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Your Personal Exams Guide

- NDA
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RRB Group D 2022 Prev. Yr. Paper (17 Aug 2022) (Shift 3)

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. The resistivity of a material is dependent on which of the following factors? **(+1, -0.33)**

   a. Resistance

   b. Area of cross section

   c. Length

   d. Temperature

---

2. Arrange the following metals in the decreasing order of reactivity: K, Na, Zn, Cu, Hg, Ag **(+1, -0.33)**

   a. K > Na > Zn > Cu > Hg > Ag

   b. K > Na > Zn > Ag > Hg > Cu

   c. K > Na > Zn > Cu > Ag > Hg

   d. K > Na > Zn > Hg > Cu > Ag

---

3. Amit's son was born on 10 January 2012. On what day of the week was he born? **(+1, -0.33)**

   a. Monday

   b. Tuesday

   c. Wednesday

   d. Thursday

---

4. Identify the personality from among the following who received the Padma Shri 2022 award in the sports field. **(+1, -0.33)**

   a. Shivnath Mishra

   b. Shaibal Gupta

   c. Avani Lekhara

   d. Tara Jauhar

---

5. Which of the following has the maximum non-metallic characters in group 16 elements? **(+1, -0.33)**

   a. Polonium (Po)

   b. Oxygen (O)

   c. Sulfur (S)

   d. Selenium (Se)

---

6. Panchayati Raj Institutions in India have been established following which amendment of the Constitution of India? **(+1, -0.33)**

   a. 42nd Amendment Act

   b. 57th Amendment Act

   c. 64th Amendment Act

   d. 73rd Amendment Act

---

7. Which of the following substances are selectively reabsorbed from the initial filtrate by the tubular portion of the nephron in the human kidney? **(+1, -0.33)**

a. Salts, glucose, fats, and water

b. Glucose, water, amino acids, and proteins

c. Glucose, water, salts, and amino acids

d. Water, glucose, salts, and proteins

---

8. Which of the following rules is used to determine the direction of induced current due to the motion of a coil at right angle to the magnetic field? **(+1, -0.33)**

a. Fleming's left-hand rule

b. Maxwell's corkscrew rule

c. Right-hand thumb rule

d. Fleming's right-hand rule

---

9. In a certain code language, PRECIOUS is written as KIVXRLFH and CLEAR is written as XOVZI. How will DIRTYING be written in the same language? **(+1, -0.33)**

a. WRIFBRMS

b. WRIGBRMT

c. WHSGBRMT

d. VRIGBROT

---

10. If 2 × X × 412 × 83 = 161, then the value of X is: **(+1, -0.33)**

a. 14

b. 12

c. 11

d. 13

---

11. 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 at variance from commonly known facts. Decide which of the given conclusions logically follows from the given statements. **(+1, -0.33)**

Statements:

1. All springs are brooks.

2. Some brooks are creeks.

3. No creek is tap.

Conclusions:

I. Some taps are creeks.

II. No spring is a tap.

III. Some brooks are springs.

a. Only conclusion III follows.

b. Only conclusion I follows.

c. Only conclusions I and II follow.

d. Only conclusions II and III follow.

12. Which of the following is an example of a human cell that has the ability to modify its shape? **(+1, -0.33)**

a. WBC

b. RBC

c. Liver cells

d. Brain cell

13. From point X, a girl walks 70 m towards the north. Then, she takes a left turn and walks 150 m. Then, she takes a left turn and walks 70 m. Then, she takes another left turn and walks 90 m. She then takes a right turn and walks 100 m. Finally, she takes a left turn and walks 60 m to reach point Z. How far and in which direction is point Z from point X? (All turns are 90-degree turns only) **(+1, -0.33)**

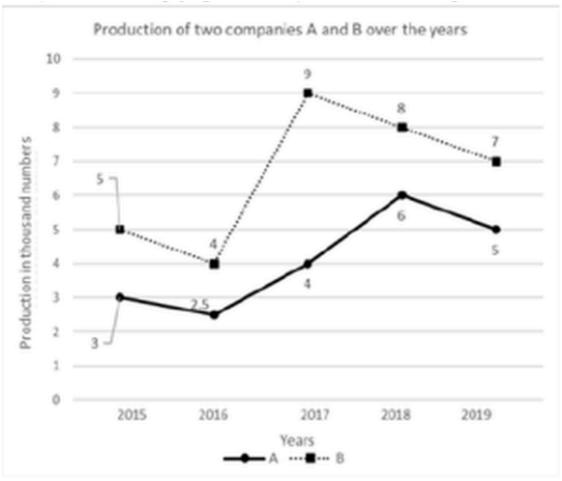
a. 60 m, North

b. 60 m, South

c. 100 m, North

d. 100 m, South

14. Study the following graph carefully and answer the question: Production of two companies A and B over the years. **(+1, -0.33)**



For company A, what is the approximate percentage decrease in production from 2015 to 2016?

a. 25%

b. 15%

c. 20%

d. 22%

---

15. A cost incurred in the past and that cannot be recovered in the future is called: **(+1, -0.33)**

a. Floating cost

b. Prime cost

c. Economic cost

d. Sunk cost

---

16. A convex mirror used as a rear-view mirror of a car has a focal length of 2 m. If a bus is located at a distance of 3 m from the mirror, where will its **(+1, -0.33)**

image be formed?

a. 0.83 m in front of the mirror

b. 1.2 m in front of the mirror

c. 0.83 m behind the mirror

d. 1.2 m behind the mirror

---

17. A white precipitate will be formed if we add ammonia solution to: **(+1, -0.33)**

a. $Mg(NO_3)_2$ solution

b. KNO_3 solution

c. $AlCl_3$ solution

d. $Ba(NO_3)_2$ solution

---

18. The bluish colour of water in deep sea is due to: **(+1, -0.33)**

a. Scattering of light

b. Refraction of light

c. Dispersion of light

d. Reflection of light

---

19. If θ is an acute angle, find the denominator A, when $(\text{cosec}\ \theta - \cot\theta)^2 = \frac{1-Cos\theta}{A}$ **(+1, -0.33)**

a. cosec θ - 1

b. 1 + sin θ

c. cot θ

d. 1 + cos θ

---

20. Amna has a younger sister whose age is 8 years less than that of Aruna. If Aruna's sister's age is 18 years, then Aruna's age is: **(+1, -0.33)**

a. 10 years

b. 24 years

c. 26 years

d. 28 years

---

21. How many participants from India won the gold medal in the 14th International Olympiad on Astronomy and Astrophysics (IOAA) 2021? **(+1, -0.33)**

a. 3

b. 5

c. 4

d. 6

---

22. The 'Save the Narmada' movement originated as a protest against raising the height of Sardar Sarovar Dam. Some disadvantages of building dams are mentioned below. Which one is an advantage? **(+1, -0.33)**

