Prepp.in

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Your Personal Exams Guide

- NDA
- CDS
- SSC CGL
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- IES
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- SSC Stenogr..
- RRB NTPC
- SSC GD
- RBI GRADE B
- RBI Assistant
- DSSSB

RRB Group D 2022 Prev. Yr. Paper (22 Aug 2022) (Shift 2)

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

Instructions

1. Test will auto submit when the Time is up.
2. The Test comprises of multiple choice questions (MCQ) with one or more correct answers.
3. The clock in the top right corner will display the remaining time available for you to complete the examination.

Navigating & Answering a Question

1. The answer will be saved automatically upon clicking on an option amongst the given choices of answer.
2. To deselect your chosen answer, click on the clear response button.
3. The marking scheme will be displayed for each question on the top right corner of the test window.

Test

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

Statement: **C < D, E ≥ B, B > D**

Conclusions:

1. B > C

2. E < D

a. Neither conclusion 1 nor 2 is true

b. Only conclusion 2 is true

c. Only conclusion 1 is true

d. Both conclusions 1 and 2 are true

---

2. If $(x + 1/x) = k$, find the value of $x^3 + 1/x^3$. **(+1, -0.33)**

a. $3k - k^3$

b. $k^3 - 3k$

c. k^3

d. $k^3 + 3k$

---

3. If each of the digits in the number given below is arranged in the descending order from left to right, what will be the product of the digits that are third from the left and fourth from the right in the new number thus formed? **(+1, -0.33)**

(Left) 521987624 (Right)

a. 35

b. 28

c. 36

d. 21

---

4. A certain number of people are sitting in a row, facing north. P is to the immediate left of Z. Only one person sits between G and D. G is to the left of D. H is fifth to the left of G. K is to the immediate right of D. P is third to the right of K. If no other person is sitting in the row, what is the total number of persons seated? **(+1, -0.33)**

a. 13

b. 11

c. 10

d. 12

---

5. The direction of a magnetic field due to a straight current carrying conductor can be determined using: **(+1, -0.33)**

a. Fleming's left-hand rule

b. right hand thumb rule

c. left hand thumb rule

d. Fleming's right-hand rule

---

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

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

(11,57, 8)
(12, 63, 9)

a. (15, 75, 7)

b. (10, 64, 6)

c. (12, 54, 11)

d. (12, 45, 8)

---

7. 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)

FAST: JDUU :: SLOW: WOQX :: JUMP : ?

a. NOXQ

b. QXON

c. NXOQ

d. XNOQ

---

8. The value of (+1, -0.33)

$\sin210^\circ + \sin220^\circ + \sin230^\circ + \sin240^\circ + \sin250^\circ + \sin260^\circ + \sin270^\circ + \sin280^\circ + \sin290^\circ$

$/ \cos^2 20^\circ + \cos^2 40^\circ + \cos^2 50^\circ + \cos^2 70^\circ + \cot^2 45^\circ$

is:

a. 3/4

b. 5/3

c. 6/5

d. 4/3

---

9. Every year, 'Parakram Divas' is celebrated on the birth anniversary of which Indian Nationalist? (+1, -0.33)

a. Rani Lakshmi Bai

b. Bhagat Singh

c. Lala Lajpat Rai

d. Netaji Subhash Chandra Bose

---

10. Which of the following elements shows maximum valence electrons? (+1, -0.33)

a. F

b. Al

c. H

d. N

---

11. Given below are three statements and three conclusions. Take the statements to be true even if they are at variance with commonly known facts, and decide whether the conclusion/s follow/s from the given statements. **(+1, -0.33)**

Statements:
I. All chairs are desks.
II. All desks are chalks.
III. All chalks are boards.

Conclusions:
I. Some boards are desks.
II. Some chalks are chairs.
III. Some boards are chairs.

a. Conclusion I and III follow

b. Conclusion II and III follow

c. Conclusions I and II follow

d. All the conclusions follow

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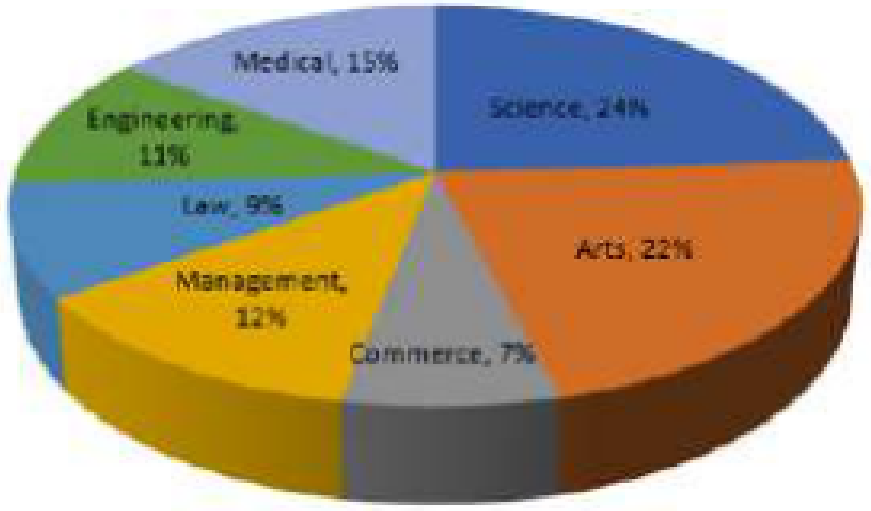
12. The following chart shows the percentage of students enrolled in different streams in a university. The total number of students enrolled in the university is 15200. Study the chart and answer the question. How many students are enrolled in Medical, Engineering and Law streams taken together? **(+1, -0.33)**

a. 4680

b. 5320

c. 5420

d. 5210



13. The equation $x^2 + 7x + 6 = 0$ can be written as: **(+1, -0.33)**

a. $(x - 1)(x - 6) = 0$

b. $(x + 1)(x + 6) = 0$

c. $(x - 1)(x + 6) = 0$

d. $(x + 1)(x - 6) = 0$

14. The volume of a cylinder is 5500 m^3. Find its diameter if the cylinder is 70 m high. **(+1, -0.33)**

a. 10 m

b. 8 m

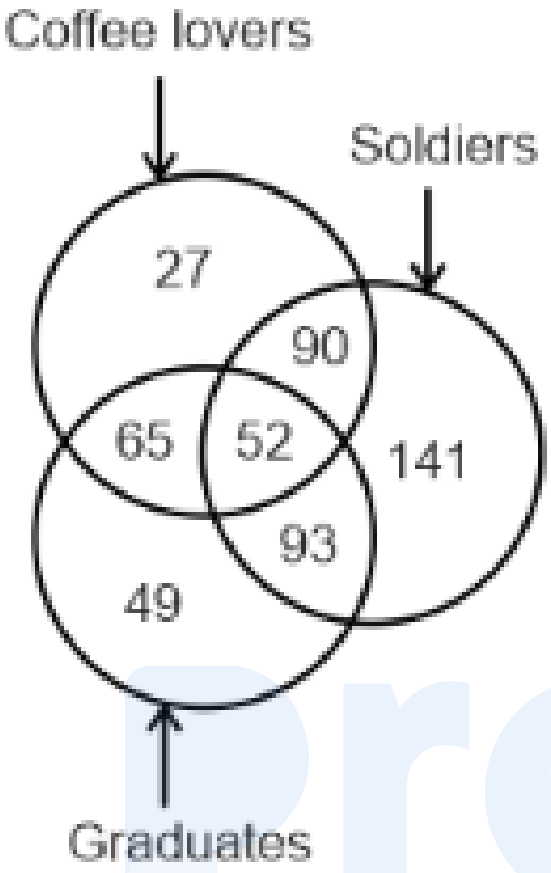
c. 5 m

d. 12 m

15. Study the given diagram carefully and answer the question. The numbers in different sections indicate the number of persons. Which of the following statements is correct on the basis of the above diagram? **(+1, -0.33)**

a. The number of coffee lovers who are both graduates and soldiers is 90.

b. The number of graduates who are also coffee lovers but not soldiers is 65.



c. The number of soldiers who are neither coffee lovers nor graduates is 193.

d. The number of soldiers who are also coffee lovers is 27.

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16. The equivalent fraction of 4.2222... is: **(+1, -0.33)**

a. 38/100

b. 38/9

c. 42/99

d. 422/99

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17. Geomorphology, the branch of Physical Geography is devoted to the study of which of the following fields? **(+1, -0.33)**

a. Study of soil

b. Study of water

c. Study of landforms

d. Study of atmosphere

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

Statement-I: On heating, the surface of copper powder becomes coated with black copper (II) oxide.

Statement-II: If hydrogen gas is passed over this heated material (CuO), the black coating on the surface turns brown.

a. Both the statements are false.

b. Statement-I is true, and statement-II is false.

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

d. Both the statements are true.

