SNAP 2024 Question Paper with Answer Key

Symbiosis National Aptitude Test or SNAP Test

GENERAL ENGLISH: READING COMPREHENSION, VERBAL ABILITY

1. In the question below, each passage consists of six sentences. The first and sixth sentences are given in the beginning. The middle four sentences in each have been removed and jumbled up. These are labeled as P, Q, R, and S. Find out the proper order for the four sentences.

    S1: The library is a place where knowledge is preserved and shared with all.

    P: Students and researchers often visit to find useful information for their studies.

    Q: It houses thousands of books, journals, and digital resources on various subjects.

    R: The peaceful environment helps visitors focus and absorb knowledge effectively.

    S: Librarians play a crucial role in organizing and maintaining these resources.

    S6: Thus, the library serves as a treasure trove of wisdom for generations.

    The proper sequence should be:

    (a) RSQP   (b) PQRS   (c) SQPR   (d) QSPR

DIRECTIONS (Qs. 2-3): *Some proverbs/idioms are given below together with their meanings. Choose the correct meaning of proverb/idiom*

2. To burn the midnight oil
    (a) To waste time
    (b) To work late into the night
    (c) To celebrate all night
    (d) To sleep early

3. Hit the nail on the head
    (a) To make a mistake
    (b) To be very precise or accurate
    (c) To get hurt while working
    (d) To start an argument

4. In the following question, choose the word which is the exact OPPOSITE of the given word.
    ARDENT
    (a) Indifferent   (b) Zealous
    (c) Fervent   (d) Enthusiastic

DIRECTIONS (Qs. 5-6): *In the questions below the sentences have been given in Direct/Indirect speech. From the given alternatives, choose the one that best expresses the given sentence in Indirect/Direct speech.*

5. She said, "I have completed my assignment on time."
    (a) She said that she had completed her assignment on time.
    (b) She said that I have completed my assignment on time.
    (c) She said that she completed her assignment on time.
    (d) None of these

6. The teacher told the students that the Earth revolves around the Sun.
    (a) The teacher said, "The Earth revolved around the Sun."
    (b) The teacher said, "The Earth revolves around the Sun."
    (c) The teacher said, "The Earth is revolving around the Sun."
    (d) The teacher said, "The Earth had revolved around the Sun."

DIRECTIONS (Qs. 7-9): *In each question, an incomplete statement followed by fillers . Pick out the best one which can complete incomplete statement correctly and meaningfully.*

7. Even though she was unwell, ...
    (a) she continued working with determination.
    (b) she decided to go on a long vacation.
    (c) she avoided taking any rest at all.
    (d) she stopped working immediately.

8. The moment the fire alarm rang, ...
    (a) everyone ignored it and continued their work.
    (b) people evacuated the building immediately.
    (c) the fire brigade arrived instantly.
    (d) the fire alarm stopped ringing.

9. If we don't leave now, ...
    (a) we will reach the destination early.
    (b) we might miss the train.
    (c) we will have plenty of time to spare.
    (d) we will arrive much before schedule.

10. In the following question, choose the word which best expresses the meaning of the given word.

    BENEVOLENT

    (a) kind   (b) cruel

    (c) selfish   (d) hostile

11. Find the correctly spelt words.

    (a) Artifact

    (b) Artifect

    (c) Arttefect

    (d) Arrtefact

DIRECTIONS (Qs. 12-13): *Pick out the most effective word(s) from the given words to fill in the blank to make the sentence meaningfully complete.*

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12. The manager's decision to fire the employee was seen as a _____ act of revenge rather than a professional choice.

    (a) vindictive   (b) malicious

    (c) spiteful   (d) callous

13. Despite his repeated failures, the entrepreneur remained _____ in his pursuit of success.

    (a) obstinate

    (b) resolute

    (c) relentless

    (d) unwavering

DIRECTIONS (Qs. 14-15): *Each question consists of two words that have a certain relationship to each other followed by four pairs of related words. Select the pair that has the same relationship.*

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14. FLORIST: FLOWERS

    (a) Chef: Food   (b) Author: Books

    (c) Painter: Canvas   (d) None of these

15. SENTINEL: WATCH

    (a) Artist: Paint

    (b) Soldier: Battle

    (c) Guard: Protect

    (d) None of these

QUANTITATIVE, DATA INTERPRETATION AND DATA SUFFICIENCY

16. On a certain principal, CI an SI at a certain rate of interest for 2 years is ₹ 16560 and ₹ 14,400/ respectively. Find the principal and rate of interest per annum.