a. Lot of public money is used

b. Many tribals and peasants are displaced

c. Causes deforestation and loss of biodiversity

d. Helpful in irrigation and electricity production

---

23. The HCF of two numbers is 7 and their LCM is 434. If one of the numbers is 14, find the other. **(+1, -0.33)**

a. 146

b. 217

c. 48

d. 52

---

24. The sum of the roots of the quadratic equation $4x^2 + 7x - 21 = 0$ is: **(+1, -0.33)**

a. 21/4

b. 7/4

c. -7/4

d. -21/4

---

25. What will come in place of A and B, respectively, in the given double displacement reaction? **(+1, -0.33)**

$A + B \rightarrow AgBr + KNO_3$

a. Ag and HNO_3

b. HBr and NaOH

c. $AgNO_3$ and KBr

d. HBr and $NaNO_3$

---

26. If 5 + x, 2x + 7, 6x + 9, and y are in proportion when x = 2, find the value of y. **(+1, -0.33)**

a. 42

b. 33

c. 28

d. 45

---

27. Gosikhurd National Irrigation Project is related to which of the following states? **(+1, -0.33)**

a. Punjab

b. West Bengal

c. Uttar Pradesh

d. Maharashtra

---

28. Soil degradation is one of the major environmental problems being faced these days. A wide range of techniques to conserve soil are mentioned below. Select the INCORRECT option. **(+1, -0.33)**

a. Crop rotation

b. Terrace farming

c. Planting trees

d. Overgrazing

---

29. In which organism is sex not determined genetically? **(+1, -0.33)**

a. Butterfly

b. Moth

c. Sparrow

d. Snail

---

30. The age of a father six years ago was six times the then age of his daughter. Three years hence, the father will be thrice as old as his daughter. What is the present age of the daughter? **(+1, -0.33)**

a. 12 years

b. 17 years

c. 15 years

d. 20 years

---

31. The 'Mango Showers' phenomenon in India is related to which season? **(+1, -0.33)**

a. Winter

b. Summer

c. Autumn

d. Rainy

---

32. If 12 is subtracted from each odd digit and 1 is added to each even digit in the number 83252769, how many digits will occur more than once in the new number thus formed? **(+1, -0.33)**

a. Three

b. None

c. Two

d. One

---

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

L@S*E^BU#WI<EM@OS#B*H!A&L<O

If we replace each of the vowels with any consonant and similarly if we replace each of the consonants in the original series with any vowel, then how many consonants will be immediately followed by a symbol in the resultant series thus formed?

a. 6

b. 5

c. 4

d. 7

---

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

a. Pyruvic acid is produced in the first stage of respiration.

b. Oxygen is not necessary for the fermentation process.

c. In the mitochondria, acetic acid is broken down utilizing oxygen.

d. In the first stage of respiration, breakdown of glucose takes place.

---

35. 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 16 times the resistance of wire B, the ratio of the cross-sectional area of wire A to that of wire B is: **(+1, -0.33)**

a. 4:1

b. 16:1

c. 1:4

d. 1:16

---

36. X and Y can complete a piece of work in 8 days and 12 days, respectively. If they work on alternate days, with X working on the first day, how long will it take the duo to complete the work? **(+1, -0.33)**

a. $9^{1}/_{3}$ days

b. $9^{2}/_{3}$ days

c. $9^{3}/_{2}$ days

d. $9^{1}/_{2}$ days

---

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

TORPEDO : DEOOPRT
FLICKER : CEFIKLR

a. PERTAIN : AEINPRT

b. CURTAIN : RUCNIAT

c. CLOSURE : OLCERUS

d. CYNICAL : ACCLINY

---

38. 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: T > G < E > F = B = Z
Conclusions:
I. F = Z
II. E = B

a. Only conclusion II is true

b. Both conclusions I and II are true

c. Neither conclusion I nor II is true

d. Only conclusion I is true

---

39. Venkat bought a second-hand scooter and spent 10% of the cost on its repairs. He sold the scooter for a profit of ₹2,200. How much did he spend on repairs if he made a profit of 20%? **(+1, -0.33)**

a. ₹3,750

b. ₹1,000

c. ₹400

d. ₹2,100

---

40. The present ages of Shanthi and Keerthi are in the ratio of 7:3. After 5 years, Shanthi's age will be 40. How old will Keerthi be after 5 years? **(+1, -0.33)**

a. 20 years

b. 10 years

c. 15 years

d. 30 years

---

41. A man travels 80 km in three hours. He further travels for two more hours. Find the distance travelled in the latter two hours if his average speed for the entire journey is 30 km/h. **(+1, -0.33)**

a. 150 km

b. 70 km

c. 120 km

d. 90 km

---

42. Refer to the following letter series and answer the question: **(+1, -0.33)**
TYANECMKEWAFHEQAPMNBEDHEKUWSDANMAWE
How many such consonants are there in the series which are

immediately preceded by a vowel and also immediately followed by a vowel?

a. Five

b. Four

c. Six

d. Three

---

43. Each of W, X, Y, Z, A, B, and C has a wedding to attend on a different day of a week starting from Monday to Sunday. C has to attend the wedding immediately after A. Y has to attend a wedding on one of the days before B and W. Only Z has to attend a wedding before A. X has to attend a wedding on Friday. B does not have to attend a wedding on Sunday. On which day of the week does Y have to attend a wedding? **(+1, -0.33)**

a. Saturday

b. Thursday

c. Sunday

d. Wednesday

---

44. On which day is a major national festival celebrated every year to commemorate the enactment of the Constitution of India, which declared India to be a sovereign, democratic, and republic state? **(+1, -0.33)**

a. 26th January

b. 15th August

c. 2nd October

d. 23rd March

---

45. KK Venugopal, the 15th Attorney General of India, received the first extension in his tenure in which of the following years? **(+1, -0.33)**

a. 2021

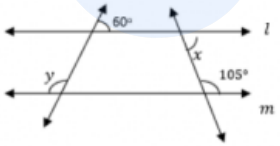
b. 2019

c. 2022

d. 2020

---

46. In the adjoining figure, line l is parallel to m. What is the value of 2x + y? **(+1, -0.33)**



a. 270°

b. 150°

c. 225°

d. 320°

---

47. Three statements are followed by four conclusions numbered I, II, III, and IV. You have to consider these statements to be true, even if they seem at variance from commonly known facts. Decide which of the given conclusions logically follows from the given statements. **(+1, -0.33)**
Statements:

1. Some carnations are petunias.
2. All petunias are sunflowers.
3. Some sunflowers are not carnations.
Conclusions:
I. Some sunflowers are carnations.
II. All carnations are sunflowers.
III. All petunias are carnations.
IV. No sunflower is a carnation.

a. Only conclusion I follows

b. Only conclusions I and IV follow

c. Only conclusions II and III follow

d. Only conclusion IV follows

---

48. If the sum of the roots of the quadratic equation $5x^2 + bx + 4 = 0$ is 9, then find the value of b. **(+1, -0.33)**

a. 9

b. 20

c. -45

d. -25

---

49. A shopkeeper sold a book at a loss of 14%. If the selling price had been increased by ₹100, there would have been a gain of 6%. What was the cost price of the book? **(+1, -0.33)**

a. ₹2,500

b. ₹2,450

c. ₹2,650

d. ₹3,970

---

50. Guard cells are involved in the process of: **(+1, -0.33)**

a. Transport of food

b. Tropic movements

c. Transpiration

d. Circulation

---

51. If $\frac{X}{Y} = \frac{3}{2}$ then find the value of $x^2 + y^2/x^2-y^2$ **(+1, -0.33)**

a. 13/5

b. 5

c. 7

d. 9

---

52. A student focuses a sharp image of the sun using a spherical mirror on a sheet of paper, which starts to burn after some time. Which of the following statement/statements about the mirror is/are correct? **(+1, -0.33)**