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19. In March 2022, which state government presented 'Children's Budget' for the first time as part of its annual financial plan? **(+1, -0.33)**

a. Himachal Pradesh

b. Andhra Pradesh

c. Uttar Pradesh

d. Madhya Pradesh

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20. Which of the following devices is/are based on heating effect of electric current? **(+1, -0.33)**

(i) Incandescent lamp
(ii) Electric geyser
(iii) Electric generator

a. Only (i)

b. Only (ii)

c. Both (i) and (ii)

d. Both (i) and (iii)

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21. Seven surgeons, W, X, Y, Z, A, B and C, were sitting around a square table, facing the centre. Four of them are sitting at the corners while three are sitting at the exact centre of the sides. One of the centre of sides was empty. C, at one of the corners, was immediately next to both B and Y. Z was immediately next to both B and X. A was at the immediate right of X. Which surgeon was third to the right of W? **(+1, -0.33)**

a. X

b. C

c. B

d. Y

---

22. Two numbers are in the ratio 5: 3. If difference between the numbers is 54, then find the smaller number. **(+1, -0.33)**

a. 91

b. 135

c. 81

d. 115

---

23. Simplify $3(3x - 2) + x((4x \div 2)) + 15 - 12$. **(+1, -0.33)**

a. $2x^2 + 6x - 3$

b. $2x^2 + 9x + 3$

c. $2x^2 + 9x + 6$

d. $2x^2 + 9x - 3$

---

24. A shop which sells sarees had offers going on wherein customers could buy 3 sarees and get 2 free. What is the discount that the customer gets? **(+1, -0.33)**

a. 40%

b. 50%

c. 60%

d. 30%

---

25. 51 men can complete a work in 12 days. Four days after they started working 6 more men joined them. How many days will they now take to complete the remaining work? **(+1, -0.33)**

a. $8\,{}^{1}/_{19}$ days

b. $5\,{}^{9}/_{19}$ days

c. $7\,{}^{3}/_{19}$ days

d. $6\,{}^{7}/_{19}$ days

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26. Five solutions A, B, C, D and E, when tested with universal indicator, showed pH as 4, 1, 11, 7 and 9, respectively. The pH in increasing order of H^+ ion concentration for these solutions is: **(+1, -0.33)**

a. C < D< E< B < A

b. C < D< E < A < B

c. C < E< D < A < B

d. D < C< E < A < B

---

27. Which of the following numbers will replace the question mark (?) in the given series? 8, 9, 20, 63, 256, ? **(+1, -0.33)**

a. 1286

b. 1284

c. 1280

d. 1285

---

28. Which aspect of large dams has NOT been criticised? **(+1, -0.33)**

a. Psychological

b. Social

c. Environmental

d. Economic

---

29. The sum of double of the largest two-digit prime number and triple of the largest three-digit prime number is equal to **(+1, -0.33)**

a. 3185

b. 3029

c. 2195

d. 6523

---

30. Which of the following is NOT a true statement? **(+1, -0.33)**

a. All rectangles are parallelograms.

b. Diagonals of a rectangle do not bisect each other.

c. Opposite sides of a rectangle are congruent and parallel.

d. Sum of any pair of adjacent angles of a rectangle is 180°.

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31. To cook some foods faster we can use _____. **(+1, -0.33)**

a. bleaching powder

b. sodium chloride

c. baking powder

d. ammonium chloride

---

32. Select the set in which the numbers are related in the same way as are the numbers of the following sets. (NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13-Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 are not allowed.) (36, 78, 13) (121, 77, 7) **(+1, -0.33)**

a. (49, 63, 9)

b. (36, 72, 10)

c. (9, 56, 18)

d. (64, 85, 12)

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33. In which state is St. Thomas Cathedral Basilica Church located? **(+1, -0.33)**

a. Tamil Nadu

b. Kerala

c. Goa

d. Maharashtra

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34. Which of the following steps have NOT been taken by the government to attract foreign companies to invest in India? **(+1, -0.33)**

a. Flexibility in the taxation system.

b. SEZs setup production units do not have to pay taxes for an initial period of five years.

c. Special Economic Zones are being set up.

d. Flexibility in the labour laws.

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35. Starting from his house, Varun walks 60 m towards the north. He then takes a right turn and walks 30 m. He then takes a right turn and walks 90 m. Finally, he takes another right turn and walks 30 m. How far and in which direction is Varun now from his house? (All turns are 90 degree turns only) **(+1, -0.33)**

a. 30 m, North

b. 30 m, South

c. 25 m, South

d. 25 m, East

---

36. The resistance of a conductor is directly proportional to: **(+1, -0.33)**

a. potential difference applied across the conductor

b. length of the conductor

c. area of cross section of the conductor

d. current flowing through the conductor

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37. A convex lens having power 5 D is placed in contact with a concave lens having power -3 D. The focal length of the combination will be: **(+1, -0.33)**

a. 50 cm

b. -0.5 cm

c. 0.5 cm

d. -50 cm

---

38. What is the angle traced by the minute hand in 48 minutes? **(+1, -0.33)**

a. 420°

b. 372°

c. 288°

d. 190°

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39. What will be the fourth next member of the homologous series of the compound propene? **(+1, -0.33)**

a. C_7H_{14}

b. C_2H_4

c. C_6H_{12}

d. C_4H_8

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40. If 1 is added to each odd digit and 2 is subtracted from each even digit in the number 53478231, what will be the sum of the digits that are second from the left and second from the right? **(+1, -0.33)**

a. 4

b. 8

c. 10

d. 6

---

41. In February 2022 India won a record-extending fifth U-19 World Cup title, beating which country by four wickets in the final? **(+1, -0.33)**

a. England

b. Pakistan

c. Canada

d. Australia

---

42. A certain number of people are sitting in a row, facing the north. M is sitting at the extreme left end. K is to the immediate right of M. G is to the immediate right of K. Only five persons are sitting between G and D. D is at the 6th position from the extreme right end. G is at some place towards the left of D. If no other person is sitting in the row, what is the total number of persons seated? **(+1, -0.33)**

a. 12

b. 13

c. 14

d. 15

---

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

Statement:
Last year, only 30 percent of girl students in district X joined under-graduate courses after

school, while 95 percent boys joined under-graduate courses.

Arguments:
I. The state government has increased the number of scholarships for girl students in undergraduate courses in government colleges.
II. Many girl students prefer to join vocational courses after school rather than undergraduate courses

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

b. Both arguments I and II weaken the statement

c. Both arguments I and II strengthen the statement

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

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44. In January 2022, the Government of India launched which portal to share key performance indicators of the coal sector? **(+1, -0.33)**

a. Koyla Darpan

b. Koyla Gyan

c. Koyla Data

d. Koyla Bit

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45. The mean proportional between the numbers p and q is 8. Which of the following pairs of numbers can be the values of p and q? **(+1, -0.33)**

a. 12 and 3

b. 16 and 4

c. 12 and 16

d. 10 and 6

---

46. A starts from X at 9:00 a.m. and reaches Y at 1:00 p.m, on the same day, B also starts from Y at 9:00 a.m. and reaches X at 3 p.m on the same day, following the same route as A. At what time do the two meet? **(+1, -0.33)**

a. 11:24 hrs

b. 11:30 hrs

c. 10:00 hrs

d. 11:12 hrs

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47. In a certain code language, PTEJAD is written as 'OUEIAE' and 'FHNOI' is written as 'EIMOI'. How will TUPAI be written in that language? **(+1, -0.33)**

a. UVPAH

b. PUHVA

c. VUPHI

d. SUQAI

---

48. Which of the following interchanges of signs would make the given equation correct? **(+1, -0.33)**

12 ÷ 6 × 18 + 16 - 15 = 5

a. +, -

b. -, -

c. +, ×

d. ×, ÷

---

49. The mean proportional of 16 and 144 is **(+1, -0.33)**

a. 44

b. 36

c. 48

d. 34

---

50. Which of the following numbers will replace the question mark (?) in the given series? 28, 29, 31, 35, 43, ? **(+1, -0.33)**

a. 55

b. 53

c. 61

d. 59

---

51. The Fundamental Duties were added in the Indian Constitution by the recommendation of which of the following committees? **(+1, -0.33)**

a. Union Constitution Committee

b. Swaran Singh Committee

c. Union Power Committee

d. Provincial Constitution Committee

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52. Which of the following statements is/are true for a DC motor? **(+1, -0.33)**

(i) The function of the split rings is to reverse the flow of current.
(ii) Maximum force is experienced by arms of the coil aligned parallel to the magnetic field
(iii) Reversing current after every half rotation leads to continuous rotation of coil.

a. Only (i)

b. Only (ii)

c. Both (i) and (ii)

d. Both (i) and (iii)

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53. Stepping out from a flower shop, Jaya walks 100 m towards the north. She then takes a right turn and walks 45 m. She then takes right turn and walks 175 m. She then takes a left turn and walks 50 m. She then takes a left turn and walks 75 m to reach a tea stall. How far and in which direction is the flower shop from the tea stall? (All turns are 90 degree turns only) **(+1, -0.33)**

a. 105 m, North

b. 105 m, West

c. 95 m, East

d. 95 m, West

---

54. The average of the first twelve multiples of 11 is: **(+1, -0.33)**

a. 68.5

b. 71.5

c. 69.5

d. 70.5

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55. From the numbers 51, 52, 53, ..., 100, find the sum of the smallest and the greatest prime numbers as given. **(+1, -0.33)**

a. 123

b. 150

c. 139

d. 154

---

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

Number/Symbol	6	5	&	@	?	9	<	#	2	%	!	=	3	7
Code	M	L	R	T	U	H	P	Y	A	V	C	X	D	G

Conditions:
(i) If the first element is a number and the last, a symbol, the codes for these two are to be interchanged.
(ii) If the first element is an odd number and the last, an even number, the first and last elements are to be coded as O.
(iii) If both second and third elements are perfect squares, the third element is to be coded as the code for the second element.