    (a) 21,6000,13%

    (b) 20,000,30%

    (c) 24,000,30%

    (d) 24,000,35%

17. $x + y + z = 850$. If x is reduced by 100 y reduced by 25, and z reduced by 50, then x:y = 1:2, y:z = 5:6, find original value of x + y

    (a) 400

    (b) 500

    (c) 550

    (d) 350

18. Find the value of:

    $\log 87600 + \log 23100 - 8 = ?$

    (a) $\log 8.76 + \log 2.31$

    (b) $\log 87.6 + \log 23.1$

    (c) $\log 876 + \log 231$

    (d) None of these

19. Average monthly expenditure for Ravi for January to June is ₹ 3200/ He spends ₹ 3000 in July, ₹ 3600 in August, ₹ 3900 in September, and ₹ 4200 in October. If his expenditure in November is 50% of that of December and his average monthly expenditure for the entire year is ₹ 3200/ then find Ravi's expenditure in the month of November?

    (a) 1600   (b) 1400

    (c) 1700   (d) 1500

20. Ram and Shyam are 10 km apart. The both see a hot air balloon passing in the sky making an agnle of 60 and 30 degree respectively. What is the height at which balloon could be flying.

    (a) $4\sqrt{3}$ (b) $5\sqrt{3}$

    (c) $3\sqrt{3}$ (d) $2\sqrt{3}$

21. A manufacturer makes 1500 articles at the cost of 120 paisa per article. He fixed the selling price such that if only 1200 articles were sold, he makes 80% profit in outlay. However 240 articles got spoilt and he was able to sell remaining stock at this price. Find the actual profit percentage as a percentage of total outlay.

    (a) 84   (b) 82

    (c) 89   (d) 86

22. Find the missing number?

			3050		
		30		102	
	5		8		?
5		3		6	4

    (a) 14   (b) 12

    (c) None of these   (d) 10

23. In a box, there are 3 red marbles, 3 blue marbles and 7 green marbles. If 2 marbles are picked randomly, find the probability of picking two non green marbles from the box.

(a) 3/26
(b) 5/26
(c) 9/26
(d) 7/26

24. ₹ 45000 was deposited for 4 years at compound interest. If the rate of interest was 6% for 1st year, and it increases by 1% every year. Then find the approx. percentage amount at the end of 4 years.

(a) 60000
(b) 70000
(c) 80000
(d) 90000

25. A shopkeeper marks 30% above the cost price and gives a discount of 15% on marked price, Apart from this, he uses a faulty balance which uses 1kg for 800g. Find his actual profit percentage.

(a) 38.125%
(b) 24.425%
(c) 32.124%
(d) None of these

26. Ritu wants to make a trapezium such that AB is parallel to CD. Angle ABC and BAD are 90 and 45 degree respectively. Length of CD and BC are 5cm and 4cm respectively. Find the area of trapezium.

(a) $20\,cm^2$
(b) None of these
(c) $28\,cm^2$
(d) $24\,cm^2$

27. In a school, if 100 students less had applied, and 50 less were selected, then the ratio of selected to unselected students would have been 7:4. So, how many students had applied if ratio of selected to unselected students was 3:2

(a) 325
(b) 415
(c) 375
(d) 425

28. Find the smallest number between 2000 and 3000 which is exactly divisible by 21, 24 and 28

(a) None of these
(b) 2000
(c) 2352
(d) 2016

29. Based on the given pattern find the next term of the given series:

5, 6, 16, 57, 244, 1245, ?

(a) 7506
(b) None of these
(c) 5500
(d) 4047

30. There are 3 different types of rice weighing 435, 493 and 551 kg respectively. The rice is packed in bags, such that no two types of rice are mixed. Find the least no of bags of equal sizes.

(a) 51
(b) 56
(c) 57
(d) 54

31. ₹ 776 is divided among 300 boys and girls in such a way that each boy gets 2.40 and each girl gets 2.80. Find the total girls.

(a) 130
(b) 140
(c) 110
(d) 120

32. Sqrt of $4^{6x^2}\,25^{y/2}\,9z^{\wedge4}$

(a) $4^{3x^2}\cdot5^y\cdot3^{z^4}$
(b) $4^{3x^2}\cdot5^{y/2}\cdot9^{z^2}$
(c) $4^{6x}\cdot25^{y/4}\cdot9^{z^2}$
(d) $4^{3x^2}\cdot5^{y/2}\cdot3^{z^4}$

33. Below is the Export and Import data of a company: Which year has the lowest percentage fall in imports from the previous year?

(a) 2021
(b) 2024
(c) 2023
(d) 2020

34. Two oranges, three bananas and four apples cost ₹ 15. Three oranges, two bananas and one apple cost ₹ 10. I bought 3 oranges, 3 bananas and 3 apples. How much did I pay ?

(a) ₹ 10
(b) ₹ 8
(c) Cannot be determined
(d) ₹ 15

35. Two equal glasses filled with mixtures of alcohol and water in the proportions of 2 : 1 and 1 : 1 respectively were emptied into third glass. What is the proportion of alcohol and water in the third glass?