(a) It is a concave spherical mirror

(b) It has a positive focal length

(c) It is a converging mirror

a. Both (b) and (c)

b. Both (a) and (c)

c. Both (a) and (b)

d. (a), (b), and (c)

---

53. In February 2022, which state launched the open-air classroom 'Paray Shikshalaya'? **(+1, -0.33)**

a. West Bengal

b. Punjab

c. Haryana

d. Kerala

---

54. A man travelled at a speed of 20 m/min for 100 min and at a speed of 70 m/min for 50 min. His average speed is: **(+1, -0.33)**

a. 35 m/min

b. 22 m/min

c. 25 m/min

d. 50 m/min

---

55. Four friends Ramniwas, Ramesh, Ramsingh, and Raman received their PhD degrees in consecutive months of the same year. Ramniwas received his degree exactly one month prior to Ramsingh. Raman received his degree exactly one month after Ramesh. Ramniwas received **(+1, -0.33)**

his degree in September, and Raman did not obtain his degree before Ramniwas. In which month did Ramesh receive his degree?

a. November

b. October

c. August

d. December

---

56. A statement is given followed by two assumptions numbered I and II. You have to assume everything in the statement to be true and decide which of the given assumptions is/are implicit in the statement. **(+1, -0.33)**
Statement: "The demand for smartphones and laptops has increased substantially since the introduction of online classes in schools."
Assumptions:
I. People are buying smartphones and laptops to enable their children to attend online classes.
II. Desktop computers cannot be used to attend online classes.

a. Neither assumption I nor II is implicit

b. Both assumptions I and II are implicit

c. Only assumption II is implicit

d. Only assumption I is implicit

---

57. Which of the following alphanumeric clusters will replace the question mark (?) in the series to make it logically complete? **(+1, -0.33)**
1AZC2, 3DYF4, 7GXIS, ?

a. 13DK14

b. 13IWK14

c. 15IVK16

d. 15TWL16

---

58. Eight friends, A, B, C, D, E, F, G, and H, are sitting around a square table facing the center. Four are at the corners, while the other four sit at the middle of the sides. Both A and C sit at opposite corners. F and D sit at opposite corners. Only G is between A and F. Only B is between A and D. H is to the immediate left of C. G is to the immediate right of F. E is second to the right of H. D is second to the left of C. Who is sitting second to the left of B? **(+1, -0.33)**

a. H

b. G

c. E

d. F

---

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

L@S*JI"BU#WR<E@NS#B*H!A&L<WQ

How many symbols are immediately followed by a consonant and immediately preceded by a vowel?

a. 0

b. 3

c. 1

d. 4

60. Ram is 55 years old, and Som is 25 years old. How many years ago was Ram three times as old as Som? **(+1, -0.33)**

a. 7 years

b. 10 years

c. 15 years

d. 5 years

---

61. Gayatri starts walking from her home and goes 100 m south. She then turns right and walks 120 m. She then turns right and walks 100 m. Finally, she turns right again and walks 150 m. How far is she now from the starting point? (All turns are 90 degrees) **(+1, -0.33)**

a. 150 m

b. 100 m

c. 60 m

d. 90 m

---

62. What is the area of an equilateral triangle whose each side is 14 cm long? **(+1, -0.33)**

a. $49\sqrt{3}$ cm^2

b. $14\sqrt{3}$ cm^2

c. $21\sqrt{3}$ cm^2

d. $35\sqrt{3}$ cm^2

63. In March 2022, which bank did RBI direct to stop onboarding new customers? **(+1, -0.33)**

a. Airtel Payment Bank

b. Ujjivan Small Finance Bank

c. AU Small Finance Bank

d. Paytm Payments Bank

---

64. In a certain code language, TRY is written as 63 and NOT is written as 40. How will DUG be written in the same language? **(+1, -0.33)**

a. 30

b. 40

c. 36

d. 32

---

65. A statement is given, followed by four conclusions. Find out which conclusion is true based on the given statement. **(+1, -0.33)**
Statement: G = P > T > S > K = N < D

a. G > D

b. G > T

c. P > D

d. N > T

---

66. Which of the following is the commercial unit of electric energy? **(+1, -0.33)**

a. Kilowatt hour

b. Joule

c. Calorie

d. Watt second

---

67. Gohan Singh Bhakna was the first president of which organization, founded by Indians in the United States in 1913? **(+1, -0.33)**

a. Indian Revolutionary Party

b. Ghadar Party

c. Swaraj Party

d. Swatantra Party

---

68. Which of the following numbers will replace the question mark (?) in the given series? **(+1, -0.33)**
14, 14, 17, 85, 92, ?

a. 1828

b. 628

c. 418

d. 924

---

69. What is the direction of the Inter-Tropical Convergence Zone in winter? **(+1, -0.33)**

a. Northward

b. Southward

c. Westward

d. Eastward

---

70. Which of the following is NOT a direct tax in India? **(+1, -0.33)**

a. Income Tax

b. Capital Gains Tax

c. Excise Tax

d. Corporate Tax

---

71. P, Q, R, S, and T are sitting in a straight line, facing north. S is an immediate neighbor of both P and R. R is an immediate neighbor of both S and Q. Q is an immediate neighbor of both R and T. Who are the immediate neighbors of Q? **(+1, -0.33)**

a. P and R

b. S and T

c. R and T

d. S and R

---

72. The value of 0.16 + 0.15 - 0.13 is: **(+1, -0.33)**

a. 0.18

b. 0.22

c. 0.63

d. 0.45

---

73. Ayan invested ₹75,000 at a rate of 7.5% per annum simple interest for 6 years. Find the amount he will receive after 6 years. **(+1, -0.33)**

