different floors of the same building. The lowermost floor in the building is numbered 1, and the topmost floor is numbered 8. L lives exactly one floor above K and exactly one floor below G. Only K lives between H and L, whereas H lives exactly one floor above J. Only D lives between S and J. F lives on the 8th floor, while S lives on the 1st floor. **(+1, -0.33)**

On which floor does K live?

a. 5th

b. 3rd

c. 7th

d. 4th

---

60. A certain number of people are sitting in a row, facing the north. Only 7 persons sit between F and U. F is at one of the extreme ends of the row. Only 9 persons sit between H and U. Only 12 persons sit between E and H. E is at the extreme right end. H is at the 19th position from the extreme left end. H is 14th from the extreme right end. If no other person is sitting in the row, what is the total number of persons seated? **(+1, -0.33)**

a. 33

b. 34

c. 32

d. 31

---

61. Find the mode of the data 2, 2, 3, 5, 15, 15, 15, 20, 21, 23, 25, 15, 23, 25. **(+1, -0.33)**

a. 25

b. 23

c. 21

d. 15

---

62. P, Q, R, S, and T are sitting in a straight row, facing north. Neither Q nor S sit at the exact central position of the row. R is adjacent to S, while P and T are sitting at the extreme ends of the row. Who is sitting at the exact central position of the row? **(+1, -0.33)**

a. Q

b. R

c. S

d. T

---

63. Three statements are given, followed by two conclusions numbered I and II. 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: Some avalanches are precipitations. Some cataclysms are avalanches. All avalanches are storms.

Conclusions:

I. Some storms are cataclysms.

II. No precipitation is a storm.

a. Only conclusion I follows

b. Only conclusion II follows

c. Both conclusions I and II follow

d. Neither conclusion I nor II follows

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64. Which of the following is NOT a part of the 5 R's needed to be followed for sustainable development? **(+1, -0.33)**

a. Refuse

b. Regeneration

c. Repurpose

d. Recycle

---

65. The Asiatic lion population largely resides in the protected park area of _____. **(+1, -0.33)**

a. Bhitarkanika National Park

b. Gir National Park

c. Anamudi Shola National Park

d. Balphakram National Park

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66. Two angles are complementary. The larger angle is 6° less than thrice the measure of the smaller angle. What is the measure of the larger angle? **(+1, -0.33)**

a. 54°

b. 63°

c. 57°

d. 66°

---

67. If $3x - 2y = 10$ and $xy = 11$, the value of $27x^3 - 8y^3$ is _____ **(+1, -0.33)**

a. 2569

b. 3336

c. 2980

d. 3170

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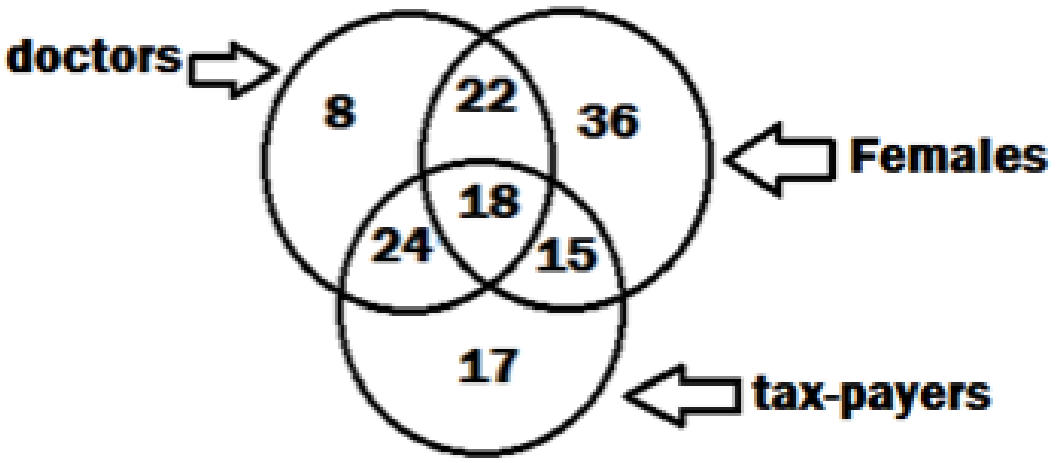
68. Study the given diagram carefully and answer the question. The numbers in different sections indicate the number of persons. **(+1, -0.33)**



How many such females are there who are also tax-payers but NOT doctors?

a. 18

b. 40

c. 15

d. 33

---

69. Which of the following numbers will replace the question mark (?) in the given series? **(+1, -0.33)**

13, 21, 33, 54, 91, ?

a. 183

b. 162

c. 175

d. 153

---

70. The following chart shows the numbers of cars sold by a company at its six branches named A, B, C, D, E, and F. Study the chart and answer the question. **(+1, -0.33)**

Car Model	Number Sold
A	850
B	725
C	650
D	555
E	700
F	410

For how many branches was the sale of the cars above the average sale for all six branches?

a. Four

b. Three

c. Five

d. Two

---

71. A spherical mirror forms an erect and diminished image. Identify the correct statement(s) about the spherical mirror. **(+1, -0.33)**

(A) The mirror is concave.

(B) The mirror forms a virtual image.

(C) The mirror has positive focal length.

a. Only B

b. Both A and B

c. Only A

d. Both B and C

---

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

BE 2, GJ 3, LO 5, QT 7, ?

a. VY 6

b. VY 11

c. WX 6

d. WX 7

---

73. In how many years will a sum of ₹10,000 become ₹13,310 at 10% compound interest per annum, compounded annually? **(+1, -0.33)**

a. 4

b. 3

c. 2

d. 5

---

74. As per NITI Aayog National Multidimensional Poverty Index – 2021, which state is the poorest? **(+1, -0.33)**

a. Jharkhand

b. Chhattisgarh

c. Bihar

d. Himachal Pradesh

---

75. The magnetic field produced due to a circular coil carrying a current having six turns will be how many times that of the field produced due to a single circular loop carrying the same current? **(+1, -0.33)**

a. 2 times

b. 4 times

c. 8 times

d. 6 times

---

76. Which of the following options is the closest approximate value which will come in place of question mark (?) in the following equation? **(+1, -0.33)**