(a) 5:7
(b) 7:5
(c) 7:6
(d) 6:7

ANALYTICAL & LOGICAL REASONING

36. If 2nd October is Monday, then which day of the week is 2nd November?
(a) Friday
(b) Tuesday
(c) Thursday
(d) Wednesday

37. Three thieves M, B and V were caught in a case of robbery. All three of them gave one statement each and it is known that only one of them is telling the truth.
M : I am innocent
B : I am innocent
V : B is involved in the robbery
Find out who was involved in the robbery.
(a) M
(b) B
(c) V
(d) Cannot be determined

38. A clock was set right on Monday at 3:00 AM but it gains 2 minutes per hour. Find the time in the clock when the actual time is 7:30 PM on Tuesday.
(a) 8 : 48 PM
(b) 8 : 45 PM
(c) 8 : 51 PM
(d) 9 : 10 PM

39. Find the missing code:
L1#1O2⁻2, J2#2Q3⁻3, _____, F4#4U5⁻5, D5#5W6⁻6
(a) H3#314⁻4
(b) None of these
(c) H3#3H4⁻4
(d) E3#3V4⁻4

40. A introduces B as "She is the wife of the grandson of father of my father". What is the relationship of B with A?
(a) Sister-in-law
(b) Daughter
(c) Sister
(d) Mother

41. Narmada Bachao Andolan : Medha Patkar : : Bhudan Andolan : ?
(a) Vinoba Bhave
(b) Kailash Satyarthi
(c) None of these
(d) Jawahar Lal Nehru

42. Find the correct number that will complete the given series:
14, 26, 36, 44, 50, ____ 56
(a) 54
(b) None
(c) 48
(d) 52

43. Statement: Company has made it Compulsory to mark online attendance using facial recognition software - Notice in an office.
Assumptions:
1. Notice will be read
2. Online attendance will benefit the company
(a) only 1
(b) only 2
(c) Neither
(d) both

44. Earthquake happened in the ocean. Due to earthquake, Tsunami waves occurred. Due to the Tsunami there were 192 death and losses of 7 million USD of property. Identify the effects
(a) Death, Tsunami Wave, Property loss
(b) Damage House, Tsunami Wave, Property loss
(c) Casualties, Prop Loss, Death
(d) Tectonic Moment, Death, Earthquake

45. Statements: Some M are L. All H are W. Some W are M
Conclusions.
I. All M are W
II. Some H are L
III. Some W are H
(a) None of the statements
(b) I & III
(c) Only III
(d) Only I

46. Angle between two hands a 5:55 PM is:
(a) 150°
(b) 152.5°
(c) 155.5°
(d) 125.5°

47. If 9th December, 2007 is Sunday, then what was 8th July, 2007
(a) Tuesday
(b) Thursday
(c) Friday
(d) Saturday

48. A cuckoo at regular time intervals. It takes 10 seconds to strike at 6 o'clock. How many seconds will it take to strike at 10 o'clock?
(a) 10 seconds
(b) 15 seconds
(c) 16.7 seconds
(d) 16 seconds

DIRECTIONS (Qs. 49-50) : *Study the following information carefully to answer the questions that follow :*

Adhir Mishra has three children : Urmila, Raghu and Sumit. Sumit married Roma, the eldest daughter of Mr. And Mrs. Mohan. The Mohans married their youngest daughter to the eldest son of Mr. and Mrs. Sharma and they had two children Sandeep and Shaifali. The Mohans have two more children, Roshan and Bimla, both elder to Sheila. Sohan and Shivendar are sons of Sumit and Roma. Leela is the daughter of Sandeep.

49. How is Mrs. Mohan related to Sumit ?
(a) Aunt
(b) Mother-in-law
(c) Mother
(d) Sister-in-law

50. What is the surname of Sohan ?
(a) Sharma
(b) Mohan
(c) Mishra
(d) Raghu

51. Raj travelled from a point X straight to Y at a distance of 80 metres. He turned right and walked 50 metres, then again turned right and walked 70 metres. Finally, he turned right and walked 50 metres. How far is he from the starting point
(a) 10 metres
(b) 20 metres
(c) 50 metres
(d) 70 metres

(i)   There is a group of five friends.

(ii)   Keshav is second in height but younger than Rekha.

(iii) Parul is taller than Megha but younger in age.

(iv)   Rekha and Megha are of the same age but Rekha is tallest between them.

(v)   Nikku is taller than Parul and elder to Rekha.