a. ₹1,12,500

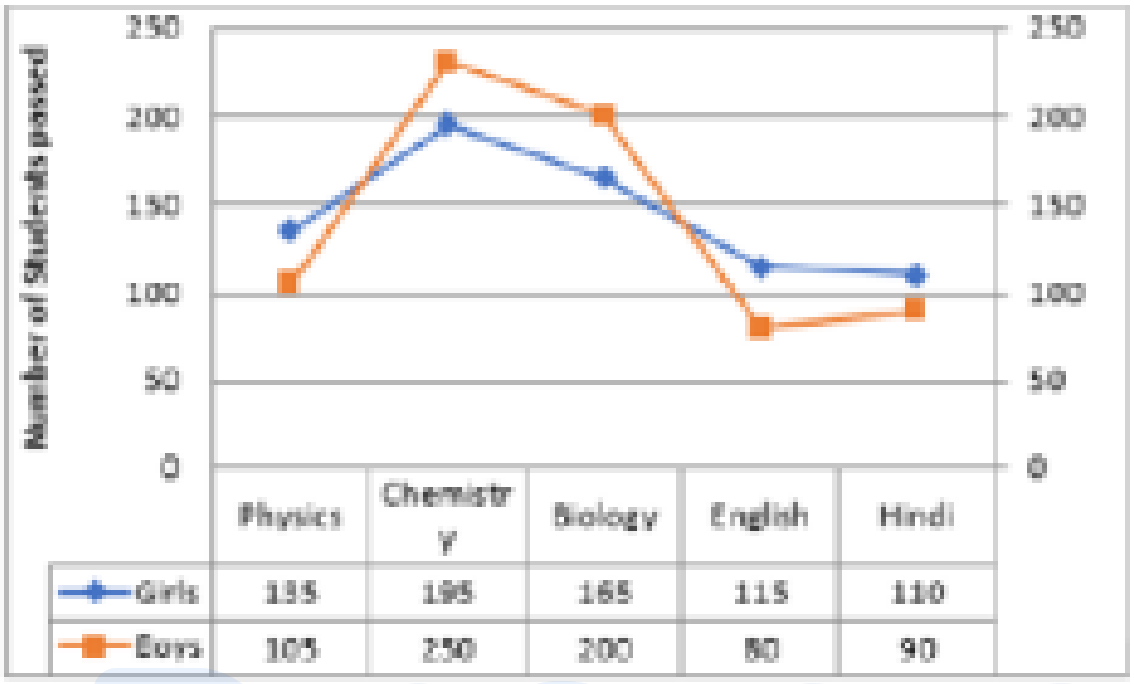
b. ₹36,000

c. ₹75,000

d. ₹1,08,750

---

74. The graph and table below show the number of boys and girls passed in five different subjects: Physics, Chemistry, Biology, English, and Hindi. **(+1, -0.33)**



What is the ratio of the girls who have passed in Physics, Chemistry, and Biology, respectively?

a. 9:13:11

b. 9:15:13

c. 9:13:8

d. 8:11:14

---

75. What will come in place of the question mark (?) in the following equation, if '-' is interchanged with '*' and '=' is interchanged with '+': **(+1, -0.33)**
8 - 2 * 3 + 5 = 20

a. 43

b. 38

c. 47

d. 11

---

76. Which of the following situations is/are possible? **(+1, -0.33)**
(a) Magnetic field lines can be parallel to each other.
(b) Magnetic field lines can be concentric circles.
(c) Magnetic field lines can intersect each other.

a. Only (b)

b. Both (a) and (b)

c. Both (a) and (c)

d. Only (a)

---

77. Which of the following is the prominent language spoken by 5.03% of the population of India as per the 2011 census? **(+1, -0.33)**

a. Punjabi

b. Gujarati

c. Marathi

d. Bengali

---

78. Which of the following numbers will replace the question mark (?) in the given series? **(+1, -0.33)**
3, 7, 13, 21, 31, ?

a. 43

b. 41

c. 42

d. 44

---

79. In which year was the Steel Authority of India incorporated? **(+1, -0.33)**

a. 1979

b. 1982

c. 1987

d. 1973

---

80. V, W, X, Y, Z, and A are six singers who have their concerts on different days of the same month, viz. 12th, 14th, 16th, 21st, 25th, and 31st of July. W has his concert on one of the days before X, but not on the 21st. V has his concert on the 14th. Only A has his concert after Y. X has his concert before V. Who has the concert on the 21st of July? **(+1, -0.33)**

a. V

b. X

c. Y

d. A

---

81. Find the number of 2-digit numbers divisible by both 2 and 4. **(+1, -0.33)**

a. 10

b. 22

c. 42

d. 32

---

82. Who was conferred with the Major Dhyan Chand Khel Ratna Award 2021 for his outstanding achievements in para-shooting? **(+1, -0.33)**

a. Harmanpreet Singh

b. Praveen Kumar

c. Sharad Kumar

d. Manish Narwal

---

83. Which of the following is NOT a use of bleaching powder? **(+1, -0.33)**

(i) To make drinking water free from germs

(ii) In soda-acid fire extinguishers

(iii) As an oxidizing agent in many chemical industries

(iv) For baking cakes

a. (iv)

b. (ii)

c. (iii)

d. (i)

---

84. Which of the following features says that people of India have a direct role in electing their representatives? **(+1, -0.33)**

a. Parliamentary Form of Government

b. Secularism

c. Fundamental Rights

d. Separation of Powers

---

85. A ray of light is incident on an interface separating two media along the normal to the interface. The angle between the incident ray and the refracted ray is equal to: **(+1, -0.33)**

a. 0°

b. 45°

c. 90°

d. 30°

---

86. If "+" means "-", "-" means "+", "*" means "×", and "×" means "+", what will come in place of the question mark in the following equation? **(+1, -0.33)**
25 + 35 - 5 * 4 = ?

a. 19

b. 14

c. 18

d. 16

---

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

(4, 25, 6), (3, 28, 9)

a. (3, 81, 6)

b. (12, 96, 8)

c. (14, 55, 4)

d. (7, 22, 3)

---

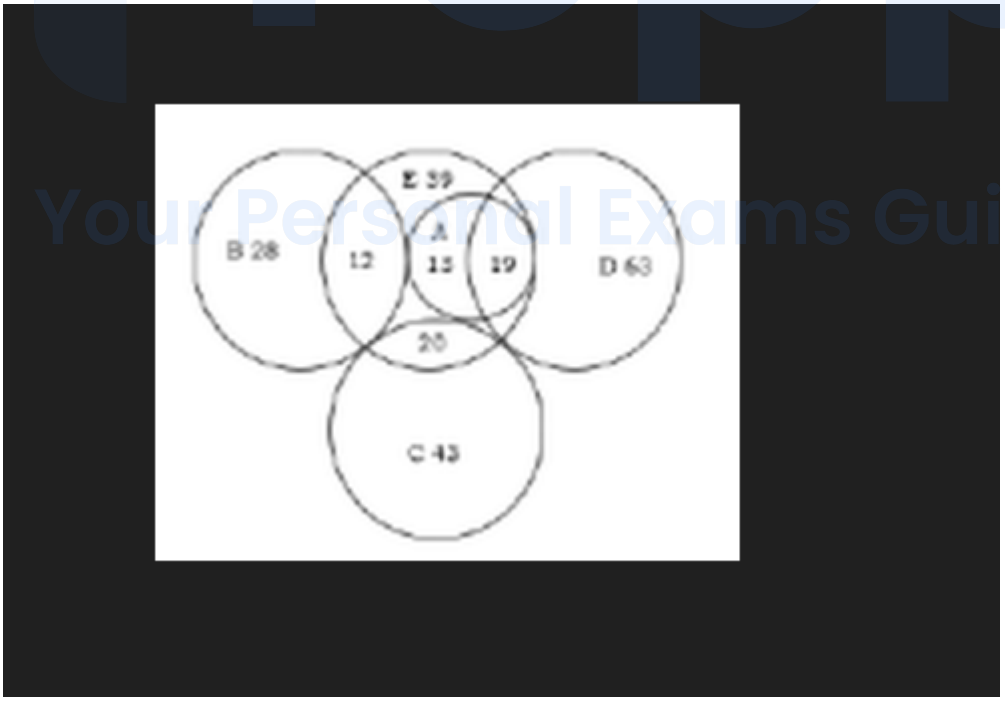
88. Study the diagram and answer the question that follows: **(+1, -0.33)**