How will "6 < % 2 #" be coded?

a. Y Y V A M

b. Ø Y C A O

c. Y H V A M

d. M H V A Y

---

57. 3 pencils and 5 pens together cost ₹81, whereas 5 pencils and 3 pens together cost ₹71. The cost of 1 pencil and 2 pens together is: **(+1, -0.33)**

a. ₹29

b. ₹35

c. ₹26

d. ₹31

---

58. For a grouped data, if X_i is the class mark and f_i is the corresponding frequency, then by direct method, mean x is given by: **(+1, -0.33)**

a. $\sum x_i \div \sum f_i$

b. $\sum f_i x_i \div \sum f_i$

c. $\sum f_i\, x_i \div \sum x_i$

d. $\sum f_i\, x_i$

---

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

2 5 6 9 8 0 3 8 6 7 2 5 2 2 6 8 3 6 5 3

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

a. 3

b. 4

c. 5

d. 2

---

60. Which State Government has in March 2022 launched the 'Dalit Bandhu' welfare scheme for empowering Dalit families of the state and enabling entrepreneurship among them through a 10 lakh direct benefit transfer per family? (+1, -0.33)

a. Uttarakhand

b. Punjab

c. Odisha

d. Telangana

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61. To which of the following organisms is the Cell Theory given by Schleiden and Schwann NOT applicable? (+1, -0.33)

a. Viruses

b. Animals

c. Algae

d. Fungi

---

62. In March 2022, in which state has India's first Virtual Smart Grid Knowledge Centre been inaugurated? (+1, -0.33)

a. Himachal Pradesh

b. Punjab

c. Jharkhand

d. Haryana

---

63. In a right-angled triangle, if the hypotenuse is 4 units greater than one side and 8 units greater than the other, then find the area of the triangle. (+1, -0.33)

a. 100 sq. units

b. 32 sq. units

c. 96 sq. units

d. 16 sq. units

---

64. Ramesh wants to choose a material for making filament of a bulb. The chosen material should possess which of the following properties? (i) Low melting point (ii) Ability to glow at high temperatures (iii) High resistance **(+1, -0.33)**

a. Both (ii) and (iii)

b. Only (ii)

c. Only (i)

d. Both (i) and (ii)

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65. Simplify $234 \times [8 - (6 + 2) \times 3] + 4234$. **(+1, -0.33)**

a. 490

b. 423

c. 940

d. 324

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66. The amount of _____ in a plant cell alters its structure in order to facilitate movement. **(+1, -0.33)**

a. water

b. electro-chemical impulses

c. hormones

d. protein

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67. The product of the roots of $x^2 - 7x + 12 = 0$ is _____ **(+1, -0.33)**

a. -7

b. -12

c. 12

d. 7

---

68. Carbon is unable to form C^{4+} ion because _____ (+1, -0.33)

a. it gains electrons easily

b. its formation requires a large amount of energy

c. it shows catenation property

d. it has tetra valency

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69. We can prepare eco-friendly carry bags with _____ (+1, -0.33)

a. glass

b. plastic

c. rubber

d. paper

---

70. In which part of the Indian Constitution is Panchayati Raj described? (+1, -0.33)

a. Part VIII

b. Part VI

c. Part IX

d. Part VII

---

71. What is the correct order of elements according to their valence shell electrons? (+1, -0.33)

a. F > O > C > Li

b. Li > O > C > F

c. Ne > N > F > Be

d. B > C > O > F

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72. What is the name of the phenomenon of wearing down of relief variations of the surface of the Earth through erosion? (+1, -0.33)

a. Gradation

b. Eruptions

c. Germination

d. Solidification

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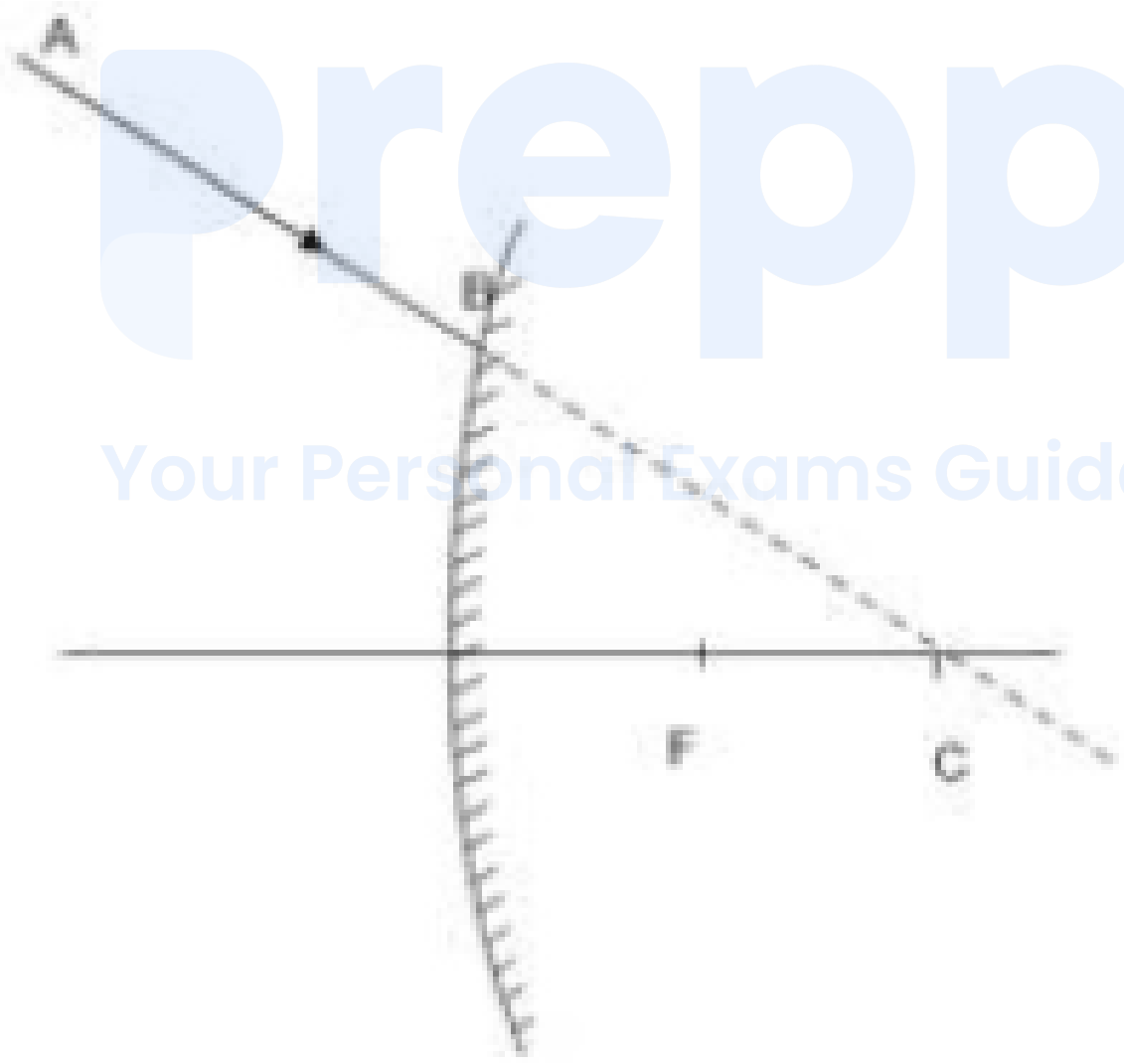
73. A light ray AB is incident on a convex mirror as shown in the figure. What will be the angle of reflection? (+1, -0.33)



a. 90°

b. 0°

c. 30°

d. 45°

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74. For a ray of light undergoing refraction through a triangular glass prism, the angle of deviation is the angle between: (+1, -0.33)

a. the incident ray and the normal at the point of incidence

b. the incident ray and the emergent ray

c. the incident ray and the refracted ray

d. the refracted ray and the emergent ray

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75. Six boys, Prateek, Kartik, Yash, Himmat, Dev and Nihit, are sitting in a straight line. All are facing the north direction. Prateek sits second to the left of Kartik. Dev is sitting at one of the extreme ends. Only Prateek is sitting between Yash and Himmat. Kartik sits to the immediate left of Nihit. Himmat sits third to the right of Dev. Who is sitting to the immediate left of Kartik? (+1, -0.33)

a. Prateek

b. Dev

c. Yash

d. Himmat

---

76. Many scientists before Mendel had started studying the inheritance of traits in peas and other organisms, but Mendel succeeded in giving the laws of Inheritance. Some reasoning for Mendel's success are mentioned below. All are correct except one. Select the INCORRECT reasoning? (+1, -0.33)

a. He studied the inheritance of one character at a time, whereas scientists before him had considered the organism as a whole.

b. He worked with a small sample size.

c. He blended his knowledge of Science and Mathematics.

d. He kept a count of individuals of a particular trait in each generation.

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77. Some people are playing on a football ground. Only two are wearing red coloured T-shirts. Exactly three are wearing yellow-coloured T-shirts. The one who is wearing a red T-shirt passed the ball to the only individual wearing a saffron coloured T-shirt. The person wearing a white coloured T-shirt tackled the person wearing the saffron coloured T-shirt, and then passed the ball to the player who is wearing the green coloured T-shirt. No other individual is playing on the ground. How many total players are playing football on the ground? **(+1, -0.33)**

a. 9

b. 8

c. 10

d. 7

---

78. By selling an item at a 10% profit a seller makes a profit of ₹777.70. Find the cost price of the item. **(+1, -0.33)**

a. ₹7,707

b. ₹7,777

c. ₹7,277

d. ₹7,177

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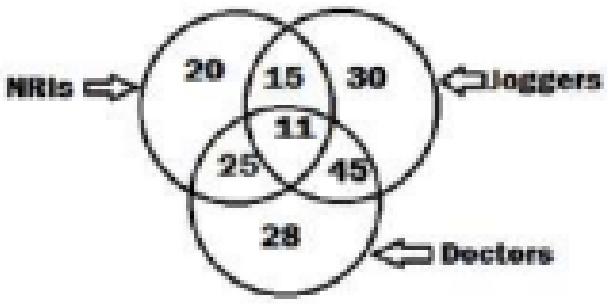
79. Study the given diagram carefully and answer the question. The numbers in different sections indicate the number of persons. How many such doctors are there who are also joggers but NOT NRIs? **(+1, -0.33)**



a. 28

b. 75

c. 45

d. 56

---

80. The following question is based on the given six, 4-digit numbers. **(+1, -0.33)**

(Left) 8347, 5486, 9627, 4913, 8721, 6418 (Right)

(For example, 2456: 6 = digit in unit's place, 5 = digit in ten's place, 4 = digit in hundred's place, 2 = digit in thousand's place)
NOTE - All operations to be done from left to right.