52. If they are arranged in descending order of their ages, who will be in the third position?
   (a) Parul
   (b) Keshav
   (c) Nikku
   (d) None of these

53. If they are arranged in ascending order of their height, who will be in the fourth position?
   (a) Nikku
   (b) Parul
   (c) Rekha
   (d) Keshav

54. If it is possible to make a meaningful word with the second, the fifth and the eighth letters of the word 'CARETAKER', which of the following will be the first letter of that word? If no such word can be made, give X as answer. If more than one such word can be made, give M as the answer.
   (a) A   (b) E
   (c) X   (d) M
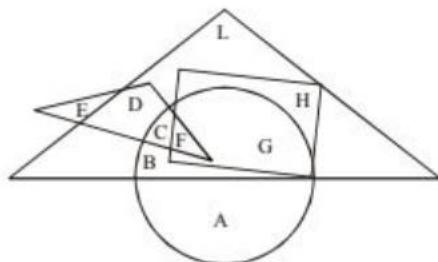
On the basis of the above diagram, answer the following questions :

55. Which among the following regions represent the graduates or teachers but not politicians?
   (a) B,G   (b) G,H   (c) A, E   (d) E,F

56. Which among the following regions represent the graduate politicians but not the members of Parliament?
   (a) B,C   (b) L,B   (c) D,L   (d) A,H,L

57. If 'All sweet things are fluids' and 'Some fluids are coloured things', then it implies -
   A. Some sweet things are coloured things
   B. Some sweet things are fluids
   C. All fluids are sweet things
   D. Some fluids are sweet things
   Choose the most appropriate answer from the options given below:
   (a) A, B and C only   (b) A, and C only
   (c) B, C and D only   (d) A, C and D only

58. There are four Trees - Lemon, Coconut, Mango and Neem each at a different corner of a rectangular plot. A well is located at one corner and a cabin at another corner. Lemon and Coconut trees are on either side of the gate, which is located at the centre of side, opposite to the side, extremes of which the well and cabin are located. The mango tree is not at the corner where the cabin is located.
   Which of the following pairs can be diagonally opposite to each other in the plot ?
   (a) Cabin and Neem tree
   (b) Coconut tree and Lemon tree
   (c) Mango tree and Well
   (d) Neem tree and Lemon tree

59. Find the mission Letter/number
   B2CD, DE3F, ..., H5IJ, J6KL
   (a) D3GH   (b) G3HI
   (c) FGH4   (d) FG4H

60. Select the combination of numbers so that letters arranged accordingly will form a meaningful word.
   R   A   C   E   T
   1   2   3   4   5
   (a) 1,2,3,4,5   (b) 3,2,1,4,5
   (c) 5,2,3,4,1   (d) 5,1,2,3,4

ANSWERS WITH EXPLANATIONS

1. **(d)** Sentence **Q** logically follows S1 because it introduces what the library contains. Sentence **S** follows Q by explaining the role of librarians in maintaining these resources. Sentence **P** comes next, as it describes who benefits from these resources. Sentence **R** concludes the middle section by highlighting the environment of the library. The last sentence, S6 wraps up by reinforcing the overall importance of the library.

2. **(b)** The idiom **"to burn the midnight oil"** means to work or study late into the night, often to complete an important task. It originates from the time when oil lamps were used for lighting, and people had to literally burn oil to continue working after dark. It is commonly used to describe someone putting in extra effort to meet deadlines or prepare for exams.

3. **(b)** The idiom **"hit the nail on the head"** means to describe exactly what is causing a situation or problem. It originates from carpentry, where hitting the nail directly on the head ensures it is driven in properly. In conversation, it is used when someone gives an accurate explanation or solution to a problem.

4. **(a)** The antonym of 'ardent' is indifferent, which means passionate or intensely enthusiastic. However, the remaining words are described below:

   - **Indifferent** means **lacking interest or enthusiasm**, making it the correct antonym.

   - **Zealous** and **Fervent** are synonyms of "ardent," so they are incorrect.

   - **Enthusiastic** also means eager and excited, which is similar in meaning to "ardent."

5. **(a)** The reporting verb **"said"** remains the same as there is no object. The present perfect tense **"have completed"** changes to the past perfect **"had completed"** in indirect speech. The pronoun **"I"** changes to **"she"** as it refers to the speaker.

6. **(b)** This is a **universal truth** (scientific fact), so the **tense remains unchanged** in direct speech. The verb **"revolves"** is in the simple present tense and remains the same. The reporting verb **"told"** changes to **"said"** as there is no object in the direct sentence.

7. **(a)** The phrase **"even though"** indicates contrast. The correct answer should reflect that despite being unwell, she **still did something** rather than stopping. Option (a) correctly conveys determination and perseverance.

8. **(b)** **"The moment"** indicates an immediate reaction. The logical consequence of a fire alarm ringing is that people would **evacuate the building**. Other options do not logically follow a fire alarm situation.

9. **(b)** **"If we don't leave now"** suggests urgency. The logical consequence of **delaying departure** is missing the train. Other options contradict the situation and do not make sense.

10. **(a)** Kind is the closest synonym. The remaining words are also described here: **Benevolent** means **kind, generous, and well-meaning. Cruel, selfish, and hostile** all have opposite or negative meanings, making them incorrect choices.

11. **(a)** Artifact is a **man-made object** from the past, often of **historical or cultural significance**. However, the remaining words are incorrectly spelt.