A = Academicians, E = Teachers, D = Women, B = Men, C = Doctors. The numbers inside the shapes indicate the number of respective persons. What is the sum total of the following:

(i) Women academicians who are teachers

(ii) Teachers who are doctors

(iii) Men who are neither teachers nor academicians?



a. 67

b. 64

c. 41

d. 63

---

89. A cuboid with dimensions 18.5 cm × 12.5 cm × 10 cm needs to be painted all over. Find the area to be painted. **(+1, -0.33)**

a. 1157.5 cm^2

b. 1198 cm^2

c. 984.56 cm^2

d. 1082.5 cm^2

---

90. What does the term 'Upa' in the term Upanishad denote? **(+1, -0.33)**

a. Nearness

b. Happiness

c. Totality

d. Secret

---

91. A contraceptive technique that increases phagocytosis of sperms within the uterus is: **(+1, -0.33)**

a. Use of copper T

b. Use of condoms

c. Surgery

d. Use of oral contraceptives

---

92. Which day of the calendar year is acknowledged as 'Rare Disease Day'? **(+1, -0.33)**

a. 18 February

b. 28 February

c. 28 March

d. 08 February

---

93. 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:
3 : 7 :: 9 : 27 :: 15 : ? **(+1, -0.33)**

a. 18

b. 40

c. 42

d. 26

---

94. The balanced reaction for the following chemical reaction is:
Barium sulphate + Aluminium chloride → Barium chloride + Aluminium sulphate **(+1, -0.33)**

a. $BaSO_4 + AlCl \rightarrow BaCl_2 + AlSO_4$

b. $2BaSO_4 + 2AlCl_3 \rightarrow 2BaCl_2 + Al_2(SO_4)_3$

c. $3BaSO_4 + 2AlCl_3 \rightarrow 3BaCl_2 + Al_2(SO_4)_3$

d. $BaSO_4 + AlCl_3 \rightarrow BaCl_2 + Al_2(SO_4)$

---

95. In Newlands' Octaves, the properties of which two elements were found to be the same? **(+1, -0.33)**

a. Na, Mg

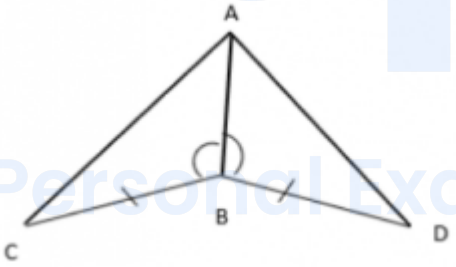
b. H, Th

c. Li, Na

d. Ca, Cl

---

96. In the given figure, ∠ABC = ∠ABD, BC = BD. Then, ΔCAB is congruent to: **(+1, -0.33)**



a. ΔABD

b. ΔADB

c. ΔDAB

d. ΔDBA

---

97. If a:b = 2:3 and b:c = 3:4, then a:b:c = ? **(+1, -0.33)**

a. 3:2:4

b. 2:3:4

c. 3:4:2

d. 2:4:3

---

98. What is the need to balance chemical equations? **(+1, -0.33)**

a. To indicate the ratio of masses of reactants and products in which they react.

b. To indicate the ratio of volumes of reactants and products in which they react.

c. To satisfy the law of conservation of mass.

d. To satisfy the law of constant proportions.

---

99. A can finish painting a sari in 11 days, B in 20 days, and C in 55 days if they work independently. In how many days can the work be completed if A is assisted by B on every odd-numbered day and by C on every even-numbered day till the work completes? **(+1, -0.33)**

a. 9 days

b. 18 days

c. 12 days

d. 8 days

---

100. As of July 2022, under the Pradhan Mantri Shram Yogi Maan-Dhan Yojana (PM-SYM) for Old Age Protection, what percentage of monthly contribution is payable by the beneficiary? **(+1, -0.33)**

a. 50%

b. 40%

c. 25%

d. 30%

Answers

1. **Answer: d**

Explanation:

The resistivity of a material primarily depends on **temperature** as it can change the atomic structure, affecting the ease with which electrons move through the material. Resistance, area of cross section, and length influence resistance but not resistivity itself.

---

2. **Answer: a**

Explanation:

The reactivity series lists metals from most to least reactive. **Potassium (K) is the most reactive, followed by sodium (Na), zinc (Zn), copper (Cu), mercury (Hg), and finally silver (Ag),** based on their tendency to lose electrons and react with substances like water or acids.

---

3. **Answer: c**

Explanation:

10 January 2012 fell on a **Wednesday.** This can be verified using a perpetual calendar or date calculator.

---

4. **Answer: c**

Explanation:

Avani Lekhara received the Padma Shri in 2022 for her contributions to sports, particularly in the field of para-shooting, after winning gold at the Paralympics.

---

5. **Answer: b**

Explanation:

Oxygen exhibits the highest non-metallic character among the group 16 elements due to its high electronegativity and small atomic size.

---

6. **Answer: d**

Explanation:

The 73rd Amendment Act, passed in 1992, introduced the Panchayati Raj system to empower rural local governance in India.

---

7. **Answer: c**

Explanation:

The nephron reabsorbs essential nutrients like glucose, water, salts, and amino acids from the filtrate, while waste products are excreted.

---

8. **Answer: d**

Explanation:

Fleming's right-hand rule helps determine the direction of induced current when a conductor moves perpendicularly to a magnetic field.

9. **Answer: b**

Explanation:

The code follows a specific letter mapping. By applying this mapping to DIRTYING, we get WRIGBRMT.

10. **Answer: c**

Explanation:

By isolating X in the equation and simplifying, we find that X = 11 satisfies the equation.

11. **Answer: a**

Explanation:

Given the statements, only conclusion III logically follows as some brooks are springs based on the provided information.

12. **Answer: a**

Explanation:

White blood cells (WBCs) can change shape to move through blood vessel walls and reach infected areas in the body.

13. **Answer: d**

Explanation:

Using the described movements, the final position of point Z is 100 m to the south of point X.

---

14. **Answer: c**

Explanation:

The approximate decrease in production for company A from 2015 to 2016 can be calculated as 20% based on the graph's data.

---

15. **Answer: d**

Explanation:

A sunk cost is a cost that has already been incurred and cannot be recovered, regardless of future decisions.

---

16. **Answer: d**

Explanation:

Using the mirror formula, the image of the bus is formed 1.2 m behind the convex mirror.

---

17. **Answer: c**

Explanation:

When ammonia solution is added to $AlCl_3$, a white precipitate of $Al(OH)_3$ forms, indicating a chemical reaction.

