

SNAP Mock Test Paper -1

INSTRUCTION S:

- Mock TestPaper contains 60 questions.
- Every question has four alternatives, of which only one is correct.
- Time: 60 minutes | Max. Marks: 60

SECTION-I: GENERAL ENGLISH

1. Complete the sentence with appropriate words and choose the correct option:

1. The government has invited applications for the monthly assistance given for indigent (A)/indigenous (B) and senior artistes.
 2. A seminar on 'Cities and climate change' has stressed the need for judicious (A)/judicial (B) choice of building materials as they have serious implications on the environment.
 3. Despite such a profit, it is insidious (A)/invidious (B) on their part to hesitate to give 10 per cent of production to public distribution system.
 4. Unmoved by the impetuous (A)/vehement (B) opposition from his own party, railway minister stood by the passenger fare hike, saying he had pulled the state transporter out of deep trouble.
- (a) AABB (b) BABA
(c) ABAB (d) BBAA

DIRECTIONS (Qs. 2-3): In the following questions, a sentence has been given in Active (or Passive) Voice. Out of the four alternatives suggested select the one which best express the same sentence in Passive (or Active) voice.

2. Mona was writing a letter to her father.

- (a) A letter was written to her father by Mona. (b) A letter has been written to her father by Mona.
(c) A letter was being written by Mona to her father. (d) A letter was written by Mona to her father.

3. Women like men to flatter them.

- (a) Men are liked by women to flatter them. (b) Women like to be flattered by men.
(c) Women like that men should flatter them. (d) Women are liked to be flattered by men.

DIRECTIONS (Qs. 4-7): In each of these questions, a sentence has one blank, each blank indicating that something has been omitted. Beneath the sentence are given four words. Choose

the word that best fits the meaning of the sentence as a whole.

4. The cost of this operation has _____ our small store of money.

- | | |
|---------------|--------------|
| (a) destroyed | (b) damaged |
| (c) depleted | (d) affected |

5. He had taken the shocking news quietly, neither _____ fate nor uttering any word of bitterness.

- | | |
|---------------------|---------------------|
| (a) submitting to | (b) railing against |
| (c) conspiring with | (d) dissenting from |

6. Criticism that tears down without suggesting areas of improvement is not _____ and should be avoided if possible.

- | | |
|------------------|---------------|
| (a) constructive | (b) mandatory |
| (c) pertinent | (d) sagacious |

7. Be just _____ fear nothing.

- | | |
|---------|-----------|
| (a) but | (b) while |
| (c) and | (d) until |

8. This question has a set of sentences. Identify the arrangement of these sentences, which makes a logical sequence.

A. Valmik Thapar traces the cult of the tiger and provides a cache of interesting stories and beliefs connected with this magnificent animal.

B. In all the countries where it is found, the respect in which it is held owes in large measure to the fear it arouses.

C. "In religion, ritual and art, the tiger holds a place of unmatched eminence because of the sacred status it enjoys".

D. The tiger's immense power and strength give it an aura unmatched in the animal world.

E. The mixture of adoration and fear has led to a wealth of legends and myths.

F. He traces man's relationship with the tiger in a journey from the Siberian forests of Eurasia to the forests of Indonesia.

- | | |
|------------|------------|
| (a) ABDECF | (b) ADBECF |
| (c) ABCDEF | (d) ABEDCF |

9. In the given question, a part of the sentence is underlined/italicized. Beneath the sentence, four different ways of phrasing the part are indicated. Choose the best alternative.

In Southern Bengal, many banyan trees are planted at the end of a village or at the border of a district, for providing excellent shade at summers, and shelter during winter from the bitter winds.

- | | |
|--|---|
| (a) to provide excellent shade in summer and, in winter, shelter from the bitter winds | (b) providing excellent shades of summer, and shelters of bitter winter winds |
| (c) in order to provide shade in excellent summer, and shelter from the winds of bitter winter | (d) for providing excellent shades at summer, and shelter from bitter winds in summer |

10. In the following question, a word is given for which a usage is provided. Out of the given alternatives, choose the one which best expresses the meaning of the given word.

EGREGIOUS: A generation ago, parents would not tolerate such egregious behaviour, but nowadays they just smile and say that it's just a phase, all adolescents go through.

- | | |
|--------------|-----------------|
| (a) Indolent | (b) impertinent |
| (c) unwanted | (d) outrageous |

DIRECTIONS (Qs. 11-12): In the following questions, choose the word opposite in meaning to the given word / answer as directed.

11. Grotesque (Antonym)

- | | |
|---------------|------------|
| (a) Natural | (b) Odd |
| (c) Whimsical | (d) Sinful |

12. Choose the word NOT having a prefix:

- | | |
|----------------|--------------------|
| (a) Disagree | (b) Disconnect |
| (c) Discipline | (d) Discrimination |

13. Identify the correct figure of speech:

Most collectors of coins would give the Earth to own one of the copper coins issued by Mohammed Bin Tughlaq.

- | | |
|---------------|---------------------|
| (a) Hyperbole | (b) Personification |
| (c) Metaphor | (d) Oxymoron |

14. Complete the sentence with appropriate words and choose the correct option:

- As proof of his prophetic (A)/pathetic (B) powers, extracts from his writings were posted on the internet and reproduced by editors around the world.
- Celebrating its 'Arab Spring' and free elections, Egypt is all set to emulate (A)/imitate (B) some of the best election management practices of India.
- They accused him of trying to foment (A)/ferment (B) a revolution and threw him in jail for treason.
- Many of them are still shy and diffident (A)/dissident (B) but most walk tall and earn good money as doctors, engineers, nurses, teachers and businessmen.