$48.9 \times 3.95 - 2.97 + 17.86 = ?$

a. 125

b. 140

c. 211

d. 250

77. The area (in square units) of the triangle formed by the vertices (0, 2), (2, 3), and (3, 1) is: **(+1, -0.33)**

a. 2.5

b. 3.5

c. 5.5

d. 4.4

---

78. Vikas took a bus from a bus stop. The bus travelled 50 m towards the west. Then, it took a right turn and travelled 70 m. Then, it took a left turn and travelled 15 m. Then, it took a left turn and travelled 30 m. Then, it took a left turn and travelled 35 m. Then, it took a right turn and travelled 10 m. Finally, it took a left turn and travelled 30 m to reach the school. How far and in which direction is the bus stop from the school? (All turns are 90 degree turns only) **(+1, -0.33)**

a. 30 m, South

b. 30 m, North

c. 40 m, South

d. 40 m, East

---

79. If 10% of 24% of x is 240, then x = ? **(+1, -0.33)**

a. 100

b. 100000

c. 1000

d. 10000

---

80. If sec 4A = cosec (3A - 50°), where 4A and 3A are acute angles, find the value of A + 75. **(+1, -0.33)**

a. 67°

b. 95°

c. 78°

d. 105°

---

81. What is the angle traced by the hour hand in 23 minutes? **(+1, -0.33)**

a. 12.5°

b. 13°

c. 11.5°

d. 12°

---

82. Oral contraceptive pills work by stopping _____. **(+1, -0.33)**

a. ovulation

b. ovulation and implantation

c. ovulation and fertilisation

d. fertilisation and implantation

---

83. Identify the FALSE statement. **(+1, -0.33)**

a. Hydrotropism is the tendency to grow in moist areas, i.e., the movement of roots towards high humidity.

b. The sunflower is a phototrophic plant.

c. Geotropism is demonstrated by the downward migration of roots.

d. The growth of pollen tubes towards ovules is an example of geotropism.

---

84. Which of the following is the most electropositive element? **(+1, -0.33)**

a. Cs

b. Mg

c. Ca

d. Na

---

85. Which of the following medicinal plants is the best remedy to treat blood pressure? **(+1, -0.33)**

a. Navmallika

b. Rajnigandha

c. Alukam

d. Sarpagandha

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86. G, H, I, J, K, and L live on six different floors of the same building. The lowermost floor in the building is numbered 6, the floor above it is numbered 5, and so on till the topmost floor is numbered 1. **(+1, -0.33)**

J lives on an even-numbered floor. G and K each live on an odd-numbered floor. I lives on floor number 2. H lives on an odd-numbered floor, immediately above L and immediately below I. G does not live on the topmost floor. Who lives on the lowermost floor?

a. J

b. K

c. G

d. L

---

87. Select the option that is related to the fifth number in the same way as the second number is related to the first number and the fourth number is related to the third number. **(+1, -0.33)**

3 : 12 :: 25 : 78 :: 21 : ?

a. 66

b. 63

c. 48

d. 42

---

88. Caustic soda is generally NOT used in the _____. **(+1, -0.33)**

a. detergent industry

b. fabric industry

c. paper and pulp industry

d. manufacture of ammonia

---

89. A and B invest Rs. 42,000 and Rs. 56,000 respectively, in a business. At the end of the year they make a profit of Rs. 87,220. Find B's share in the profit. **(+1, -0.33)**

a. Rs. 47,240

b. Rs. 48,480

c. Rs. 49,840

d. Rs. 45,620

---

90. Select the set in which the numbers are related in the same way as are the numbers of the following set. **(+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 / 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, 51, 5)

(5, 36, 7)

a. (19, 44, 3)

b. (11, 51, 6)

c. (14, 120, 16)

d. (13, 10, 7)

---

91. The apparent position of a star keeps on changing slightly because: **(+1, -0.33)**

a. the physical conditions of the atmosphere are stationary

b. the atmosphere scatters star light

c. the atmosphere consists of a mixture of gases

d. the physical conditions of the atmosphere keep changing

---

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

K I O X J E T R U L E B A C K J M N

How many such vowels are there each of which is immediately followed by at least two consonants appearing together in the above series?

a. 2

b. 4

c. 1

d. 3

---

93. Find the smallest number by which 6300 must be multiplied to make it a perfect square. **(+1, -0.33)**

a. 6

b. 12

c. 7

d. 15

---

94. The sum of ages of P and Q is 15 years more than the sum of ages of Q and R. How many years younger is R as compared to P? **(+1, -0.33)**

a. 19

b. 15

c. 13

d. 12

---

95. All the compounds of which of the following sets belong to the same homologous series? **(+1, -0.33)**

a. C_3H_8, C_4H_{10}, C_5H_{12}

b. C_6H_{10}, C_6H_{12}, C_6H_{14}

c. C_4H_8, C_5H_8, C_6H_{10}

d. C_2H_6, C_2H_4, C_2H_2

---

96. The smallest natural number that must be added to 1212 to make it a perfect square is: **(+1, -0.33)**

a. 18

b. 27

c. 13

d. 24

---

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

2, 14, 70, 210, ?

a. 210

b. 420

c. 410

d. 630

---

98. Which Indian Badminton Player won a silver medal in the All England Badminton Championships 2022 in Birmingham? **(+1, -0.33)**

a. Kidambi Srikanth

b. Lakshya Sen

c. PV Sindhu

d. Saina Nehwal

---

99. If a + b = 56 and $(a - b)^2 = 496$, find the value of the product of a and b. **(+1, -0.33)**

a. 460

b. 660

c. 760

d. 560

---

100. Two resistors of 6Ω and 12Ω are connected in parallel. What is the equivalent resistance? **(+1, -0.33)**

a. 3Ω

b. 4Ω

c. 2Ω

d. 5Ω

Answers

1. **Answer: a**

Explanation:

First, apply the given symbol changes to the equation. The modified equation becomes: 8 + 13 - 18 × 9 ÷ 3. Solve step by step: 18 ÷ 3 = 6, then 9 × 6 = 54, followed by 8 + 13 - 54 = -33.

---

2. **Answer: a**

Explanation:

Mendeleev's Periodic Law states that the properties of elements are periodic functions of their atomic masses. This was the basis of the original periodic table developed by Dmitri Mendeleev.