---

18. **Answer: a**

Explanation:

The bluish color of water in the deep sea is primarily due to the scattering of light, where shorter blue wavelengths scatter more than other colors.

---

19. **Answer: d**

Explanation:

Using trigonometric identities, we find that $(\text{cosec}\ \theta - \cot\ \theta)^2$ simplifies to $A = 1 + \cos\ \theta$.

---

20. **Answer: c**

Explanation:

Since Aruna's sister is 18 years old and is 8 years younger, Aruna's age is 18 + 8 = 26 years.

---

21. **Answer: c**

Explanation:

In the 14th International Olympiad on Astronomy and Astrophysics (IOAA) 2021, 4 participants from India won the gold medal.

---

22. **Answer: d**

Explanation:

Dams are advantageous in providing water for irrigation and generating electricity, despite some environmental and social impacts.

---

23. **Answer: b**

Explanation:

Using the formula HCF × LCM = Product of the numbers, we find the other number is 217.

---

24. **Answer: c**

Explanation:

For the equation $4x^2 + 7x - 21 = 0$, the sum of the roots is $-b/a = -7/4$.

---

25. **Answer: c**

Explanation:

In a double displacement reaction, $AgNO_3$ and KBr react to form AgBr and KNO_3 as products.

---

26. Answer: b

Explanation:

Substituting x = 2 into the proportion gives the value of y as 33 to maintain the proportion.

---

27. Answer: d

Explanation:

The Gosikhurd National Irrigation Project is located in Maharashtra, aimed at improving irrigation facilities in the region.

---

28. Answer: d

Explanation:

Overgrazing contributes to soil degradation rather than conserving it, as it leads to loss of vegetation and soil erosion.

---

29. Answer: d

Explanation:

In snails, sex determination can be influenced by environmental factors rather than genetic inheritance.

---

30. **Answer: a**

Explanation:

Using the given conditions, we find that the daughter's current age is 12 years to satisfy both scenarios.

---

31. **Answer: b**

Explanation:

'Mango Showers' refers to the pre-monsoon rainfall that occurs in India during the summer season, aiding in the ripening of mangoes.

---

32. **Answer: c**

Explanation:

After performing the operations, two digits repeat in the transformed number.

---

33. **Answer: b**

Explanation:

After making the replacements, there are 6 consonants immediately followed by a symbol in the modified series.

---

34. Answer: c

Explanation:

The breakdown of acetic acid occurs without oxygen; it's glucose that breaks down in the first stage, and pyruvic acid forms in the absence of oxygen in fermentation.

---

35. Answer: d

Explanation:

To find the ratio of the cross-sectional area of wire A to that of wire B, we can use the formula for the resistance of a wire:

$R = \chi L / A$

where:

- **R** is the resistance,
- **χ** is the resistivity of the material,
- **L** is the length of the wire, and
- **A** is the cross-sectional area of the wire.

Since both wires A and B are made of the same material and have the same length, we can write:

$R_A = \chi L / A_A$ and $R_B = \chi L / A_B$

Given that the resistance of wire A is 16 times the resistance of wire B, we have:

$R_A = 16 R_B$

Substitute the expressions for R_A and R_B:

$\chi L / A_A = 16 \cdot \chi L / A_B$

Since χ and L are the same on both sides, they cancel out:

$1 / A_A = 16 \cdot 1 / A_B$

Rearrange to find the ratio of A_A to A_B:

$A_B = 16 A_A$

So, the ratio of the cross-sectional area of wire A to that of wire B is:

$A_A / A_B = 1 / 16$

Answer: The ratio of the cross-sectional area of wire A to that of wire B is **1:16**.

---

36. Answer: d

Explanation:

Given: A and B can separately do a piece of work in 8 and 12 days respectively.
Formula used: W = E × T

Where, W = Work, E = Efficiency, and T = Time Calculation:

Time taken by A = 8 days

Time taken by B = 12 days

Let Total work = LCM of 8 and 12 = 24 units Efficiency of A = 24/8 = 3 units/day Efficiency of B = 24/12 = 2 units/day Efficiency of A and B together = 3 + 2 = 5 units/2 days By working alternatively, they would complete 20 units of work in 8 days.

Remaining work = 24-20 ⇒ 4 units of these 4 units of work,

first 3 units would be completed by A(as he started the work) and 1 unit by B. time taken = 1+1/2 ⇒ 1.5 days Total time taken to complete the work = 9.5 days ∴

Total time taken to complete the work is 9.5 days.

---

37. Answer: a

Explanation:

The logic is alphabetical arrangement of letters. Therefore, PERTAIN : AEINPRT follows the same pattern.

---

38. Answer: d

Explanation:

Analyzing the statement and conclusions:

Statement:

T > G < E > F = B = Z

- This can be interpreted as:
  - T > G
  - G < E
  - E > F
  - F = B
  - B = Z (therefore, F = Z)

Conclusions:

I. F = Z

- From the statement, F = B and B = Z, so by transitivity, **F = Z**.
- **Conclusion I is true.**

II. E = B

- From the statement, E > F and F = B. Since E is greater than F, and F equals B, **E ≠ B**.
- **Conclusion II is false.**

Final Answer:

Only Conclusion I is true.

---

39. Answer: b

Explanation:

Let's go through the solution carefully to find the correct answer, which is ₹1,000.

Step 1: Let the original cost price of the scooter be x.

Step 2: Venkat spent 10% of the original cost on repairs. Therefore, the amount spent on repairs is:

$0.1x$

Step 3: The total cost price (original cost + repairs) becomes:

$\text{Total Cost} = x + 0.1x = 1.1x$

Step 4: Venkat sold the scooter for a profit of ₹2,200, which represents a 20% profit on the total cost.

This means that 20% of the total cost price $(1.1x)$ is equal to ₹2,200.

Step 5: Set up the equation based on the profit percentage:

$0.2 * 1.1x = 2,200$

Step 6: Solve for x:

$0.22x = 2,200$

$x = 2,200 / 0.22$

$x = 10,000$

Step 7: Calculate the amount spent on repairs, which is 10% of the original cost:

$Repairs = 0.1 * 10,000 = 1,000$

Answer: Venkat spent ₹1,000 on repairs.

---

40. Answer: a

Explanation:

To solve this, let's break down the information given:

Step 1: Let the present ages of Shanthi and Keerthi be $7x$ and $3x$, respectively, based on the given ratio of $7:3$.

Step 2: According to the problem, after 5 years, Shanthi's age will be 40. This means:

$7x + 5 = 40$

Step 3: Solve for x:

$7x = 40 - 5$

$7x = 35$

$x = 35 / 7$

$x = 5$

Step 4: Calculate Keerthi's present age using $3x$:

$Keerthi's\ present\ age = 3 * 5 = 15$

Step 5: Determine Keerthi's age after 5 years:

$Keerthi's\ age\ after\ 5\ years = 15 + 5 = 20$

Answer: Keerthi will be 20 years old after 5 years.

41. **Answer: b**

Explanation:

To find the distance traveled in the latter two hours, let's go through the solution step-by-step.