12. **(a)** The correct answer is 'vindictive', meaning seeking revenge, which fits the context perfectly. The remaining words that are incorrect are also defined below:

    - **Malicious** means intending harm but does not necessarily imply personal revenge.

    - **Spiteful** suggests a small, mean-spirited action rather than a major decision like firing someone.

    - **Callous** means emotionally insensitive but does not imply revenge.

13. **(b)** The correct answer is 'resolute', meaning firmly determined, which fits the context perfectly. The remaining words that are incorrect are also defined below:

    - **Obstinate** means stubborn in a negative way, which doesn't fit well in the sentence.

    - **Relentless** means persistent but often has a slightly aggressive tone, which may not be ideal here.

    - **Unwavering** is close in meaning but does not fully capture the **active pursuit** of success as well as "resolute" does.

14. **(a)** A **florist** is a person who works with **flowers**. Similarly, a **chef** is a person who works with **food**. Other options do not have the same relationship; for example, an **author writes books**, but they don't necessarily "work with" them in the same way a florist works with flowers.

15. **(c)** A **sentinel** is someone who **watches or keeps guard**. Similarly, a **guard** is someone who **protects**. Other

options don't reflect the same duty-based relationship (e.g., a soldier fights in a battle, but their role is broader than just battle itself).

16. (c)
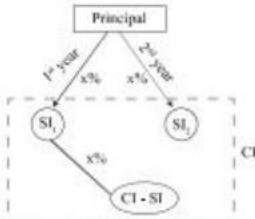
CI- SI = $16560 - 14400 = ₹2160$

SI for 1 year $= \dfrac{14400}{2} = ₹7200$

Rate % $= \dfrac{2160}{7200} \times 100$

$= \boxed{30\%}$

Principal $= \dfrac{7200}{30} \times 100$

$= \boxed{₹24,000}$

17. (b) $x + y + z = 850$

x is reduced by 100, y is reduced by 25 and z is reduced by 50, than:

$x : y = 1 : 2$

$y : z = 5 : 6$

ATQ

$x' : y' = 1 : 2 \Rightarrow x' = \dfrac{1}{2} y'$

$y' : z' = 5 : 6$

$\Rightarrow y' = \dfrac{5}{6} z'$

$x' = \dfrac{1}{2} \times \dfrac{5}{6} z'$

$= \dfrac{5}{12} z'$

$x' = \dfrac{5}{12} z'$

$y = \dfrac{5}{6} z'$

$\dfrac{5}{12} z' + 100 + \dfrac{5}{6} z' + 25 + (z' + 50) = 850$

$\dfrac{9}{4} z' + 175 = 850$

$z' = 300$

$x' = \dfrac{5}{12} z' \Rightarrow \dfrac{5}{12} \times 300 = 125$

$y' = \dfrac{5}{6} z' \Rightarrow \dfrac{5}{6} \times 300 = 250$

$x = x' + 100 \Rightarrow 125 + 100 = 225$

$y = y' + 25$

$\Rightarrow 250 + 25 = 275$

$x + y = 225 + 275 = \boxed{500}$

18. (a) $\log a + \log b - \log c$

$= \log \left(\dfrac{a \times b}{c} \right)$

Here, a $= 87600$, b $= 23100$, log c $= 8 = \log_{10} 10^8$

$\Rightarrow c = 10^8$

$\therefore \log 87600 + \log 23100 - 8$

$= \log \left(\dfrac{87600 \times 23100}{10^8} \right)$

$= \log \left(\dfrac{87600}{10^4} \times \dfrac{23100}{10^4} \right) = \log (8.76 \times 2.31)$

$= \log 8.76 + \log 2.31$

19. (d) Let the expenditure of December be x

$3200 \times 6 + 3000 + 3600 + 3900 + 4200 + \dfrac{x}{2} + x$

$= 3200 \times 12$

$33900 + \dfrac{x}{2} + x = 38400$

$\dfrac{2x + x}{2} = 4500$

$3x = 9000$

$x = 3000$

November $= \dfrac{x}{2} = \dfrac{3000}{2} = ₹1500$

20. (b)
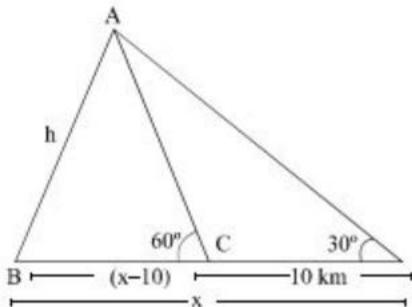
In △ABC

$$\frac{AB}{BC} = \tan 60°$$

21. (c) Total cost price of 1500 articles = 1500 × 120 paisa

= 180000 paisa = ₹1800

Profit is 180% of CP = $1800 \times \frac{180}{100}$ = ₹3240

Selling price of 1 article = $\frac{3240}{1200}$ = ₹2.7

240 articles got spoilt and remaing sold at:

= (1500 − 240 − 1200) × 2.7

= 60 × 2.7 = 162

Actual profit% = $\frac{₹(3240+162)-1800}{1800} \times 100$

= $\frac{1602}{1800} \times 100 = 89\%$

22. (a) (30 × 102) − 10 = 3050

(5 × 8) − 10 = 30

(5 × 3) − 10 = 5

(8 × x) − 10 = 102

8 × x = 112

x = 14

23. (b) Probability = $\frac{\text{Non - green combinations}}{\text{Total combinations}}$

= $\frac{6_{c_2}}{13_{c_2}} = \frac{(6 \times 5)/2}{(13 \times 12)/2}$

= $\frac{15}{78} = \boxed{\frac{5}{26}}$

24. (a) Amount = $P\left(1 + \frac{R}{100}\right)^r$

= $45000\left(1 + \frac{6}{100}\right)\left(1 + \frac{7}{100}\right)\left(1 + \frac{8}{100}\right)\left(1 + \frac{9}{100}\right)$

= 45000 × 1.06 × 1.07 × 1.08 × 1.09

= 60083.11 ~ 60,000

25. (a) Let the cost price be 100x

ATQ

Selling price = $100x \times \frac{130}{100}$

= 110.5x

Since, the cost price of 1 kg (1000g) is 100x, the cost

price of 800g = $\frac{100x}{1000} \times 800 = 80x$

Profit percentage = $\frac{(110.5-80)x}{80x} \times 100$

= $\boxed{38.125\%}$

26. (c) According to the question,
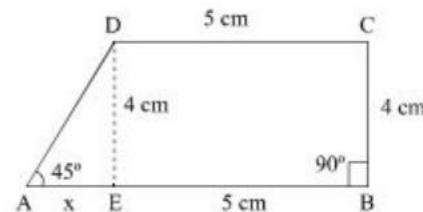
In △ADE

$\tan 45° = \frac{DE}{AE} = \tan 45° = \frac{4}{x} \Rightarrow 1 = \frac{4}{x}$

x = 4

Area of trapezion = $\frac{1}{2}[AB + DC] \times DE$

= $\frac{1}{2}[9 + 5] \times 4 = 28 \text{ cm}^2$

27. (c) Original ratio of selected and unselected students

= 3x : 2x

Ratio when 100 students less had applied and 50 less
ratio of selected and unselected = 7 : 4

According to the question,

$$\Rightarrow \frac{3x-100}{2x-50}=\frac{7}{4}$$

$$\Rightarrow 12x-400=14x-350$$

$$\Rightarrow 2x=50$$

$$\Rightarrow x=25$$

$\Rightarrow$ Total no. of students who applied

$$=25\times7+100$$

$$=275+100=375$$

28. (d) Prime factorization of 21, 24, 28 = 21

$$\Rightarrow 3\times7, 24\Rightarrow2^3\times3$$

$$28\Rightarrow2^2\times7$$

L.C.M. of (21, 24, 28) = $2^3\times3\times7$

$$=8\times3\times7=168$$

Now, Divide 2000, by 168 to find the first multiple which is greater than 2000 and 3000.

$$=\frac{2000}{168}=11.90$$

Smallest number $= 11 \approx 12\times168=2016$

29. (a) Pattern of the series as shown below,

5   6   16   57   244   1245   7506

×1+1² ×2+2² ×3+3² ×4+4² ×5+5² ×6+6²
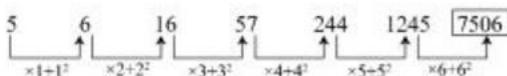
30. (a) HCF of 435, 493 and 551 kg is

HCF = 493 − 435 = 52 = $\boxed{29}\times2$

↓

H.C.F

Now,

Least no. of bags =

$$\frac{\text{Quantity of rice 1}}{\text{HCF}}+\frac{\text{Quantity of rice 2}}{\text{HCF}}$$
$$+\frac{\text{Quantity of rice 3}}{\text{HCF}}$$

$$=\frac{435}{29}+\frac{493}{29}+\frac{551}{29}$$

$$=15+17+19=51$$

31. (b) Let the number of boys = x and number of girls = y

According to the question,

Total number of boys and girls are 300

$= x+y=300$ ....(i)

Each boy gets ₹2.40 and each girl gets ₹2.80

$2.4x+2.8y=776$ .....(ii)

solving both (i) and (ii), we get

$x+y=300$

$2.4x+2.8y=776$

$$\Rightarrow \quad 2.4x+2.4y=720$$

$$2.4x+2.8y=776$$

$$\frac{-\qquad-\qquad}{-0.4y=-56}$$

$$y=\frac{56}{0.4}=140$$

Hence, total number of girls are 140

32. (d) $\sqrt{4^{6\times2}.25^{Y/2}.9Z^4}$

$$=\sqrt{4^{2(3x^2)}.5^{2(y/2)}.3^2Z^4}$$

$$=4^{3x^2}.5^{y/2}.3Z^4$$

33. (b) Percentage fall in imports in year 2021

$$=\frac{40-35}{40}\times100=\frac{5}{40}\times100=12.5\%$$

Percentage fall in imports in year 2024

$$=\frac{48-45}{48}\times100=\frac{3}{48}\times100=6.25\%$$

Percentage fall in imports in year 2023

$$=\frac{75-45}{75}\times100=\frac{30}{75}\times100=40\%$$

Percentage fall in imports in year 2020

$$=\frac{45-40}{45}\times100=\frac{5}{45}\times100=11.11\%$$

Hence, percentage fall in imports in year 2024 was minimum.