---

3. **Answer: a**

Explanation:

Connecting resistors in parallel decreases the total resistance, which is equivalent to increasing the cross-sectional area of the conductor, allowing more current to flow.

---

4. **Answer: b**

Explanation:

The coding pattern involves shifting each letter in the word by +3 in the alphabetical order: C becomes F, L becomes O, A becomes D, and N becomes Q. Therefore, CLAN is coded as FODQ.

---

5. **Answer: a**

Explanation:

Solution:

Let x = 0.474747... (repeating)

This is a repeating decimal with a repeating block of 47. Since there are two digits repeating, we multiply x by 100 to shift the decimal point two places to the right:

100x = 47.474747...

Now, we subtract the original x from this equation:

100x - x = 47.474747... - 0.474747...

99x = 47

Now, we solve for x by dividing both sides by 99:

x = 47/99

Therefore, the fraction equivalent to 0.474747... is **47/99**.

---

6. **Answer: a**

Explanation:

The formation of water from hydrogen and oxygen is a combination reaction because two reactants combine to form a single product.

---

7. **Answer: a**

Explanation:

Meristematic growth occurs in regions of the plant where cells continuously divide, such as the root apex, allowing the plant to grow in length.

---

8. **Answer: b**

Explanation:

Kerala won the Santosh Trophy for the 2021-22 season, which was the 75th edition of the tournament.

---

9. **Answer: c**

Explanation:

The Tropical Deciduous Forests, also known as monsoon forests, shed their leaves in the dry season to conserve water. Trees like safflower, shisham, khair, arjun, and mulberry are characteristic of this vegetation type, adapted to seasonal variations with a wet and dry season.

---

10. **Answer: d**

Explanation:

The total score for 12 students is 12 × 80 = 960, and for the remaining 18 students, it is 18 × 75 = 1350. Therefore, the combined total score for all 30 students is 960 + 1350 =

2310. To find the average score, divide the total score by the number of students: 2310 ÷ 30 = 77.

---

11. Answer: b

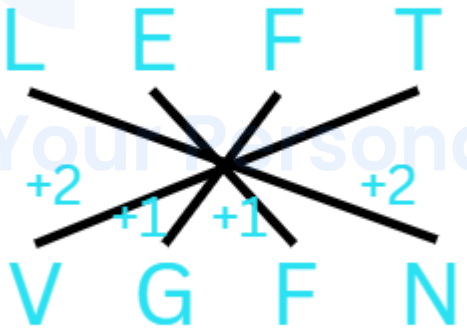
Explanation:

A combination reaction is characterized by two or more reactants combining to form a single product. In the equation A + B → C, reactants A and B combine to form product C, which is the hallmark of a combination reaction.

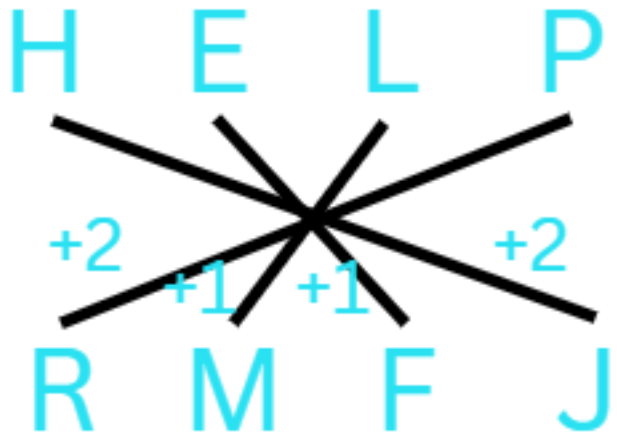
---

12. Answer: b

Explanation:



Similarly,



13. **Answer: b**

Explanation:

The statement indicates adverse weather conditions and potential power outages, supporting both conclusions. Conclusion I is valid since power is expected to be affected from 2 p.m. to 9 p.m., including after 3 p.m. Conclusion II logically follows as venturing into rough seas would be hazardous during a cyclone.

14. **Answer: d**

Explanation:

L @ S O J ^ B U # W R < E M @ N U # B * H ! A & L E W % H & G A * S A # L D

Examining each consonant in the sequence that has a symbol before it and a vowel after, we find that three consonants meet this criterion. This careful identification verifies that option 4 is correct.

15. **Answer: b**

Explanation:

Optical devices with positive focal lengths focus light rays rather than diverge them. Both convex lenses and convex mirrors have positive focal lengths, making them suitable candidates for device Y.

---

16. **Answer: d**

Explanation:

Article 21 of the Indian Constitution guarantees the right to life and personal liberty. This fundamental right is protected unless deprivation occurs through a lawful process, emphasizing its importance in safeguarding individual freedom.

---

17. **Answer: c**

Explanation:

Diastole is the phase of the cardiac cycle when the heart muscles relax after contraction, allowing the chambers to fill with blood. During diastole, the ventricles are relaxed, and blood flows from the atria into the ventricles as the atrioventricular (AV) valves (the tricuspid and mitral valves) open.

Thus, the correct answer is **Blood enters the ventricle**.

---

18. **Answer: d**

Explanation:

Let the length of one side of the rectangle be 63 m and the diagonal be 65 m. We can use the Pythagorean theorem to find the other side of the rectangle.

According to the Pythagorean theorem:

$(\text{Diagonal})^2 = (\text{Length})^2 + (\text{Width})^2$

Substitute the known values:

$65^2 = 63^2 + (\text{Width})^2$

$4225 = 3969 + (\text{Width})^2$

$(\text{Width})^2 = 4225 - 3969$

$(\text{Width})^2 = 256$

$\text{Width} = \sqrt{256} = 16$ m

Now that we know both sides of the rectangle (63 m and 16 m), we can calculate the perimeter:

Perimeter = 2 × (Length + Width)

Perimeter = 2 × (63 + 16) = 2 × 79 = 158 m

Therefore, the perimeter of the rectangular plot is **158 m**.

---

19. Answer: b

Explanation:

Calcium sulphate dihydrate ($CaSO_4 \cdot 2H_2O$) is commonly known as gypsum, a mineral used in plaster and construction. Plaster of Paris, on the other hand, is calcium sulphate hemihydrate ($CaSO_4 \cdot \frac{1}{2}H_2O$).