Step 1: Calculate the total distance for the entire journey using the given average speed.

- The man's average speed for the entire journey is 30 km/h.
- The total time for the journey is 3 hours + 2 hours = 5 hours.

Total Distance = Average Speed × Total Time

Total Distance = 30 × 5 = 150 km

Step 2: Find the distance traveled in the first three hours.

- It is given that the man traveled 80 km in the first three hours.

Step 3: Calculate the distance traveled in the latter two hours.

Distance in latter two hours = Total Distance - Distance in first three hours

Distance in latter two hours = 150 - 80 = 70 km

Answer: The distance traveled in the latter two hours is 70 km.

---

42. **Answer: a**

Explanation:

In the series, there are 5 consonants that are immediately preceded and followed by vowels.

43. Answer: b

Explanation:

Let's go through the information step-by-step to find the correct day for Y's wedding.

Given Information:

1. Each of W, X, Y, Z, A, B, and C has a wedding on a different day from Monday to Sunday.
2. C has to attend a wedding immediately after A.
3. Y has to attend a wedding on one of the days before both B and W.
4. Only Z has to attend a wedding before A.
5. X has to attend a wedding on Friday.
6. B does not have a wedding on Sunday.

Solution:

Using the given information, let's organize the days as follows:

- Since X's wedding is on Friday, we know that X is scheduled for **Friday**.
- Since Z is the only person who has a wedding before A, Z must have a wedding on **Monday**, making A's wedding on **Tuesday**, with C on **Wednesday** (as C attends immediately after A).
- Since Y's wedding must be before B and W, and X is already set for Friday, Y's wedding can only be on **Thursday**.
- B cannot attend a wedding on Sunday, so B's wedding must be on **Saturday**, leaving W for **Sunday**.

Thus, the schedule is as follows:

- Monday - Z
- Tuesday - A
- Wednesday - C
- Thursday - Y
- Friday - X

- Saturday - B
- Sunday - W

Answer: Y has to attend a wedding on **Thursday**.

---

44. Answer: a

Explanation:

India celebrates Republic Day on 26th January each year, marking the enactment of the Indian Constitution in 1950.

---

45. Answer: d

Explanation:

KK Venugopal received his first extension as Attorney General of India in 2020.

---

46. Answer: a

Explanation:

Given that l || m, the sum of angles calculated is 270°.

---

47. Answer: a

Explanation:

Based on the statements, only conclusion I logically follows.

---

48. **Answer: c**

Explanation:

To find the value of b, let's use the information about the sum of the roots of a quadratic equation.

Step 1: Recall the standard form of a quadratic equation, which is:

$ax^2 + bx + c = 0$

For the given equation, $5x^2 + bx + 4 = 0$, we have:

- $a = 5$
- $b = b$ (the value we need to find)
- $c = 4$

Step 2: Use the formula for the sum of the roots of a quadratic equation, which is given by:

$\text{Sum of roots} = -b / a$

Step 3: Substitute the values we know:

- The sum of the roots is given as 9.
- Therefore, $-b / 5 = 9$

Step 4: Solve for b:

$-b = 9 * 5$

$-b = 45$

$b = -45$

Answer: The value of b is **-45**.

49. **Answer: a**

Explanation:

To determine the cost price of the book, let's go through the steps with the corrected values.

Step 1: Let the cost price of the book be C.

Step 2: The shopkeeper initially sold the book at a 14% loss. Therefore, the initial selling price (SP) can be expressed as:

$SP = C - 0.14C = 0.86C$

Step 3: If the selling price had been increased by ₹100, there would have been a gain of 6%. So, the new selling price would be:

$New\ SP = C + 0.06C = 1.06C$

Step 4: Set up an equation based on the information provided:

$0.86C + 100 = 1.06C$

Step 5: Solve for C:

$100 = 1.06C - 0.86C$

$100 = 0.2C$

$C = 100 / 0.2$

$C = 500$

Answer: The cost price of the book is **₹500**.

---

50. **Answer: c**

Explanation:

Guard cells regulate the opening and closing of stomata, playing a crucial role in transpiration and gas exchange in plants.

---

51. Answer: a

Explanation:

Substituting $x/y = 2$ in the expression $(x + y)/(x - y)$ and simplifying, we find the value to be $13/5$.

---

52. Answer: b

Explanation:

A concave mirror focuses parallel light rays to a single point, making it a converging mirror and causing the paper to burn. It has a positive focal length as well.

---

53. Answer: a

Explanation:

West Bengal launched 'Paray Shikshalaya' in February 2022 to promote open-air classrooms amid the COVID-19 pandemic.

---

54. Answer: d

Explanation:

The total distance is calculated from both parts of the journey, and the average speed is found to be 50 m/min.

---

55. Answer: a

Explanation:

Based on the sequence, Ramesh received his PhD degree in November.

---

56. Answer: d

Explanation:

Only assumption I is implicit, as it logically follows from the statement. Assumption II does not follow directly.

---

57. Answer: b

Explanation:

The series follows a logical alphanumeric pattern. Following this pattern, 13IWK14 is the correct completion of the series.

---

58. Answer: b

Explanation:

Based on the seating arrangement and clues provided, G is the person sitting second to the left of B.

59. **Answer: c**

Explanation:

After analyzing the series, there is only one symbol that is immediately followed by a consonant and preceded by a vowel.

60. **Answer: b**

Explanation:

Let the number of years ago be x. Then, 55 - x = 3(25 - x). Solving this equation, we find x = 10 years.

61. **Answer: c**

Explanation:

Using the given movements and calculating the final displacement, Gayatri is 60 m from the starting point.

62. **Answer: a**

Explanation:

The area of an equilateral triangle with side length a is $(\sqrt{3}/4) \times a^2$. Substituting a = 14 cm, we get $49\sqrt{3}$ cm^2.

63. **Answer: d**

Explanation:

In March 2022, the Reserve Bank of India directed Paytm Payments Bank to stop onboarding new customers due to regulatory concerns.

---

64. **Answer: d**

Explanation:

The code is generated by assigning numerical values to each letter and applying a specific formula. Following the same rule, DUG translates to 32.

---

65. **Answer: b**

Explanation:

Based on the given statement and relationships, conclusion G > T is valid.

---

66. **Answer: a**

Explanation:

The commercial unit of electric energy is the kilowatt hour, commonly used to measure energy consumption.

---

67. **Answer: b**

Explanation:

Gohan Singh Bhakna was the first president of the Ghadar Party, an organization established to fight for India's independence.

---

68. Answer: d

Explanation:

The series follows a specific numerical pattern. By applying the same pattern, 924 is the correct answer.

---

69. Answer: b

Explanation:

In winter, the Inter-Tropical Convergence Zone (ITCZ) shifts southward due to seasonal changes.

---

70. Answer: c

Explanation:

Excise tax is an indirect tax, whereas income tax, capital gains tax, and corporate tax are examples of direct taxes in India.

---

71. Answer: c

Explanation:

Following the seating arrangement, R and T are the immediate neighbors of Q.