34. (d) Let the cost of orange, banana and apple be 'x', 'y' and 'z' respectively

According to the question,

$2x+3y+4z=15$ ...(1)

$3x+2y+z=10$ ...(2)

On Adding (1) & (2)

$5x + 5y + 5z = 25$

$\therefore x + y + z = 5$ ...(3)

Then the cost of 3 oranges, 3 bananas and 3 apples is on multiplying by 3 in equation (3) we get

$$\boxed{3x + 3y + 3z = ₹\,15}$$

35. (b) Alcohol in 1st glass $= \dfrac{2}{3}$; water in 1st glass $= \dfrac{1}{3}$

Alcohol in 2nd glass $= \dfrac{1}{2}$; water in 2nd glass $= \dfrac{1}{2}$

$\therefore$ In 3rd glass,

Alcohol $= \dfrac{2}{3} + \dfrac{1}{2} = \dfrac{7}{6}$;

water $= \dfrac{1}{3} + \dfrac{1}{2} = \dfrac{5}{6}$

$\therefore$ Required ratio $= \dfrac{7}{6} : \dfrac{5}{6} = 7 : 5$

36. (c) 2nd October $\rightarrow$ Monday

2nd November $\rightarrow ?$

Total number of odd days from 2nd october to 2nd November

Month $\rightarrow$ October + November

Odd days $\rightarrow 29 + 2 = \dfrac{31}{7} = 3$ days

$\therefore$ Required day = Monday +3 = Thursday

37. (a) CASE I

If M is telling the truth, then

M → (true), B → (wrong), V → (right) [Not possible]

CASE II

If B is telling the truth then,

B → (true), M → (false), V → (false)

CASE III

If V is telling the truth

V → (true), M → (true), B → (wrong) [Not possible]

Hence, in case II, M is involved in the Robbery.

38. (c) Time on Monday in the clock - 3 : 00 AM

From 3:00 Am on Monday to 7:30 PM on Tuesday, total number of hours gains

$= 24 + 16.5 = 40.5$ hours

total time gains $= 40.5 \times 2$ minutes

$= 81$ minutes $= 1$ hour 21 minutes

7 hours 30 minutes (PM)

Required time = 1 hours 21 minutes

$= 8$ hours 51 minutes

$= 8 : 51$ PM

39. (b) Pattern of the series as follows,
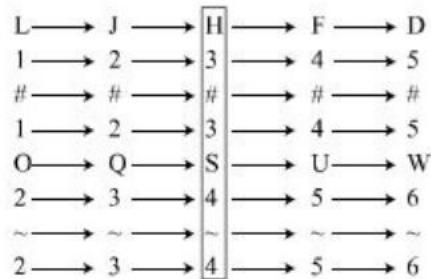
40. (a) According to the question,
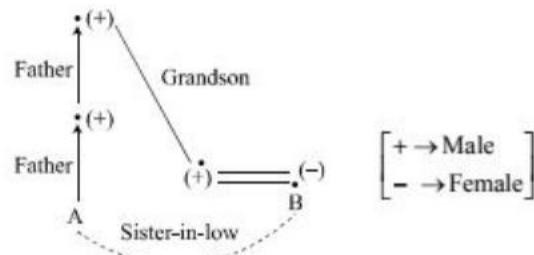
So, B is the sister-in-low of A.

41. (a) As, 'Narmada Bachao' Andolan was initiated by 'Medha Patkar'.

Similarly, 'Bhudan Andolan' was initiated by 'Vinoba Bhava'.

42. (a) Pattern of the series is as shown below
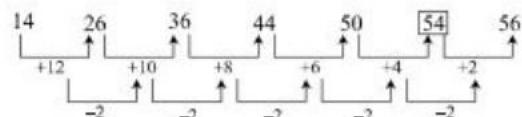
43. (d) Assumption I : for the company to implement a new policy effectively, it is always assumed that the notice will be read by employees.

Hence, this assumption is implicit the statement

Assumption II : By implementing facial recognition it assumed that the company system will improve effecicncy, security and reduce fraud.

So, this assumption is also implicit the statement.

Hence, both the assumption will implicit the statement

44. (c) According to the statement, due to Earthquake there was Tsunami and due to Tsunami there were death and property loss.

So, the effects of this incident were, casualties, property loss and Death.