---

20. **Answer: d**

Explanation:

For point B to lie on line AC, the sum of AB and BC must equal AC. Therefore, we have:

AB + BC = AC

Substitute the given values:

(x + 3) + (2x) = 4x - 5

Simplify the equation:

x + 3 + 2x = 4x - 5

3x + 3 = 4x - 5

Now, isolate x by moving terms involving x to one side and constants to the other side:

3 + 5 = 4x - 3x

8 = x

Therefore, the value of **x** that satisfies the condition is **8**.

---

21. **Answer: b**

Explanation:

In the human excretory system, urine is formed in the kidneys and then carried by the ureters to the bladder for storage before excretion.

---

22. **Answer: c**

Explanation:

Nagaland does not have Panchayati Raj Institutions, as it follows a traditional community governance system, distinct from the Panchayati Raj setup common in other Indian states.

---

23. **Answer: a**

Explanation:

Marginal propensity to consume (MPC) is the ratio of change in consumption to change in income, indicating the proportion of additional income spent on consumption.

---

24. **Answer: a**

Explanation:

In January 2022, India surpassed other countries to become the world's top exporter of cucumbers. This achievement is attributed to India's extensive agricultural sector, favorable climate conditions for cucumber cultivation, and effective export strategies that have enabled it to lead the global cucumber market.

Therefore, the correct answer is **India**.

---

25. **Answer: c**

Explanation:

The magnification (m) produced by a lens is defined as the ratio of the height of the image (h') to the height of the object (h). In terms of distances, magnification is also given by the formula:

m = v / u

where:

- v = image distance from the lens
- u = object distance from the lens

Thus, the magnification produced by a lens is equal to **v/u**.

---

26. Answer: d

Explanation:

Identifying pairs that satisfy the criterion, we find there are four such pairs. This involves comparing each letter with others to check spacing according to alphabetical order.

---

27. Answer: a

Explanation:

The pattern involves reversing each letter cluster. Following this logic, STARV becomes VRATS when reversed, making it the correct answer.

---

28. Answer: d

Explanation:

The Shanti Swarup Bhatnagar Prize for Science and Technology is one of India's highest multidisciplinary science awards, presented annually by the Council of Scientific and Industrial Research (CSIR). In 2021, the recipients included Dr. Amit Singh, Dr. Kanishka Biswas, and Dr. Anish Ghosh, recognized for their significant contributions in their respective scientific fields.

Therefore, the correct answer is **Dr. Amit Singh, Dr. Kanishka Biswas, and Dr. Anish Ghosh**.

---

29. Answer: b

Explanation:

Let's analyze each step:

1. Q starts facing south and walks 42 m south.
2. Q turns right, which means he now faces west, and walks 2 m.

3. Q turns right again, meaning he now faces north, and walks 30 m.
4. Q turns left, meaning he now faces west, and walks 10 m.

After these moves, Q is facing **west**.

Therefore, the correct answer is **West**.

---

30. Answer: b

Explanation:

Let the cost price of each laptop be Rs. x.

Since there are 40 laptops, the total cost price of all laptops is 40x.

According to the problem:

1. The profit on 25 laptops sold at a 12% profit = 25 × 12% × x = 25 × 0.12x = 3x
2. The profit on 15 laptops sold at a 20% profit = 15 × 20% × x = 15 × 0.20x = 3x

Total actual profit = 3x + 3x = 6x

If all 40 laptops had been sold at an 18% profit, the total profit would have been:

18% of 40x = 0.18 × 40x = 7.2x

According to the problem, this hypothetical profit is Rs. 30,000 more than the actual profit:

7.2x - 6x = 30,000

1.2x = 30,000

x = 30,000 / 1.2

x = 25,000

Therefore, the cost price of each laptop is **Rs. 25,000**.

---

31. **Answer: c**

Explanation:

Number of students selected in 2020 from Bihar = 380

Total number of students selected from Delhi for all years = 280 + 320 + 260 + 400 + 350 = 1610

Percentage = (Students from Bihar in 2020 / Total students from Delhi) × 100

Percentage = (380 / 1610) × 100 ≈ 23.66%

Answer: The number of students who got selected in 2020 from Bihar was approximately **23.66%** of the total number of students who got selected from Delhi for all the years together.

---

32. **Answer: a**

Explanation:

Let the required number be denoted as *d*.

Since *d* leaves a remainder of 3 when dividing 72, we can write:

72 - 3 = 69

Therefore, *d* divides 69 exactly.

Similarly, since *d* leaves a remainder of 4 when dividing 119, we can write:

119 - 4 = 115

Therefore, *d* divides 115 exactly.

Now, we need to find the greatest common divisor (GCD) of 69 and 115.

Prime factorization of 69: 69 = 3 × 23

Prime factorization of 115: 115 = 5 × 23

The common factor is 23.

Therefore, the greatest number that divides both 72 and 119, leaving remainders 3 and 4 respectively, is **23**.

---

33. Answer: a

Explanation:

Based on the statement, we see that K, U, and R are greater than N, which is in turn greater than E and G. Thus, G is less than R, making conclusion 1 correct.

---

34. Answer: b

Explanation:

As of 15th June 2022, Sonali Singh was serving as the Controller General of Accounts (CGA) in India. She was appointed to this position and took over the responsibilities of overseeing the accounts and financial reporting functions under the Department of Expenditure, Ministry of Finance.

Therefore, the correct answer is **Sonali Singh**.

---

35. Answer: d

Explanation:

The Indian Official Language Act was passed in 1963 to give Hindi and English official language status, ensuring smooth administration across different language

speakers in India.

---

36. Answer: d

Explanation:

Each hour corresponds to a 30° movement by the hour hand, so each minute corresponds to 0.5°. In 18 minutes, the angle traced is 18 × 0.5° = 9°.

---

37. Answer: a

Explanation:

For a regular polygon, the formula for each interior angle is: $(n-2) \times 180^\circ / n$. Setting this to 135°, we solve for n: (n-2) × 180° = 135°n. Simplifying, n = 8.

---

38. Answer: a

Explanation:

Resistivity (ρ) is a material property and does not depend on the length or cross-sectional area. Cutting the wire into parts does not change its resistivity; thus, each part has resistivity ρ.