What will be the resultant if the digit in hundred's place of the largest number is added to the digit in thousand's place of the smallest number?

a. 9

b. 7

c. 8

d. 10

---

81. The following reaction is an example of _____. **(+1, -0.33)**

$Mg(OH)_2 + 2HCl \rightarrow MgCl_2 + 2H_2O$

a. neutralisation reaction

b. precipitate reaction

c. decomposition reaction

d. combination reaction

---

82. Which of the following foods is high in iron? **(+1, -0.33)**

a. Milk

b. Jaggery

c. Butter

d. Rice

---

83. As of July 2022, who among the following is the Chairman of 15th Finance Commission of India? **(+1, -0.33)**

a. NK Singh

b. Anoop Singh

c. Arvind Mehta

d. Ashok Lahiri

---

84. The radius of curvature of a given spherical mirror is -20 cm. The focal length of the mirror is: **(+1, -0.33)**

a. 40 cm

b. -40 cm

c. -10 cm

d. 10 cm

---

85. Sindhu Darshan festival is celebrated in which part of India? **(+1, -0.33)**

a. Punjab

b. Ladakh

c. Sikkim

d. Uttar Pradesh

---

86. The following table shows the number of male and female employees working in four departments of an organization i.e., HR, Production, Marketing, and Operations. Study the table and answer the question: **(+1, -0.33)**

Departments	Male	Female
HR	35	65
Production	160	155
Marketing	176	140
Operations	128	142

What is the ratio of the total number of employees in Production (both male and female taken together) and the total number of employees in Operations (both male and female

employees taken together), respectively?

a. 7 : 6

b. 7 : 3

c. 8 : 5

d. 6 : 5

---

87. Name the firm that has acquired neo bank Avail Finance in March 2022? **(+1, -0.33)**

a. Phonepay

b. Paytm

c. Uber

d. Ola

---

88. Which scheme has been introduced by the Department of Biotechnology, Government of India, for awarding writers for writing original books in Hindi on the subjects related to Biotechnology? **(+1, -0.33)**

a. Dr. Aryabhatta Hindi Granth Lekhan Puraskar Yojna

b. Dr. Hargobind Khurana Hindi Granth Lekhan Puraskar Yojna

c. Dr. Jagdish Chandra Bose Hindi Granth Lekhan Puraskar Yojna

d. Dr. Raman Bose Hindi Granth Lekhan Puraskar Yojna

---

89. The position of how many letters will remain unchanged if each of the letters in the word 'ACQUIRE' is arranged in alphabetical order? **(+1, -0.33)**

a. 2

b. 3

c. 1

d. 4

---

90. The value of $\{4 - 3 \times [7 - 8 \times (2 \times 4 - 10)]\}$ = **(+1, -0.33)**

a. 65

b. -65

c. -25

d. 73

---

91. Which flower of Himalaya has antiseptic properties and hence can help in the healing of bruises? **(+1, -0.33)**

a. Datura

b. Ricinus

c. Brahma Kamal

d. Parthenium

---

92. Who among the following was the Team India Flag Bearer at the 2022 Commonwealth Games opening ceremony in Birmingham? **(+1, -0.33)**

a. Aditi Ashoke

b. PV Sindhu

c. Lovlina Borgohain

d. Mirabai Chanu

---

93. Based on the given statement, four conclusions are drawn. Find out which conclusion is NOT true based on the statement. **(+1, -0.33)**

Statement: $A < B < C \leq D = E > F > G$

a. $D > G$

b. $A > E$

c. $E > B$

d. C ≤ E

---

94. How many languages as on June 2022 have the status of 'classical language' in India? **(+1, -0.33)**

a. 6

b. 5

c. 4

d. 3

---

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

EHT-13, HKW-17, LOA-22, QTF-28, WZL-35, ?

a. CGT-41

b. DGT-44

c. DHR-43

d. DGS-43

---

96. In April 2022 the Lok Sabha passed the Constitution (Scheduled Castes and Scheduled Tribes) Orders (Second Amendment) Bill, 2022 which seeks to amend the Constitution to include Gonds and associated tribes in the Scheduled Tribes category in certain districts of_____ **(+1, -0.33)**

a. Uttar Pradesh

b. Himachal Pradesh

c. Sikkim

d. Assam

---

97. The phloem is the plant's vascular tissue that transports _____ **(+1, -0.33)**

a. Gases

b. oxygen

c. nutrients

d. water

---

98. 'Double Circulation' CANNOT be observed in _____ **(+1, -0.33)**

a. eagle

b. snake

c. fish

d. frog

---

99. At what rate of per cent per annum will ₹1,300 give ₹520 as simple interest in 5 years? **(+1, -0.33)**

a. 4%

b. 5%

c. 7%

d. 8%

---

100. The total surface area of a cylinder of radius 70 m and height 140 m, is: **(+1, -0.33)**

a. 61,524 m^2

b. 82,500 m^2

c. 5124 m^2

d. 92,400 m^2

Answers

1. **Answer: c**

Explanation:

Statement: C < D, E ≥ B, B > D

After combining: E ≥ B > D > C

Conclusions:

1. B > C → **True** (As B > D > C, it means B > C)

2. E < D → **False** (As E ≥ B > D, it means E > C)

---

2. **Answer: d**

Explanation:

Given that $(x + 1/x) = k$, we use the identity:

$(x + 1/x)^3 = x^3 + 1/x^3 + 3(x + 1/x)$.

Substitute $(x + 1/x) = k$ into the equation:

$k^3 = x^3 + 1/x^3 + 3k$.

Rearranging gives:

$x^3 + 1/x^3 = k^3 - 3k$.

Thus, the correct answer is $k^3 - 3k$.

---

3. **Answer: b**

Explanation:

Given Series: 521987624

First, we will arrange in descending order of the digits in the number:

987654221

The product of the digits that are third from the left and fourth from the right in the new arrangement:

7 × 4 = 28

Hence, the correct answer is **28**.

---

4. **Answer: a**

Explanation:

Let's represent the people with letters. H _ _ _ G D K P Z
There is one person between G and D, so G is to the left of D.
P is to the immediate left of Z. K is to the immediate right of D.
P is third to the right of K.

Counting the number of people, including H, we get a total of 8 people.
But there are 5 spaces between H and G.

Hence, the total number of people is 8 + 5 = 13.

---

5. **Answer: b**

Explanation:

The right-hand thumb rule is used to determine the direction of the magnetic field around a current-carrying conductor. The thumb points in the direction of the current, and the fingers curl in the direction of the magnetic field.

---

6. **Answer: b**

Explanation:

In the given sets, the pattern is:

11 x 5 + 2 = 57

57 - 49 = 8

12 x 5 + 3 = 63

63 - 54 = 9

Following the same pattern:

10 x 6 + 4 = 64

64 - 58 = 6

---

7. **Answer: c**

Explanation:

We solve this by observing the pattern in the given pairs:

First Pair (FAST : JDUU):

- F → J (+4), A → D (+3), S → U (+2), T → U (+1).
Each letter is shifted by an incrementally decreasing number of positions in the alphabet.

Second Pair (SLOW : WOQX):

- S → W (+4), L → O (+3), O → Q (+2), W → X (+1).
The same pattern is followed here.

Third Pair (JUMP : ?):

- J → N (+4), U → X (+3), M → O (+2), P → Q (+1).

Thus, JUMP is related to NXOQ.

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

---

8. **Answer: b**

Explanation:

We are tasked with evaluating the given expression:

$\sin^2 10° + \sin^2 20° + \sin^2 30° + \sin^2 40° + \sin^2 50° + \sin^2 60° + \sin^2 70° + \sin^2 80° + \sin^2 90°$

$\div \cos^2 20° + \cos^2 40° + \cos^2 50° + \cos^2 70° + \cot^2 45°$

Step 1: Simplify the numerator:
Using the property that $\sin^2 a + \sin^2(90°-a) = 1$ for complementary angles:

- $\sin^2 10° + \sin^2 80° = 1$
- $\sin^2 20° + \sin^2 70° = 1$
- $\sin^2 30° + \sin^2 60° = 1$
- $\sin^2 40° + \sin^2 50° = 1$
- $\sin^2 90° = 1$.

Total numerator = 1 + 1 + 1 + 1 + 1 = 5.

Step 2: Simplify the denominator:
Using the property that $\cos^2 a + \cos^2(90^\circ - a) = 1$ for complementary angles:

- $\cos^2 20^\circ + \cos^2 70^\circ = 1$
- $\cos^2 40^\circ + \cos^2 50^\circ = 1$
- $\cot^2 45^\circ = 1$.

Total denominator = 1 + 1 + 1 = 3.

Step 3: Evaluate the fraction:
$\text{Numerator} \div \text{Denominator} = 5 \div 3$.

Hence, the correct answer is **5/3**.

---

9. Answer: d

Explanation:

'Parakram Divas' is celebrated every year on January 23rd to honor the birth anniversary of Subhas Chandra Bose, an iconic leader in India's struggle for independence. The Government of India announced this day in 2021 to recognize Bose's unparalleled contributions to the nation's freedom movement.

Explanation of Options:

- **Mahatma Gandhi:** Known as the 'Father of the Nation', but his birth anniversary (October 2) is celebrated as Gandhi Jayanti, not Parakram Divas.

- **Subhas Chandra Bose:** Correct answer. He was the founder of the Indian National Army (INA) and is remembered for his slogan "Give me blood, and I shall give you freedom."