---

72. **Answer: b**

Explanation:

Calculating 0.16 + 0.15 - 0.13 gives a result of 0.22.

---

73. **Answer: d**

Explanation:

Using the simple interest formula, Ayan's total amount after 6 years is ₹1,08,750.

---

74. **Answer: a**

Explanation:

The ratio of girls who passed in Physics, Chemistry, and Biology is 9:13:11 based on the given data.

---

75. **Answer: c**

Explanation:

After interchanging symbols, solving the equation yields 47 as the result.

---

76. **Answer: b**

Explanation:

Magnetic field lines can be parallel in uniform fields and concentric around circular loops, but they do not intersect.

---

77. **Answer: d**

Explanation:

According to the 2011 census, Bengali is spoken by 5.03% of India's population, making it a prominent language.

---

78. **Answer: a**

Explanation:

The series follows an incremental pattern. The next number in the sequence is 43.

---

79. **Answer: d**

Explanation:

The Steel Authority of India (SAIL) was incorporated in 1973.

---

80. **Answer: c**

Explanation:

Following the clues, Y has the concert on the 21st of July.

81. **Answer: b**

Explanation:

A number divisible by both 2 and 4 is essentially divisible by 4. Counting all 2-digit multiples of 4, we find there are 22 such numbers.

---

82. **Answer: d**

Explanation:

Manish Narwal was awarded the Major Dhyan Chand Khel Ratna Award in 2021 for his exceptional performance in para-shooting.

---

83. **Answer: a**

Explanation:

Bleaching powder is not used in baking cakes. It is commonly used as a disinfectant, in fire extinguishers, and as an oxidizing agent.

---

84. **Answer: a**

Explanation:

The Parliamentary Form of Government ensures that people directly elect their representatives to the parliament.

---

85. **Answer: a**

Explanation:

When light is incident along the normal to an interface, it does not bend, so the angle between the incident and refracted rays is 0°.

---

86. **Answer: c**

Explanation:

After substituting the symbols with their designated operations, the result of the equation is 18.

---

87. **Answer: d**

Explanation:

The numbers in the correct set follow the same relation as in the provided pairs, where a specific pattern is maintained.

---

88. **Answer: a**

Explanation:

Based on the provided diagram and categories, the sum total of the specified groups is 64.

---

89. **Answer: d**

Explanation:

To find the area to be painted, we need to calculate the surface area of the cuboid.

Given Dimensions:

- Length (l) = 18.5 cm
- Breadth (b) = 12.5 cm
- Height (h) = 10 cm

Formula for the Surface Area of a Cuboid:

$$\text{Surface Area} = 2(lb + bh + lh)$$

Step 1: Substitute the given values:

$$\text{Surface Area} = 2(18.5 \times 12.5 + 12.5 \times 10 + 18.5 \times 10)$$

Step 2: Calculate each term inside the parentheses:

- $18.5 \times 12.5 = 231.25$
- $12.5 \times 10 = 125$
- $18.5 \times 10 = 185$

Step 3: Add the results:

$$231.25 + 125 + 185 = 541.25$$

Step 4: Multiply by 2 to get the total surface area:

$$\text{Surface Area} = 2 \times 541.25 = 1082.5 \text{ cm}^2$$

Answer: The area to be painted is **1082.5 cm²**.

---

90. **Answer: a**

Explanation:

In Sanskrit, 'Upa' means "nearness," implying a close or intimate knowledge, as is taught in the Upanishads.

---

91. Answer: a

Explanation:

The copper T contraceptive device increases the phagocytosis of sperms in the uterus, reducing the chance of fertilization.

---

92. Answer: b

Explanation:

Rare Disease Day is observed on 28 February to raise awareness about rare diseases and improve access to treatment for patients.

---

93. Answer: b

Explanation:

The pattern involves multiplication or addition in a specific sequence. Based on this logic, the correct answer is 40.

---

94. Answer: c

Explanation:

The balanced chemical equation is $3BaSO_4 + 2AlCl_3 \rightarrow 3BaCl_2 + Al_2(SO_4)_3$.

---

95. Answer: c

Explanation:

In Newlands' Octaves, lithium (Li) and sodium (Na) were observed to have similar properties, as they fall in the same group according to the octaves.

---

96. Answer: c

Explanation:

To prove the congruence of triangles CAB and DAB, let's examine the given information:

- $ABC = ABD$
- $BC = BD$
- AB is a common side in both triangles CAB and DAB.

With these conditions, we can apply the **SAS (Side-Angle-Side) Congruence** criterion:

- The side AB is common to both triangles.
- The angles ABC and ABD are equal.
- The sides BC and BD are equal.

By SAS, CAB DAB.

Answer: The correct answer is **DAB**.

---

97. Answer: b

Explanation:

To find the ratio $a : b : c$, we can use the given ratios $a : b = 2 : 3$ and $b : c = 3 : 4$.

Step 1: Write down the ratios:

- $a : b = 2 : 3$
- $b : c = 3 : 4$

Step 2: Make the values of b in both ratios the same. This can be done by finding the least common multiple (LCM) of 3 (the value of b in both ratios).

- In $a : b = 2 : 3$, we already have $b = 3$.
- In $b : c = 3 : 4$, b is also 3, so no adjustment is needed.

Step 3: Combine the ratios:

Since $a : b = 2 : 3$ and $b : c = 3 : 4$, we can write:

$a : b : c = 2 : 3 : 4$

Answer: The combined ratio $a : b : c$ is **2 : 3 : 4**.

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98. Answer: c

Explanation:

Balancing chemical equations is necessary to satisfy the law of conservation of mass, which states that matter is neither created nor destroyed.

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99. Answer: d

Explanation:

Let's solve this problem step-by-step to find the correct answer of 8 days.

Step 1: Determine the work rate of each person.

- A can complete the work in 11 days, so A's rate of work is $1/11$ of the work per day.
- B can complete the work in 20 days, so B's rate of work is $1/20$ of the work per day.
- C can complete the work in 55 days, so C's rate of work is $1/55$ of the work per day.

Step 2: Calculate the combined work done on odd and even days.

- On odd-numbered days, A and B work together, so their combined rate is:

$A + B = 1/11 + 1/20$

$= (20 + 11) / 220 = 31/220$ of the work per day.

- On even-numbered days, A and C work together, so their combined rate is:

$A + C = 1/11 + 1/55$

$= (5 + 1) / 55 = 6/55$ of the work per day.

Step 3: Calculate the work done in two days (one cycle of odd + even days).

In two days, the combined work done is:

$31/220 + 6/55$

Convert $6/55$ to have a common denominator with $31/220$:

$6/55 = 24/220$

Therefore, the total work done in two days is:

$(31 + 24) / 220 = 55/220 = 1/4$ of the work.

Step 4: Calculate how many such cycles are needed to complete the work.

Since $1/4$ of the work is done in two days, it will take 4 cycles to complete the work.

4 cycles * 2 days per cycle = 8 days

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100. Answer: a

Explanation:

Under the PM-SYM scheme, the beneficiary is required to contribute 50% of the monthly premium amount, with the government contributing the remaining 50%.