---

39. Answer: d

Explanation:

Fatehpur Sikri was the first planned city built by Emperor Akbar. It served as the Mughal capital for some years and showcases Mughal architectural brilliance.

---

40. Answer: b

Explanation:

Sushil Chandra was the Chief Election Commissioner (CEC) of India as of March 2022. The CEC oversees the conduct of free and fair elections in India.

---

41. Answer: a

Explanation:

The ketone homologous series starts with propanone (CH_3COCH_3) as the simplest ketone because a ketone requires at least three carbon atoms. The next member is butanone ($CH_3COC_2H_5$).

---

42. Answer: c

Explanation:

We can approximate the values to make the calculations easier:

$26.52 \approx 27$

$3.89 \approx 4$

$7.79 \approx 8$

$27.39 \approx 27$

Substitute these approximate values into the equation:

$27 \times 4 - 8 \times 2 + 27$

$= 108 - 16 + 27$

= 119

Therefore, the closest approximate value for the given equation is **119**.

---

43. Answer: a

Explanation:

Total cost price (CP) of 15 articles = Rs. 15

Cost price per article = 15 / 15 = Rs. 1

Selling price (SP) per article = Rs. 1.23

Now, calculate the profit per article:

Profit per article = Selling price - Cost price = 1.23 - 1 = Rs. 0.23

Profit percentage = (Profit per article / Cost price per article) × 100%

Profit percentage = (0.23 / 1) × 100% = 23%

Therefore, the profit percentage is **23%**.

---

44. Answer: c

Explanation:

Raja Rammohan Roy established the Atmiya Sabha in 1815 to promote social and religious reforms in Bengal, advocating against practices like Sati and encouraging education and rational thinking.

---

45. Answer: d

Explanation:

To solve the equation:

$^{6}/_{x} - {}^{2}/_{x-1} - {}^{1}/_{x-2} = 0$

we can find a common denominator and simplify.

Step 1: Find the common denominator

The common denominator for $^{6}/_{x}$, $^{2}/_{x-1}$, and $^{1}/_{x-2}$ is $x(x-1)(x-2)$.

Step 2: Rewrite the equation with the common denominator

$$^{6(x-1)(x-2) - 2x(x-2) - x(x-1)}/_{x(x-1)(x-2)} = 0$$

Since the denominator cannot be zero, we only need to solve the numerator for zero:

$$6(x-1)(x-2) - 2x(x-2) - x(x-1) = 0$$

Step 3: Expand each term in the numerator

Expanding each term:

1. $6(x-1)(x-2) = 6(x^2 - 3x + 2) = 6x^2 - 18x + 12$
2. $-2x(x-2) = -2x^2 + 4x$
3. $-x(x-1) = -x^2 + x$

Step 4: Combine like terms

Now we combine these terms:

$$(6x^2 - 2x^2 - x^2) + (-18x + 4x + x) + 12 = 0$$

$$3x^2 - 13x + 12 = 0$$

Step 5: Solve the quadratic equation

Now we solve for x using the quadratic formula:

$x = {-(-13) \pm \sqrt{((-13)^2 - 4 \times 3 \times 12)}}/{2 \times 3}$

$x = {13 \pm \sqrt{(169 - 144)}}/{6}$

$x = {13 \pm \sqrt{25}}/{6}$

$x = {13 \pm 5}/{6}$

So, we have two possible values for x:

1. $x = {13 + 5}/{6} = {18}/{6} = 3$
2. $x = {13 - 5}/{6} = {8}/{6} = {4}/{3}$

Answer

The roots of the equation are:

$x = 3$ and $x = {4}/{3}$

---

46. Answer: c

Explanation:

Correct Answer: United Kingdom

Solution:

The Hyderabad Literary Festival 2022 had the United Kingdom as its guest nation. This annual festival showcases a diverse range of literary, artistic, and cultural events, with a focus on promoting cross-cultural dialogue and understanding. The inclusion of the UK as the guest nation highlighted the country's contributions to literature and facilitated cultural exchange between the nations.

Therefore, the correct answer is **United Kingdom**.

47. **Answer: a**

Explanation:

From B ≥ M > G and G ≥ Y, we can infer B > Y. However, no information supports M = L, so only conclusion 1 is valid.

48. **Answer: a**

Explanation:

The first commercial-scale biomass-based hydrogen plant in India is being set up in Khandwa district, Madhya Pradesh. This plant represents a significant step in promoting clean and renewable energy sources, utilizing biomass to produce hydrogen, which is an eco-friendly fuel with potential applications in various industries.

Therefore, the correct answer is **Khandwa**.

49. **Answer: d**

Explanation:

During colonial times, about 85% of India's population was dependent on agriculture as their primary livelihood. The British policies focused on cash crop cultivation, impacting the traditional agrarian economy.

50. **Answer: c**

Explanation:

Resistance is inversely proportional to the square of the radius. Given that the resistance of A is 9 times that of B, the radius ratio is $\sqrt{9} = 3$, so the radius of A to B is 1 : 3.

---

51. Answer: a

Explanation:

Two numbers are co-prime if their only common factor is 1. The pair 34 and 35 are co-prime because they do not share any common factors except 1.

---

52. Answer: d

Explanation:

Expanding $(x - 2)(x - 3)$ gives $x^2 - 5x + 6$. Since $x^2 + 2x + 9 \neq x^2 - 5x + 6$, equating both sides does not yield a valid quadratic equation, making it "not a quadratic equation."

---

53. Answer: c

Explanation:

The 'Jiyo Parsi' scheme aims to support the elderly in the Parsi community with Rs. 10,000 per month per person after 60 years to improve their quality of life.

---

54. Answer: d

Explanation:

According to Faraday's Law of Induction, increasing the number of turns in the coil or the speed of the magnet increases the induced current. Increasing resistivity would reduce current, so options (i) and (ii) are correct.

---

55. Answer: a

Explanation:

Option 1 describes a characteristic of plastic bags rather than an environmental implication. The other options explain the negative impact of plastic on animals and the environment, making Option 1 the odd one out.

---

56. Answer: a

Explanation:

From the statements, we know that all toys are disposables through plastics, and some toys are fibres. This gives either some fibres as plastics or no fibre as a disposable, making "either I or III" valid.