- **Bhagat Singh:** A revolutionary freedom fighter, but his birth anniversary (September 28) is not linked to Parakram Divas.

- **Jawaharlal Nehru:** India's first Prime Minister, celebrated for his contributions to modern India. His birth anniversary (November 14) is observed as Children's Day, not Parakram Divas.

Thus, the correct answer is **Subhas Chandra Bose**.

---

10. Answer: a

Explanation:

The valence electrons of an element are the electrons present in its outermost shell. Let us analyze the given elements:

Oxygen (O): Oxygen has 6 valence electrons as its electronic configuration is $1s^2\ 2s^2\ 2p^4$.

Fluorine (F): Fluorine has 7 valence electrons as its electronic configuration is $1s^2\ 2s^2\ 2p^5$, making it the element with the maximum valence electrons in this list.

Sulfur (S): Sulfur has 6 valence electrons as its electronic configuration is $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^4$.

Chlorine (Cl): Chlorine has 7 valence electrons as its electronic configuration is $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^5$, but fluorine is still prioritized as it is in the second period and has a stronger electronegativity.

Conclusion: Fluorine (F) has the maximum valence electrons among the given elements, with 7 valence electrons.

Hence, the correct answer is **Fluorine (F)**.

---

11. **Answer: d**

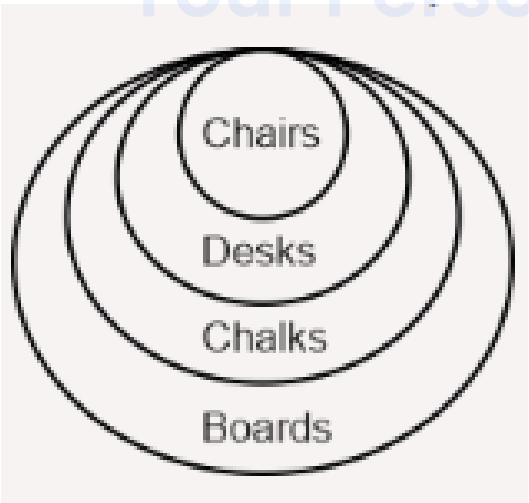
Explanation:

Since all chairs are desks, all desks are chalks, and all chalks are boards, it follows that:

I. Some boards are desks (because all chalks are boards, and all desks are chalks, therefore some boards must be desks).

II. Some chalks are chairs (because all chairs are desks, and all desks are chalks, therefore some chalks must be chairs).

III. Some boards are chairs (because all chairs are desks, all desks are chalks, and all chalks are boards, therefore some boards must be chairs). Therefore, all conclusions follow.



---

12. **Answer: b**

Explanation:

Total number of students enrolled: 15,200

Percentage of students enrolled in:

Medical = 15%
Engineering = 11%
Law = 9%

The total number of students in Medical, Engineering, and Law streams = 15% + 11% + 9% = 35% of 15,200.

Total students: (35/100) × 15,200 = 0.35 × 15,200 = 5,320

Hence, the total number of students in these streams is **5,320**.

---

13. **Answer: b**

Explanation:

To factorize the quadratic equation $x^2 + 7x + 6 = 0$, follow these steps:

1. Identify the coefficients: a = 1, b = 7, c = 6.

2. Find two numbers that multiply to give the product of a × c (1 × 6 = 6) and add up to b (7).
The numbers are 6 and 1.

3. Rewrite the middle term (7x) as the sum of these two numbers: $x^2 + 6x + x + 6 = 0$.

4. Group terms and factorize:
$(x^2 + 6x) + (x + 6) = 0$
$x(x + 6) + 1(x + 6) = 0$.

5. Take common factors:
$(x + 1)(x + 6) = 0$.

Thus, the quadratic equation $x^2 + 7x + 6 = 0$ can be written as **$(x + 1)(x + 6) = 0$**.

---

14. **Answer: a**

Explanation:

The volume of a cylinder $V = \pi r^2 h$.

(V) is the volume of the cylinder (5500 m^3),
(r) is the radius of the cylinder (which we need to find),
(h) is the height of the cylinder (70 m).

$\Rightarrow r^2 = {V} \div {\pi h}$

$\Rightarrow r^2 = {5500} \div (\pi \times 70)$

$\Rightarrow r^2 = {5500} \div 219.91$

$\Rightarrow r^2 \approx 25.03$

$\Rightarrow r \approx \sqrt{25.03} \approx 5.00$ m

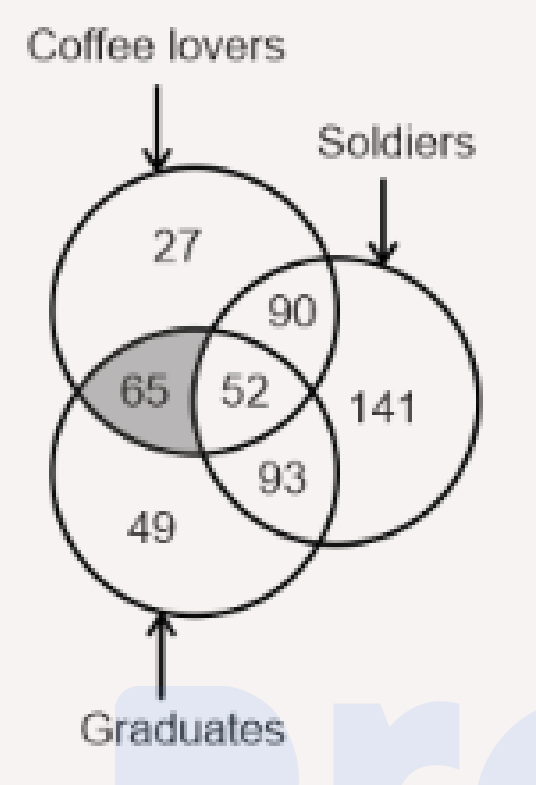
The diameter (d) is twice the radius:
$d = 2r = 2 \times 5.00$ m $= 10$ m.

---

15. **Answer: b**

Explanation:

From the diagram, it is clear that the number of graduates who are also coffee lovers but not soldiers is 65.



16. **Answer: b**

Explanation:

Let x = 4.2222... 10x = 42.2222... Subtracting x from 10x: 10x - x = 42.2222... - 4.2222... 9x = 38 x = 38/9

17. **Answer: c**

Explanation:

Geomorphology is the study of the physical features of the earth and their relation to its geological structures.

18. **Answer: d**

Explanation:

Statement I is true because when copper is heated in air, it reacts with oxygen to form copper(II) oxide (CuO), which is black in color.

Statement II is also true because when hydrogen gas is passed over heated copper(II) oxide, the hydrogen reduces the copper(II) oxide to copper, which is brown in color.

The reaction is as follows: $CuO(s) + H_2(g) \rightarrow Cu(s) + H_2O(g)$

---

19. **Answer: d**

Explanation:

In March 2022, the Madhya Pradesh government became the first state in India to present a dedicated 'Children's Budget' as part of its annual financial plan. This innovative step aimed to prioritize child welfare by allocating funds specifically for the development of children in areas such as health, education, and nutrition.

Details:

- The Children's Budget included allocations for schemes focusing on child protection, education, and health.
- It emphasized the state's commitment to achieving child-centric developmental goals.

Thus, the correct answer is **Madhya Pradesh**.

---

20. **Answer: c**

Explanation:

Incandescent lamps and electric geysers work on the principle of heating effect of electric current. An electric generator does not directly use the heating effect of electric current; it converts mechanical energy into electrical energy.

---

21. **Answer: c**

Explanation:

Let's represent the seating arrangement around the square table.
Since C is at a corner and next to B and Y, we can place them as follows: C ,Y , B
Then Z is next to B and X, so X must be opposite C.
A is to the right of X, meaning A and X are on opposite sides. C Y B X A Z

Therefore, W must be between Y and A.

Going third to the right of W leads us to B.

22. **Answer: c**

Explanation:

Let the two numbers be 5x and 3x.
Their difference is 5x - 3x = 2x = 54.
Therefore, x = 27.
The smaller number is 3x = 3 * 27 = 81.

23. **Answer: d**

Explanation:

Step 1: Expand the given expression 3(3x - 2) + x((4x ÷ 2)) + 15 - 12.
= 3(3x) - 3(2) + x((4x ÷ 2)) + 15 - 12
= 9x - 6 + x (2x) + 15 - 12
Step 2: Combine like terms.
= 9x - 6 + $2x^2$ + 15 - 12
Step 3: Simplify further.
= $2x^2$ + 9x - 3
Thus, the simplified expression is **$2x^2$ + 9x - 3**.

24. **Answer: a**

Explanation:

If a customer buys 3 sarees, they get 2 free. This means they get 5 sarees for the price of 3. The discount is (2/5) * 100% = 40%

25. **Answer: c**

Explanation:

Step 1: Determine the work completed in 4 days by 51 men.
Total work = 51 men × 12 days = 612 man-days.
Work completed in 4 days = 51 men × 4 days = 204 man-days.
Remaining work = 612 - 204 = 408 man-days.

Step 2: Calculate the effective workforce after 4 days.
After 4 days, 6 more men joined, so the total workforce is 51 + 6 = 57 men.

Step 3: Determine the number of days needed to complete the remaining work.
Days required = Remaining work ÷ Workforce = 408 ÷ 57 = $7\,{}^{3}/_{19}$ days.

Thus, the remaining work will be completed in **$7\,{}^{3}/_{19}$ days**.

---

26. Answer: c

Explanation:

Step 1: Understand the relationship between pH and H^+ ion concentration.
The pH scale is inversely related to H^+ ion concentration. Lower pH indicates higher H^+ ion concentration, and higher pH indicates lower H^+ ion concentration.