45. (b) According to the statements, Venn diagrams are as follows,
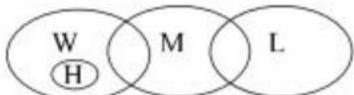
Conclusion I (√) II (×) III (√)

Hence, only conclusion I and III follows.

46. (b) Give time → 5 : 55 PM

Here, Hour = 5, minutes = 55

$$\text{Angle} = \left| \frac{11}{2} \times \text{minutes} - 30 \times \text{Hour} \right|^{\circ}$$

$$= \left| \frac{11}{2} \times 55 - 30 \times 5 \right|^{\circ}$$

$$= |302.5 - 150|^{\circ} = 152.50$$

47. (b) 19 December 2007 — Sunday

8th July 2007 — ?

Total number of odd days from 8th July 2007 to 19 December 2007

Months → July + August + Sep. + Oct. + Nov.+ Dec.

odd days → 2 + 3 + 2 + 3 + 2 + 5

$$= \frac{17}{7} = 3 \text{ days.}$$

∴ Required day = Sunday – 3

= Thursday

48. (c) Number of strikes by cuckoo at 6' O clock = 6

Time taken to strike at 6' O clock = 10 seconds

Time per strike $= \dfrac{10}{6} \sim 1.67$ sec per strike

∴ Time taken to cuckoo at 10' O clock

= 1.67 × 10 seconds

= 16.7 seconds

Sol. (49-50): Family Tree
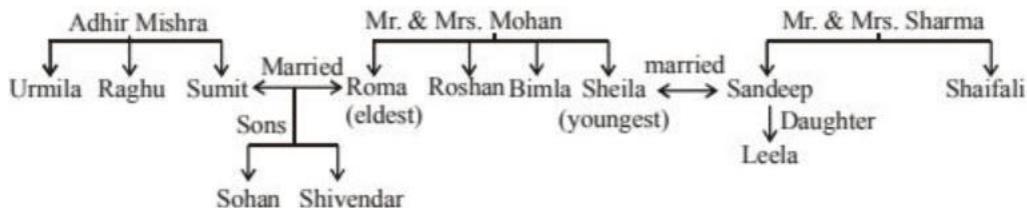
49. (b) Sumit's mother-in-law = Mrs. Mohan.

50. (c) As, Sohan is son of Sumit and Sumit is son of Adhir Mishra. So, surname of Sohan is Mishra.

51. (a) The movements of Raj are as shown n fig (X to Y, Y to A, A to B , B to C).
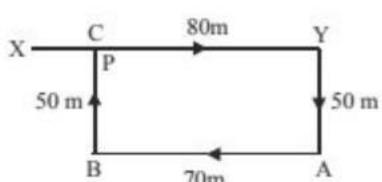
∴ Raj's distance from the starting point

= XC = (XY – YC) = (XY – BA)

= (80 – 70) m = 10 m.

Sol. (52-53) : Descending order of their ages and heights is as given below:

Age Nikku > Rekha = Megha > Parul > Keshav

or Nikku > Rekha = Megha > Keshav > Parul

Height Rekha > Keshav > Nikku > Parul > Megha.

52. (d) Either Rekha or Megha will be in the third position.

53. (d) Keshav will be the fourth position.

54. (d) The second, fifth and eighth letters of the word CARETAKER are A, T and E respectively. The words formed are EAT, ATE and TEA.

55. (c) The persons satisfying the given conditions are denoted by regions which lie inside the smaller triangle or the circle but outside the bigger triangle i.e. A and E.

56. (a) The person satisfying the given conditions are represented by regions which are common to the bigger triangle and the circle but lies outside the rectangle i.e. B and C.

57. (c)
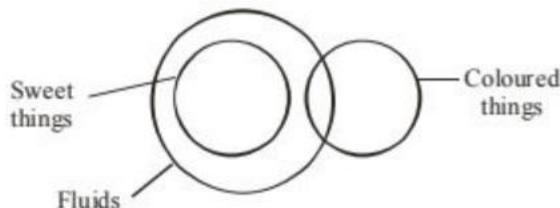
So, some fluids are sweet things and some sweet things are flaids.

58. (d) The following arrangement is possible.

$$\begin{pmatrix} Cabin, \\ Neem \end{pmatrix} \begin{pmatrix} well, \\ mango \end{pmatrix}$$

| Coconut | Lemon |
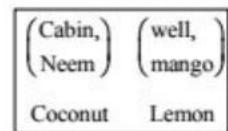
Neem tree and Lemon tree can be seen that diagonally a opposite to each other in the plot.

59. (b) ITNIETAM → INTIMATE

using given alphabet a logical word is created Similarly

TREVNIETARBI → INVERTIBRATE

B 2 C D, D E 3 F, [   ] H 5 I J, J 6 K L

60. (d) Clearly, the given letters, when arranged in the order 5, 1, 2, 3, 4 from the word 'TRACE'.