---

57. Answer: b

Explanation:

The perimeter of the square field is 4 × 38 = 152 meters. Converting the speed to m/s: 6 km/h = 6000 m / 3600 s = 1.67 m/s. Time taken = distance / speed = 152 / 1.67 ≈ 91.2 seconds.

---

58. Answer: a

Explanation:

Given:

Time taken by pipe A to fill the tank = 21 hours

Time taken by pipe B to fill the tank = 24 hours

Formula used:

Time = $^{\text{Total work}}/_{\text{Efficiency}}$

Calculation:

Here, extra 48 minutes represents the extra time taken by the pipes due to the leak.

Total units of water to be filled = LCM of (21, 24) = 168 units.

Pipe A can fill 8 units of water in 1 hr.

Pipe B can fill 7 units of water in 1 hr.

Normal Time is taken to fill the tank = $^{168}/_{15}$ hrs = 11 $^{3}/_{15}$ hrs = 11 hrs 12 minutes.

With 48 min extra, the pipes would take 12 hrs to fill the tank.

Let the leakage can empty N units of water in 1 hr.

(7 + 8 - N) × 12 = 168

15 - N = 14

N = 15 - 14 = 1

Leakage can empty 1 unit of water in 1 hr.

Leakage of 168 units of water takes 168 hrs.

Hence, the time taken to empty the tank is '168' hrs.

59. **Answer: a**

Explanation:

Floor	Name
8	F
7	G
6	L
5	K
4	H
3	J
2	D
1	S

Arranging based on the clues given, K lives on the 4th floor, meeting all conditions with L, G, and other placements according to the floor order provided.

---

60. **Answer: c**

Explanation:

Using H's position information, we find the row length as 19 + 14 - 1 = 32, meeting all distance criteria with no additional people seated.

---

61. **Answer: d**

Explanation:

The mode is the most frequently occurring number. In the data set, 15 appears four times, more than any other number, making it the mode.

---

62. **Answer: b**

Explanation:

P/T Q/S R S/Q T/P

We can't determine the positions of others but we can determine the position of R from the above given statements. i.e R

---

63. **Answer: a**

Explanation:

Conclusion I follows since cataclysms are avalanches, which are all storms, so some storms are cataclysms. Conclusion II does not follow as we have no information that relates storms and precipitation exclusively.

---

64. **Answer: b**

Explanation:

The 5 R's for sustainable development are Refuse, Reduce, Reuse, Repurpose, and Recycle. "Regeneration" is not one of the 5 R's, making it the correct answer.

---

65. **Answer: b**

Explanation:

The Gir National Park in Gujarat, India, is the primary habitat for the Asiatic lion, with conservation efforts focused here to protect this endangered species.

---

66. **Answer: d**

Explanation:

Solution:

Let the measure of the smaller angle be *x*.

Since the angles are complementary, their sum is 90°.

Therefore, the measure of the larger angle is **90 - x**.

According to the problem:

The larger angle is 6° less than thrice the measure of the smaller angle:

90 - x = 3x - 6

Now, solve for *x*:

90 + 6 = 4x

96 = 4x

x = 24

The smaller angle is 24°.

Now, find the larger angle:

Larger angle = 90 - x = 90 - 24 = 66°

Answer: The measure of the larger angle is **66°**.

---

67. **Answer: c**

Explanation:

Given:

$3x - 2y = 10$ and $xy = 11$

Formula used:

$(a - b)^3 = a^3 - b^3 - 3ab(a - b)$

Calculation:

$3x - 2y = 10$

Taking a cube on both sides of the above equation:

$(3x - 2y)^3 = 10^3$

$\Rightarrow 27x^3 - 8y^3 - 3(3x)(2y)(3x - 2y) = 1000$

$\Rightarrow 27x^3 - 8y^3 - 18(xy)(3x - 2y) = 1000$

Putting, $3x - 2y = 10$, $xy = 11$

$\Rightarrow 27x^3 - 8y^3 - 18 \times 11 \times 10 = 1000$

$\Rightarrow 27x^3 - 8y^3 - 1980 = 1000$

$\Rightarrow 27x^3 - 8y^3 = 1000 + 1980 = 2980$

Hence, the value of $27x^3 - 8y^3$ is '2980'.

---

68. Answer: c

Explanation:

To answer the question, let's analyze the Venn diagram:

We need to find the number of females who are also tax-payers but NOT doctors.

Identify the relevant sections:

- The overlapping section between "Females" and "Tax-payers" without including "Doctors" is represented by the number **15** in the Venn diagram.

Conclusion:

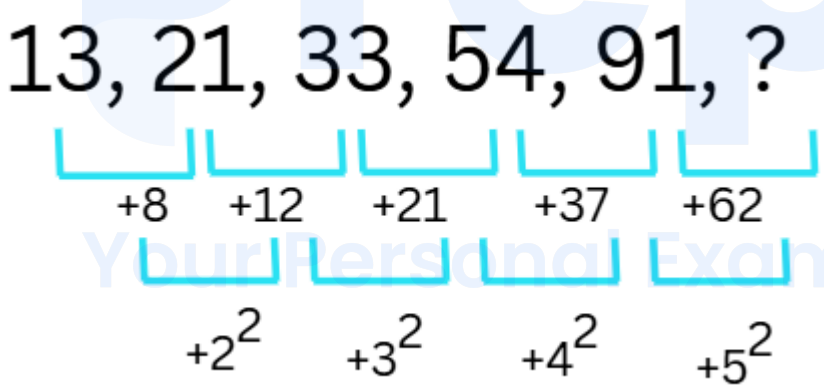
- Therefore, the number of females who are also tax-payers but NOT doctors is **15**.

Answer: 15

---

69. **Answer: d**

Explanation:



---

70. **Answer: a**

Explanation:

Calculate the average sale across six branches. Count branches exceeding this average, resulting in four branches with above-average sales.

71. **Answer: d**

Explanation:

Solution:

When a spherical mirror forms an erect and diminished image, it is typically a convex mirror. A convex mirror always forms a virtual, erect, and diminished image regardless of the position of the object.