Step 2: Arrange the given pH values in increasing order:
Solutions and their pH values: A = 4, B = 1, C = 11, D = 7, E = 9.
Increasing order of pH: B (pH 1) < A (pH 4) < D (pH 7) < E (pH 9) < C (pH 11).

Step 3: Write the solutions in the reverse order of their pH (to show decreasing H^+ ion concentration):
C (lowest H^+) < E < D < A < B (highest H^+).

Thus, the correct order of solutions in terms of increasing H^+ ion concentration is **C < E < D < A < B**.

---

27. Answer: d

Explanation:

The pattern is: 8 x 1 + 1 = 9 9 x 2 + 2 = 20 20 x 3 + 3 = 63 63 x 4 + 4 = 256 256 x 5 + 5 = 1285

---

28. Answer: a

Explanation:

The aspects of large dams that have been criticised are social, environmental and economic. Psychological aspect is not mentioned as criticized.

---

29. **Answer: a**

Explanation:

The largest two-digit prime number is 97. The largest three-digit prime number is 997. The sum of double of 97 and triple of 997 is (2 * 97) + (3 * 997) = 194 + 2991 = 3185

---

30. **Answer: b**

Explanation:

Diagonals of a rectangle bisect each other. All other statements are true.

---

31. **Answer: c**

Explanation:

Baking powder is a leavening agent used in baking and cooking to make food rise faster.

---

32. **Answer: a**

Explanation:

In the given sets, the relationship between the numbers is as follows: (36, 78, 13): 78 = 36 * 2 + 6; 13 = 78 / 6 (121, 77, 7): 77 = 121 - 44; 7 = 77 / 11 Let's check the options: Option 1: (49, 63, 9): 63 = 49 * 1.28; 9 = 63/7 Option 2: (36, 72, 10): 72 = 36 * 2; 10 = 72/7.2 Option 3: (9, 56, 18): 56 = 9 * 6 + 2; 18 = 56/3 + 1 Option 4: (64, 85, 12): 85 = 64 + 21; 12 = 85/7 + 1 Only option 1 satisfies a consistent mathematical relationship.

---

33. **Answer: a**

Explanation:

St. Thomas Cathedral Basilica Church is located in Tamil Nadu.

---

34. **Answer: a**

Explanation:

The question asks which step has NOT been taken by the government to attract foreign companies. Options 2, 3, and 4 represent steps taken by the government. Therefore, the only option that has NOT been taken is option 1.

---

35. **Answer: b**

Explanation:

Varun starts by walking 60m North. Then he walks 30m East. Then he walks 90m South. Finally, he walks 30m West. The net displacement is (60-90)m South = 30m South, and (30-30)m West = 0m West. Therefore, Varun is 30m South from his house.

---

36. **Answer: b**

Explanation:

According to Ohm's law, resistance is directly proportional to the length of the conductor and inversely proportional to the area of cross-section of the conductor. Resistance is independent of potential difference and current.

---

37. **Answer: a**

Explanation:

The power of the combination is given by P = P1 + P2 = 5D + (-3D) = 2D. The focal length is given by f = 1/P = 1/2D = 0.5m = 50cm

---

38. **Answer: c**

Explanation:

In 60 minutes, the minute hand traces 360°. In 48 minutes, the minute hand traces (48/60) * 360° = 288°

---

39. **Answer: a**

Explanation:

Step 1: Understand the homologous series of alkenes.
The general formula for the homologous series of alkenes is C_nH_{2n}. Each successive member differs by a CH_2 group.

Step 2: Identify the molecular formula of propene.
Propene has the molecular formula C_3H_6.

Step 3: Add four CH_2 groups successively to find the fourth next member.
$C_3H_6 + CH_2 = C_4H_8$ (first next member).
$C_4H_8 + CH_2 = C_5H_{10}$ (second next member).
$C_5H_{10} + CH_2 = C_6H_{12}$ (third next member).
$C_6H_{12} + CH_2 = C_7H_{14}$ (fourth next member).

Thus, the fourth next member of the homologous series of propene is C_7H_{14}.

---

40. Answer: b

Explanation:

The given number is 53478231. Adding 1 to each odd digit: 5+1=6, 3+1=4, 7+1=8, 3+1=4, 1+1=2 Subtracting 2 from each even digit: 4-2=2, 8-2=6, 2-2=0 The new number is 64860242. The digit second from the left is 4 and the digit second from the right is 4. Sum = 4+4 = 8

---

41. Answer: a

Explanation:

In February 2022, India won the U-19 World Cup final by beating England.

---

42. Answer: c

Explanation:

Let's denote the people as M, K, G, and D. M is at the extreme left. K is to the right of M, and G is to the right of K. There are 5 people between G and D. D is the 6th person from the right. This means there are 5 people to the right of D, plus D himself, making a total of 6 people on the right side. Since G is to the left of

D and there are 5 people between them, we have M, K, G, and 5 people between G and D, plus D. This makes a total of 1 + 1 + 1 + 5 + 1 = 9 people. Adding the 5 people to the right of D, the total number of people is 9 + 5 = 14.

---

43. Answer: a

Explanation:

Analysis of the arguments:
Argument I: This argument weakens the statement because it suggests that measures have been taken (increased scholarships) to encourage girl students to join undergraduate courses. It implies that the low percentage of girls joining undergraduate courses may not solely be due to their preferences but could be attributed to prior lack of incentives.
Argument II: This argument strengthens the statement because it provides a valid reason for the low percentage of girl students joining undergraduate courses — their preference for vocational courses instead.

Thus, **Argument I weakens, while Argument II strengthens the statement.**

---

44. Answer: a

Explanation:

The correct answer is Koyla Darpan. This portal was launched by the Government of India in January 2022 to share key performance indicators of the coal sector.

---

45. Answer: b

Explanation:

The mean proportional between p and q is given by √(pq). We are given that √(pq) = 8. Therefore, pq = 64. Let's check the options: 1. 12 x 3 = 36 ≠ 64 2. 16 x 4 = 64 3. 12 x 16 = 192 ≠ 64 4. 10 x 6 = 60 ≠ 64 Only the pair 16 and 4 satisfies the condition.

---

46. Answer: a

Explanation:

A takes 4 hours to travel from X to Y. B takes 6 hours to travel from Y to X. Let the distance between X and Y be D. Speed of A = D/4 Speed of B = D/6 Let t be the time when they meet. Distance covered by A = (D/4)t Distance covered by B = (D/6)t When they meet, the sum of distances covered by A and B is equal to D. (D/4)t + (D/6)t = D t(1/4 + 1/6) = 1 t(3/12 + 2/12) = 1 t(5/12) = 1 t = 12/5 = 2.4 hours 2.4 hours = 2 hours and 0.4 hours = 2 hours and 24 minutes They meet at 9:00 a.m. + 2 hours 24 minutes = 11:24 a.m.

---

47. Answer: d

Explanation:

To solve this, analyze the patterns in the given examples:

Example 1: PTEJAD → OUEIAE
- Observe the transformation: 'P' → 'O', 'T' → 'U', 'E' → 'E', 'J' → 'I', 'A' → 'A', and 'D' → 'E'.
- The transformation involves alternating backward and forward shifts in the alphabet.
Backward: 'P' → 'O', 'J' → 'I', 'D' → 'E'.
Forward: 'T' → 'U', 'E' → 'E', 'A' → 'A'.

Example 2: FHNOI → EIMOI
- The transformation: 'F' → 'E', 'H' → 'I', 'N' → 'M', 'O' → 'O', 'I' → 'I'.
- Similarly, alternate backward and forward shifts are applied.

Using this pattern, apply the same logic to TUPAI:

- 'T' → 'S' (backward shift), 'U' → 'U' (forward shift), 'P' → 'Q' (backward shift), 'A' → 'A' (forward shift), 'I' → 'I' (backward shift).

Thus, TUPAI is written as SUQAI in the code language.

---

48. Answer: d

Explanation:

Step 1: Analyze the equation and substitute the interchange of signs mentioned in Option 4 (× and ÷).
The new equation becomes: 12 × 6 ÷ 18 + 16 - 15 = 5.

Step 2: Solve the modified equation step-by-step.
12 × 6 = 72.
72 ÷ 18 = 4.
Substitute these values into the equation:
4 + 16 - 15 = 5.

Step 3: Simplify the equation.

4 + 16 = 20.
20 - 15 = 5.

Step 4: Verify the result.
The equation is satisfied with the interchange of × and ÷.

Thus, the correct answer is **Option 4: ×, ÷.**

---

49. Answer: c

Explanation:

Let x be the mean proportional of 16 and 144. Then, we have the equation: $16/x = x/144$ $x^2 = 16 \times 144$ $x^2 = 2304$ $x = \sqrt{2304}$ $x = 48$ Therefore, the mean proportional of 16 and 144 is 48.

---

50. Answer: d

Explanation:

The pattern in the series is as follows: 29 - 28 = 1 31 - 29 = 2 35 - 31 = 4 43 - 35 = 8 The differences are powers of 2 (2^0, 2^1, 2^2, 2^3). The next difference should be $2^4 = 16$. Therefore, the next number in the series is 43 + 16 = 59.

---

51. Answer: b

Explanation:

The Fundamental Duties were added to the Indian Constitution by the recommendation of the Swaran Singh Committee.

---

52. Answer: d

Explanation:

The function of the split rings is to reverse the direction of current flow through the coil after every half rotation. This ensures continuous rotation. Maximum force is experienced when the coil is perpendicular to the magnetic field, not parallel. Therefore, statement (i) and (iii) are true.