Let's analyze each statement:

- **Statement A:** The mirror is concave. - *Incorrect*. A concave mirror forms an inverted image when the object is placed beyond the focal point, except when the object is very close to the mirror (within the focal length) where it forms an enlarged virtual image.
- **Statement B:** The mirror forms a virtual image. - *Correct*. A convex mirror always forms a virtual, erect, and diminished image.
- **Statement C:** The mirror has positive focal length. - *Correct*. For a convex mirror, the focal length is considered positive.

Correct Statements: (B) The mirror forms a virtual image. and (C) The mirror has positive focal length.

72. **Answer: b**

Explanation:

In the pattern, letters advance by 5 positions, and numbers increase with next prime number : BE 2, GJ 3, LO 5, QT 7. The next cluster is VY 11.

73. **Answer: b**

Explanation:

Formula:

$A = P(1 + r/100)^n$

Where:

- A = Final amount (₹13,310)
- P = Principal amount (₹10,000)
- r = Interest rate (10%)
- n = Number of years

Substitute the values into the formula:

$13,310 = 10,000(1 + 10/100)^n$

$13,310 = 10,000(1.1)^n$

Divide both sides by 10,000:

$1.331 = (1.1)^n$

Now, we need to find the value of *n* for which $(1.1)^n = 1.331$.

By calculating powers of 1.1, we find that:

$(1.1)^3 \approx 1.331$

Therefore, **n = 3**.

Answer: It will take 3 years for ₹10,000 to become ₹13,310 at 10% compound interest per annum, compounded annually.

---

74. Answer: c

Explanation:

According to the National Multidimensional Poverty Index by NITI Aayog in 2021, Bihar was identified as the state with the highest poverty levels.

---

75. Answer: d

Explanation:

The magnetic field strength of a coil is directly proportional to the number of turns. Thus, a coil with six turns will produce a field 6 times stronger than a single turn coil.

---

76. Answer: c

Explanation:

Calculating step-by-step: 48.9 × 3.95 ≈ 193.66, then 193.66 - 2.97 + 17.86 ≈ 208.55, which rounds to approximately 211.

---

77. Answer: a

Explanation:

Formula:

Area = $^1/_2 \mid x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2) \mid$

For the points (0, 2), (2, 3), and (3, 1):

- $(x_1, y_1) = (0, 2)$
- $(x_2, y_2) = (2, 3)$
- $(x_3, y_3) = (3, 1)$

Substitute the values into the formula:

Area = $^1/_2$ | 0(3 - 1) + 2(1 - 2) + 3(2 - 3) |

Area = $^1/_2$ | 0 + 2(-1) + 3(-1) |

Area = $^1/_2$ | 0 - 2 - 3 |

Area = $^1/_2$ | -5 |

Area = $^1/_2$ × 5

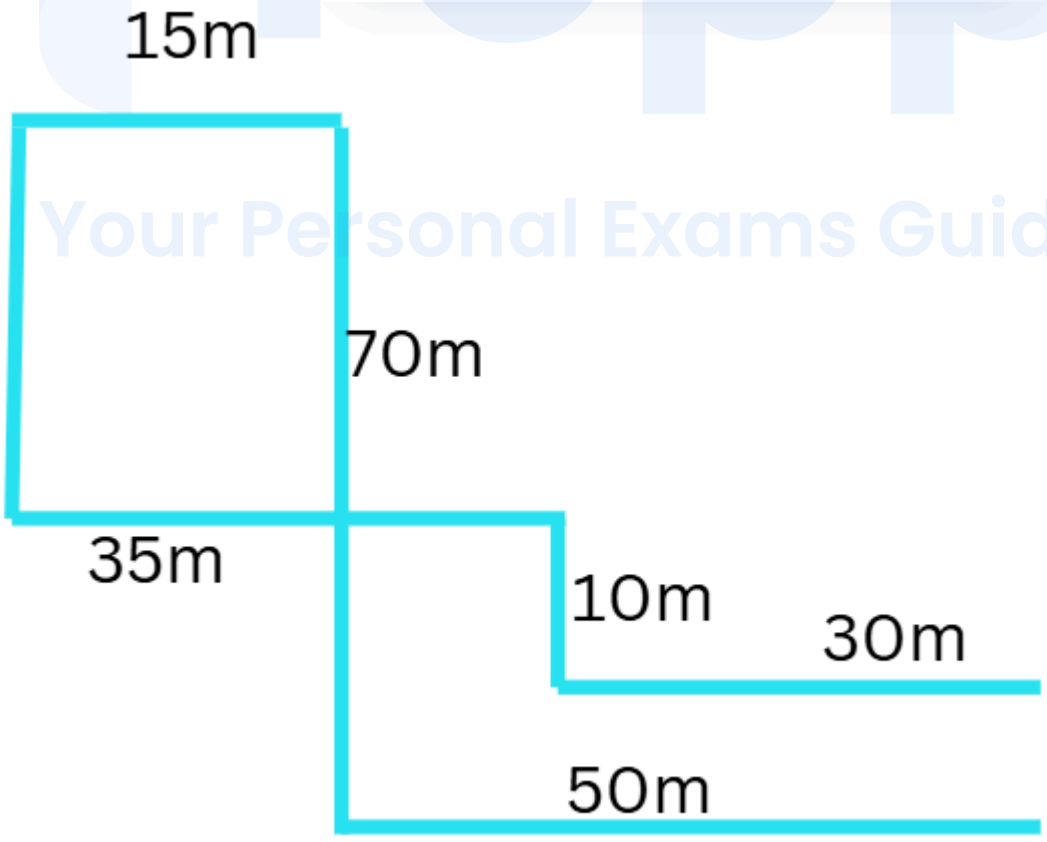
Area = 2.5 square units

Answer: The area of the triangle is **2.5 square units**.

---

78. **Answer: a**

Explanation:



79. **Answer: d**

Explanation:

Setting up the equation 0.10 × 0.24 × x = 240, we get x = 240 / (0.10 × 0.24) = 10000.

80. **Answer: b**

Explanation:

Step 1: Use the Trigonometric Identity

We know that:

sec θ = cosec (90° - θ)

In this problem, we have:

sec 4A = cosec (3A - 50°)

Therefore, we can write:

4A = 90° - (3A - 50°)

Step 2: Solve for A

Expanding and solving the equation:

4A = 90° - 3A + 50°

4A + 3A = 140°

7A = 140°

A = 20°

Step 3: Find A + 75

A + 75 = 20° + 75° = 95°

Answer: The value of A + 75 is **95°**.