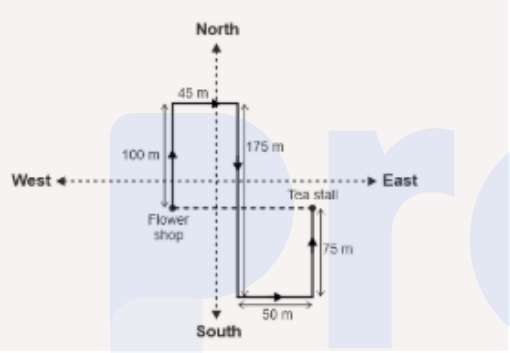
---

53. **Answer: d**

Explanation:

Let's trace Jaya's movements:
1. 100 m North
2. 45 m East (right turn from North)
3. 175 m South (right turn from East)
4. 50 m East (left turn from South)
5. 75 m North (left turn from East)

Net movement in the East-West direction = 45 + 50 = 95 m East
Net movement in the North-South direction = 100 - 175 + 75 = 0 m
Therefore, the flower shop is **95 m West** from the tea stall.



---

54. **Answer: b**

Explanation:

The first twelve multiples of 11 are: 11, 22, 33, 44, 55, 66, 77, 88, 99, 110, 121, 132. Sum of these multiples = 11 + 22 + 33 + 44 + 55 + 66 + 77 + 88 + 99 + 110 + 121 + 132 = 858 Average = Sum / Number of multiples = 858 / 12 = 71.5

---

55. **Answer: b**

Explanation:

The smallest prime number between 51 and 100 is 53. The greatest prime number between 51 and 100 is 97. Their sum is 53 + 97 = 150.

---

56. **Answer: c**

Explanation:

1. The sequence is **6 < % 2 #**, and using the table, the codes for each are:
6 → M, < → Y, % → V, 2 → A, # → M.

2. Apply the conditions:
(i) The first element (6) is a number, and the last element (#) is a symbol. Therefore, their codes are interchanged:
6 → M becomes # → M, and # → M becomes 6 → M.

3. The second and third elements (< and %) do not satisfy condition (iii) since < (P) and % (V) are not perfect squares.

4. Final sequence of codes after applying the conditions:
Y H V A M.

Answer: Y H V A M

---

57. **Answer: d**

Explanation:

Let the cost of one pencil be 'x' and the cost of one pen be 'y'. According to the question, we have the following equations: 3x + 5y = 81 5x + 3y = 71 Multiplying the first equation by 5 and the second equation by 3, we get: 15x + 25y = 405 15x + 9y = 213 Subtracting the second equation from the first, we get: 16y = 192 y = 12 Substituting the value of y in the first equation: 3x + 5(12) = 81 3x + 60 = 81 3x = 21 x = 7 Therefore, the cost of 1 pencil and 2 pens is: x + 2y = 7 + 2(12) = 7 + 24 = 31

---

58. **Answer: b**

Explanation:

Explanation:
The direct method for calculating the mean of grouped data involves the following formula:

$\bar{x} = \sum f_i x_i \div \sum f_i$,
where:
- x_i is the class mark (midpoint of each class).

- f_i is the frequency of the corresponding class.

Steps:
1. Multiply each class mark (x_i) by its corresponding frequency (f_i) to calculate f_ix_i.
2. Sum all f_ix_i values to get $\sum f_ix_i$.
3. Sum all frequencies (f_i) to get $\sum f_i$.
4. Divide $\sum f_ix_i$ by $\sum f_i$ to get the mean $\bar{x}$.

Thus, the correct answer is $\sum f_ix_i \div \sum f_i$.

---

59. Answer: b

Explanation:

Solution:
To solve this, we need to identify numbers in the series that are **immediately preceded by an even number** and **immediately followed by an odd number**. Let's analyze the series step by step:

Series: 2 5 6 9 8 0 3 8 6 7 2 5 2 2 6 8 3 6 5 3

1. Check each number in the series:
   - 5: Preceded by 2 (even) and followed by 6 (even) → Does not satisfy.
   - 6: Preceded by 5 (odd) and followed by 9 (odd) → Does not satisfy.
   - 9: Preceded by 6 (even) and followed by 8 (even) → Does not satisfy.
   - 0: Preceded by 8 (even) and followed by 3 (odd) → Satisfies condition.
   - 3: Preceded by 0 (even) and followed by 8 (even) → Does not satisfy.
   - 6: Preceded by 8 (even) and followed by 7 (odd) → Satisfies condition.
   - Remaining numbers do not satisfy the conditions.

2. The numbers that satisfy the condition are: **0 and 6**.

Answer: There are **2** such numbers in the series.

---

60. Answer: d

Explanation:

The 'Dalit Bandhu' welfare scheme was launched by the Telangana government to empower Dalit families. This initiative involves a direct benefit transfer of ₹10 lakh per family to support entrepreneurship. Other states mentioned have not implemented similar programs with such a scale and purpose:

- **Uttarakhand:** No such welfare program has been reported in March 2022.
- **Punjab:** Known for welfare schemes but not this specific initiative.
- **Odisha:** Focuses on skill development but no equivalent scheme as 'Dalit Bandhu'.

---

61. **Answer: a**

Explanation:

The Cell Theory states that all living organisms are composed of cells, and all cells arise from pre-existing cells. However, this theory does not apply to viruses because:

- **Viruses:** They are acellular and lack a cellular structure. They depend on host cells for reproduction.
- **Animals:** Composed of cells, so the Cell Theory applies.
- **Algae:** These are unicellular or multicellular organisms made of cells.
- **Fungi:** They consist of cellular structures like hyphae.

---

62. **Answer: d**

Explanation:

The Virtual Smart Grid Knowledge Centre was inaugurated in Haryana in March 2022. It is India's first facility of this kind aimed at enhancing grid management and promoting renewable energy integration. Other states do not host this facility:

- **Himachal Pradesh:** Known for hydroelectric projects but no such virtual grid facility.
- **Punjab:** Focuses on solar and agricultural initiatives but not virtual grid centers.
- **Jharkhand:** Primarily known for its mining sector, not virtual grid initiatives.
- **Haryana:** The correct answer, as the center was specifically established here to pioneer advancements in smart grid technology.

---

63. **Answer: c**

Explanation:

Let the sides of the right-angled triangle be a, b, and c, where c is the hypotenuse. We are given that $c = a + 4$ and $c = b + 8$. By the Pythagorean theorem, $a^2 + b^2 = c^2$. Substituting $c = a + 4$ and $c = b + 8$, we get $a^2 + b^2 = (a + 4)^2$ and $a^2 + b^2 = (b + 8)^2$. Solving these equations simultaneously, we get $a = 12$ and $b = 16$. Therefore, the area of the triangle is $(1/2) * a * b = (1/2) * 12 * 16 = 96$ sq. units.

---

64. **Answer: a**

Explanation:

A filament in a bulb needs to withstand high temperatures and glow, hence (ii) is necessary. It also needs high resistance to convert electrical energy into heat and light efficiently, hence (iii) is necessary. A low melting point (i) would be undesirable.

---

65. **Answer: a**

Explanation:

Following the order of operations (PEMDAS/BODMAS), we first solve the inner parentheses: (6 + 2) = 8. Then, we perform the multiplication within the brackets: 8 × 3 = 24. Next, we solve the expression inside the brackets: 8 - 24 = -16. Now, we perform the multiplication: 234 × (-16) = -3744. Finally, we add the remaining term: -3744 + 4234 = 490.

---

66. **Answer: a**

Explanation:

The amount of water in a plant cell alters its structure in order to facilitate movement.

---

67. **Answer: c**

Explanation:

Let the quadratic equation be $ax^2 + bx + c = 0$. The product of roots is given by c/a. In this case, a = 1, b = -7, c = 12. Therefore, the product of roots is 12/1 = 12.

---

68. **Answer: b**

Explanation:

Carbon has 4 valence electrons. To form C^{4+} ion, it would need to lose all 4 electrons which requires a large amount of energy. Therefore, it's difficult for carbon to form a C^{4+} ion.

---

69. **Answer: d**

Explanation:

Eco-friendly carry bags are made from paper.

---

70. **Answer: c**

Explanation:

Panchayati Raj is described in Part IX of the Indian Constitution.

---

71. **Answer: a**

Explanation:

Explanation:
The number of valence shell electrons determines the chemical reactivity and properties of an element.
Let us analyze the given elements:

1. Fluorine (F): Atomic number 9 → Electronic configuration: 2, 7. Valence electrons = 7.
2. Oxygen (O): Atomic number 8 → Electronic configuration: 2, 6. Valence electrons = 6.
3. Carbon (C): Atomic number 6 → Electronic configuration: 2, 4. Valence electrons = 4.
4. Lithium (Li): Atomic number 3 → Electronic configuration: 2, 1. Valence electrons = 1.

Order based on valence shell electrons:
F (7) > O (6) > C (4) > Li (1).

Thus, the correct answer is **F > O > C > Li**.

---

72. **Answer: a**

Explanation:

The phenomenon of wearing down of relief variations of the surface of the Earth through erosion is called Gradation.

---

73. **Answer: b**

Explanation:

The angle of incidence is 0°. According to the law of reflection, the angle of reflection is equal to the angle of incidence. Therefore, the angle of reflection is also 0°.

---

74. **Answer: b**

Explanation:

The angle of deviation is the angle between the incident ray and the emergent ray.

---

75. **Answer: d**

Explanation:

Let's arrange the boys based on the given information: 1. Dev is at one extreme end. 2. Himmat is third to the right of Dev. So, the arrangement becomes: Dev _ _ _ _ 3. Kartik is to the immediate left of Nihit. So, Dev _ _ _ Kartik Nihit 4. Prateek is second to the left of Kartik. So, Dev Prateek _ Kartik Nihit 5. Only Prateek is sitting between Yash and Himmat. So the arrangement becomes: Dev Prateek Yash Kartik Nihit Therefore, Himmat is sitting to the immediate left of Kartik.