---

81. Answer: c

Explanation:

Each hour represents 30°, so each minute represents 0.5°. In 23 minutes, the angle is 23 × 0.5 = 11.5°.

---

82. Answer: c

Explanation:

Oral contraceptive pills primarily prevent ovulation, reducing the chance of fertilization by stopping the release of eggs from the ovaries.

---

83. Answer: d

Explanation:

The growth of pollen tubes towards ovules is an example of chemotropism (response to chemicals), not geotropism (response to gravity).

---

84. Answer: a

Explanation:

Cesium (Cs) is the most electropositive element among the options.
Electropositivity increases down the group in alkali metals, with Cs being the most electropositive in this group.

---

85. **Answer: d**

Explanation:

Sarpagandha is known for its effectiveness in managing high blood pressure due to its natural properties, which help in calming the nervous system.

---

86. **Answer: a**

Explanation:

To solve this problem, let's analyze the clues step-by-step:

Information Given:

- **Building Structure:** Six floors numbered from 6 (lowermost) to 1 (topmost).
- **People Living on Floors:** G, H, I, J, K, and L each live on a different floor.

Clues:

1. J lives on an even-numbered floor.
2. G and K each live on an odd-numbered floor.
3. I lives on floor number 2.
4. H lives on an odd-numbered floor, immediately above L and immediately below I.
5. G does not live on the topmost floor.

Step-by-Step Analysis

1. From Clue 3, we know that **I lives on floor 2.**

2. Clue 4 states that **H lives on an odd-numbered floor, immediately above L and immediately below I**. Since I is on floor 2, H must be on floor 3, and L must be on floor 4.

- Floor 3: H
- Floor 2: I
- Floor 4: L

3. Clue 1 says that **J lives on an even-numbered floor**. Since floors 2 and 4 are already occupied by I and L, the only even-numbered floors left for J are floors 6 and 1.

4. Clue 5 states that **G does not live on the topmost floor (floor 1)**. So, J must live on floor 6.

- Floor 6: J

5. Clue 2 says that **G and K each live on an odd-numbered floor**. The only remaining odd-numbered floors are floors 5 and 1, so G must live on floor 5 and K must live on floor 1.

- Floor 5: G
- Floor 1: K

Final Floor Arrangement:

Floor	Person
1	K
2	I
3	H
4	L
5	G
6	J

Answer: The person who lives on the lowermost floor (floor 6) is **J.**

---

87. **Answer: a**

Explanation:

The pattern adds the squares of individual digits. $3 + 3^2 = 12$, $25 + 5^2 = 78$, and $21 + 6^2 = 66$.

---

88. **Answer: d**

Explanation:

Caustic soda (sodium hydroxide) is commonly used in the detergent, fabric, and paper industries but is not used in ammonia manufacturing.

---

89. **Answer: c**

Explanation:

Solution:

Step 1: Calculate the ratio of A's and B's investments.

A's investment = Rs. 42,000

B's investment = Rs. 56,000

Ratio of A : B = 42000 : 56000

Simplify the ratio:

A : B = 3 : 4

Step 2: Use this ratio to divide the total profit.

Total profit = Rs. 87,220

Let B's share in the profit be:

B's share = $^{4}/_{(3 + 4)}$ × 87,220

B's share = $^{4}/_{7}$ × 87,220

Step 3: Calculate B's share.

B's share = (4 × 87,220) / 7

B's share = 3,48,880 / 7

B's share = 49,840

Answer: B's share in the profit is **Rs. 49,840**.

---

90. Answer: b

Explanation:

The relation is: (first number) + (third number) * (second number)

i.e 12 + 5 = 17 *3 = 51

Similarly,

11 + 6 = 17 * 3 = 51

---

91. Answer: d

Explanation:

The apparent position of stars changes due to atmospheric refraction, which is caused by changes in atmospheric conditions, making option 4 correct.

---

92. Answer: d

Explanation:

Upon examining the series, there are three vowels each followed by at least two consonants, satisfying the condition given.

---

93. Answer: c

Explanation:

Prime factorization of 6300 = $2^2 \times 3^2 \times 5^2 \times 7$. To make it a perfect square, we need another 7, so multiplying by 7 makes it a perfect square.

---

94. Answer: b

Explanation:

If P + Q = Q + R + 15, then P − R = 15. Thus, R is 15 years younger than P.

---

95. Answer: a

Explanation:

C_3H_8, C_4H_{10}, and C_5H_{12} are alkanes, fitting the formula C_nH_{2n+2}, and thus belong to the same homologous series.

---

96. Answer: c

Explanation:

The nearest perfect square greater than 1212 is 1225 (which is 35^2). Therefore, 1225 - 1212 = 13.

---

97. Answer: a

Explanation:

The pattern follows the rule: each term is multiplied by the next odd number to get the next term. So, 2 × 7 = 14, 14 × 5 = 70, 70 × 3 = 210, and 210 × 1 = 210

---

98. Answer: b

Explanation:

Lakshya Sen won the silver medal in the All England Badminton Championships 2022, marking a significant achievement in his career.

---

99. Answer: b

Explanation:

Given: $a + b = 56$ and $(a - b)^2 = 496$

Formula used:

$(a + b)^2 = a^2 + b^2 + 2ab$

$(a - b)^2 = a^2 + b^2 - 2ab$

Calculation:

$(a - b)^2 = a^2 + b^2 - 2ab$

$\Rightarrow (a - b)^2 = ((a + b)^2 - 2ab) - 2ab$

$\Rightarrow (a - b)^2 = (a + b)^2 - 4ab$

Putting the given values of $(a - b)^2 = 496$ and $a + b = 56$ into the above equation, we get:

$496 = 56^2 - 4ab$

$\Rightarrow 4ab = 3136 - 496$

$\Rightarrow 4ab = 2640$

$\Rightarrow ab = 660$

Answer: Hence, the value of the product of a and b is **'660'**.

---

100. Answer: b

Explanation:

For parallel resistors, $1/R = 1/R_1 + 1/R_2 = 1/6 + 1/12 = 1/4$. Therefore, $R = 4\Omega$.