---

76. **Answer: b**

Explanation:

Mendel's success was not due to a small sample size; rather, it was his meticulous record-keeping and analysis of a large number of pea plants that led to his groundbreaking discoveries. The other options correctly explain aspects of his successful approach.

---

77. **Answer: b**

Explanation:

Red T-shirts: 2 Yellow T-shirts: 3 Saffron T-shirt: 1 White T-shirt: 1 Green T-shirt: 1 Total players = 2 + 3 + 1 + 1 + 1 = 8

78. **Answer: b**

Explanation:

Let the cost price be x. Profit = 10% of x = 0.1x Given that profit is ₹777.70 0.1x = 777.70 x = 777.70 / 0.1 x = 7777 Therefore, the cost price of the item is ₹7,777.

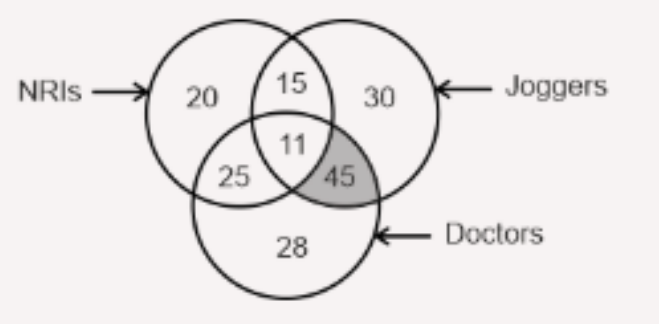
79. **Answer: c**

Explanation:

Solution:
To solve this question, we need to analyze the Venn diagram:
1. The diagram represents three groups: NRIs, Joggers, and Doctors.
2. The goal is to find doctors who are also joggers but NOT NRIs.

Step-by-step analysis:
1. The intersection of Doctors and Joggers (excluding NRIs) is represented by the section that is common to "Joggers" and "Doctors" but outside the "NRIs" circle.
2. From the diagram:
   - The number of people in the intersection of all three groups (NRIs, Joggers, and Doctors) is **11**.
   - The number of people in the intersection of only Joggers and Doctors (excluding NRIs) is **45**.

Result:
The number of doctors who are joggers but NOT NRIs is 45.



80. **Answer: d**

Explanation:

Solution:

1. Identify the largest and smallest numbers from the given list:
   - The largest number is **9627**.
   - The smallest number is **4913**.

2. Extract the required digits:
   - The digit in the hundred's place of the largest number (**9627**) is **6**.
   - The digit in the thousand's place of the smallest number (**4913**) is **4**.

3. Add these digits:
   - Resultant = 6 + 4 = **10**.

Answer: 10

---

81. Answer: a

Explanation:

The correct answer is **option 1**, i.e., **Neutralisation Reaction**.

The given reaction is an example of a neutralization reaction. In this process, magnesium hydroxide (a base) reacts with hydrochloric acid (an acid) to produce magnesium chloride (a salt) and water. Neutralization reactions typically involve the combination of hydrogen ions (H^+) from the acid and hydroxide ions (OH^-) from the base, forming water. Such reactions are common in acid–base chemistry and play a significant role in various biological, industrial, and environmental processes. Here, $Mg(OH)_2$ neutralizes HCl, resulting in a balanced chemical equation.

---

82. Answer: b

Explanation:

Jaggery is a good source of iron.

---

83. Answer: a

Explanation:

As of July 2022, N.K. Singh was the Chairman of the 15th Finance Commission of India.

---

84. **Answer: c**

Explanation:

The focal length (f) of a spherical mirror is half of its radius of curvature (R). The formula is: f = R/2. Given R = -20 cm, therefore f = -20 cm / 2 = -10 cm.

---

85. **Answer: b**

Explanation:

The Sindhu Darshan festival is celebrated in Ladakh.

---

86. **Answer: a**

Explanation:

Solution:
1. Calculate the total number of employees in Production:
- Male employees = 160
- Female employees = 155
- Total employees in Production = 160 + 155 = 315.

2. Calculate the total number of employees in Operations:
- Male employees = 128
- Female employees = 142
- Total employees in Operations = 128 + 142 = 270.

3. Find the ratio of total employees in Production to Operations:
- Ratio = 315 : 270 = 7 : 6 (simplified).

Answer: 7 : 6

---

87. **Answer: d**

Explanation:

Ola acquired neo bank Avail Finance in March 2022.

88. **Answer: c**

Explanation:

The correct answer is option 3. Dr. Jagdish Chandra Bose Hindi Granth Lekhan Puraskar Yojna is the scheme introduced by the Department of Biotechnology, Government of India, for awarding writers for writing original books in Hindi on the subjects related to Biotechnology.

89. **Answer: b**

Explanation:

Arranging the letters of ACQUIRE in alphabetical order, we get ACEIQRU. The letters that remain unchanged are C and R. Therefore, 2 letters remain unchanged.

90. **Answer: b**

Explanation:

Following the BODMAS rule: 1. Brackets: $2 \times 4 - 10 = 8 - 10 = -2$ 2. Brackets: $7 - 8 \times (-2) = 7 + 16 = 23$ 3. Multiplication: $3 \times 23 = 69$ 4. Subtraction: $4 - 69 = -65$ Therefore, the value is -65.

91. **Answer: c**

Explanation:

Brahma Kamal is a flower of the Himalayas known for its antiseptic properties and its use in healing bruises.

92. **Answer: b**

Explanation:

PV Sindhu was the Team India Flag Bearer at the 2022 Commonwealth Games opening ceremony in Birmingham.

93. **Answer: b**

Explanation:

Solution:
The given statement is: A < B < C ≤ D = E > F > G
We need to analyze each conclusion to check if it is true or not:

1. D > G:
- From the statement, D = E > F > G. Thus, D > G is **true**.

2. A > E:
- From the statement, A < B < C ≤ D = E. Hence, A is less than E, and A > E is **not true**.

3. E > B:
- From the statement, B < C ≤ D = E. Hence, E is greater than B, and this is **true**.

4. C ≤ E:
- From the statement, C ≤ D = E. Thus, C ≤ E is **true**.

Answer: The conclusion that is NOT true is **Option 2: A > E**.

---

94. **Answer: a**

Explanation:

As of June 2022, six languages in India have the status of 'classical language'.

---

95. **Answer: d**

Explanation:

Solution:
To solve this, we analyze the series step by step for the pattern in both the alphabetical and numerical parts:
1. Alphabetic pattern:
Each term consists of three letters. Let us analyze the position of each letter in the alphabet:
- First letter: E (5th), H (8th), L (12th), Q (17th), W (23rd). The difference between positions is: +3, +4, +5, +6. The next increment will be +7, so the first letter will be **D** (4th position).
- Second letter: H (8th), K (11th), O (15th), T (20th), Z (26th). The difference is: +3, +4, +5, +6. The next

increment will be +7, so the second letter will be **G** (7th position).
- Third letter: T (20th), W (23rd), A (1st), F (6th), L (12th). The difference is: +3, +4, +5, +6. The next increment will be +7, so the third letter will be **S** (19th position).

2. Numerical pattern:
The numbers in the series are: 13, 17, 22, 28, 35. The difference between consecutive numbers is: +4, +5, +6, +7. The next increment will be +8, so the next number is **43**.

Final Answer: The term that replaces the question mark is **DGS-43**.

---

96. **Answer: a**

Explanation:

The Constitution (Scheduled Castes and Scheduled Tribes) Orders (Second Amendment) Bill, 2022 was passed to include Gonds and associated tribes in the Scheduled Tribes category in specific districts of Uttar Pradesh. This move aims to address the socio-economic disadvantages faced by these tribes. Other states mentioned do not have any connection with this specific bill:

- **Himachal Pradesh:** No such amendment related to Gonds and associated tribes.
- **Sikkim:** Focuses on tribal welfare but is unrelated to this bill.
- **Assam:** Known for other tribal welfare initiatives, not this amendment.

---

97. **Answer: c**

Explanation:

Phloem is one of the vascular tissues in plants, responsible for transporting nutrients, especially sugars produced during photosynthesis, from the leaves to other parts of the plant. Here's why other options are incorrect:

- **Gases:** Gases like carbon dioxide and oxygen diffuse through stomata, not phloem.
- **Oxygen:** Oxygen is transported via diffusion, not through phloem.
- **Water:** Water is transported through xylem, another vascular tissue in plants.

Thus, the correct answer is nutrients, as phloem specializes in their transportation.

---

98. **Answer: d**

Explanation:

Double circulation is a process where the blood passes through the heart twice in one complete cycle. Fish have a single circulation system, so double circulation cannot be observed in them.

---

99. Answer: d

Explanation:

Simple Interest = (Principal × Rate × Time) / 100 520 = (1300 × Rate × 5) / 100 52000 = 6500 × Rate Rate = 52000 / 6500 Rate = 8%

---

100. Answer: d

Explanation:

Solution:
The formula for the total surface area of a cylinder is:
Total Surface Area (TSA) = 2πr(h + r),
where:
- **r** = radius of the cylinder,
- **h** = height of the cylinder,
- **π** = 3.1416 (approximate value).

Given:
Radius, r = 70 m
Height, h = 140 m

Step 1: Substitute the values into the formula:
TSA = 2 × π × 70 × (140 + 70)

Step 2: Simplify the expression:
TSA = 2 × 3.1416 × 70 × 210

Step 3: Perform the multiplication:
TSA = 2 × 3.1416 × 14,700
TSA = 92,399.5584

Step 4: Approximate the result:
TSA ≈ 92,400 m².

Final Answer: The total surface area of the cylinder is **92,400 m²**.