- | | |
|----------|----------|
| (a) BBAA | (b) ABAB |
| (c) AAAA | (d) BBAB |

15. Which one of the following alternatives has the correct spelling?

- | | |
|---------------|-----------------|
| (a) Continuum | (b) Continuem |
| (c) Contuneim | (d) Continueiam |

SECTION-II: QUANTITATIVE AND DATA INTERPRETATION & SUFFICIENCY

16. Father is aged three times more than his son Ronit. After 8 years, he would be two and a half times of Ronit's age. After further 8 years, how many times would he be of Ronit's age?

- | | |
|--------------------------|--------------------------|
| (a) 2 times | (b) $2\frac{1}{2}$ times |
| (c) $2\frac{3}{4}$ times | (d) 3 times |

17. A person spends $\frac{1}{3}$ of the money with him on clothes, $\frac{1}{5}$ of the remaining on food and $\frac{1}{4}$ of the remaining on travel. Now, he is left with Rs 100. How much did he have with him in the beginning?

- | | |
|------------|------------|
| (a) Rs 200 | (b) Rs 250 |
| (c) Rs 300 | (d) Rs 450 |

18. In an examination, a pupil's average marks were 63 per paper. If he had obtained 20 more marks for his Geography paper and 2 more marks for his History paper, his average per paper would have been 65. How many papers were there in the examination?

- | | |
|--------|--------|
| (a) 8 | (b) 9 |
| (c) 10 | (d) 11 |

19. John sold a fan at a loss of 7%. If he had sold it for Rs 48 more, he would have gained 5%. Find the cost price of the fan.

- | | |
|------------|------------|
| (a) Rs 350 | (b) Rs 480 |
| (c) Rs 240 | (d) Rs 400 |

20. Two coal loading machines each working 12 hours per day for 8 days handle 9,000 tonnes of coal with an efficiency of 90%. While 3 other coal loading machines at an efficiency of 80% set to handle 12,000 tonnes of coal in 6 days. Find how many hours per day each should work.

- | | |
|------------|------------|
| (a) 15 hrs | (b) 16 hrs |
| (c) 18 hrs | (d) 20 hrs |

21. A vessel is fully filled with a special liquid. Four litres of liquid is drawn out of this vessel and is replaced with water. If the ratio of the special liquid to the water becomes 1 : 2, then what is

the capacity of the vessel?

- (a) 8 litres
- (b) 10 litres
- (c) 6 litres
- (d) 14 litres

22. The difference between compound interest and simple interest on a sum for 2 years at 10% per annum, when the interest is compounded annually is Rs 16. If the interest were compounded half-yearly, the difference in two interests would be:

- (a) Rs 24.81
- (b) Rs 26.90
- (c) Rs 31.61
- (d) Rs 32.40

23. A can do a piece of work in 9 days and B in 18 days. They begin together, but A goes away 3 days before the work is finished. The work lasts for:

- (a) 6 days
- (b) 8 days
- (c) 12 days
- (d) 10 days

24. The jogging track in a sports complex is 726 metres in circumference. Pradeep and his wife start from the same point and walk in opposite directions at 4.5 km/h and 3.75 km/h respectively. They will meet for the first time in:

- (a) 5.5 min
- (b) 6.0 min
- (c) 5.28 min
- (d) 4.9 min

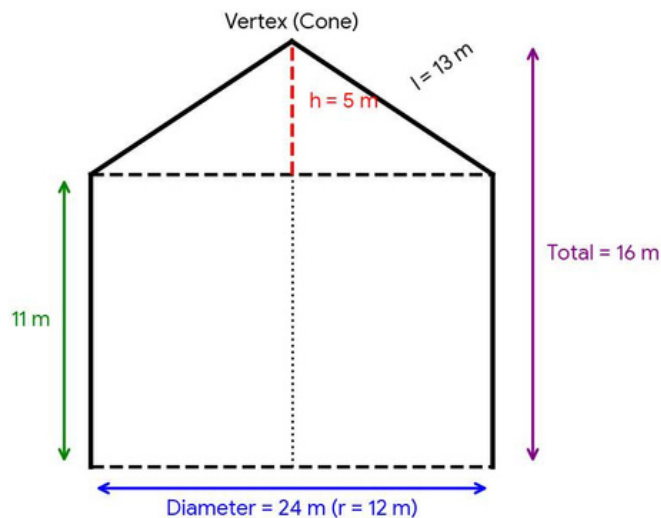
25. Find the value of:

$$1 / [1 + x^{(b-a)} + x^{(c-a)}] + 1 / [1 + x^{(a-b)} + x^{(c-b)}] + 1 / [1 + x^{(b-c)} + x^{(a-c)}] = ?$$

- (a) 0
- (b) 1
- (c) $x^{(a-b-c)}$
- (d) None of these

26. A tent is in the form of a right circular cylinder surmounted by a cone. The diameter of the cylinder is 24 m. The height of the cylindrical portion is 11 m while the vertex of the cone is 16 m above the ground. The area of the canvas required for the tent is:

Tent Model (Cylinder surmounted by Cone)



- (a) 1300 m^2
(c) 1310 m^2

- (b) 1320 m^2
(d) 1330 m^2

27. A programmer noted the results of attempting to run 20 programs. The results showed that 2 programs ran correctly in the first attempt, 7 ran correctly in the second attempt, 5 ran correctly in the third attempt, 4 ran correctly in the fourth attempt and 2 ran correctly in the fifth attempt. What is the probability that his next programme will run correctly on the third run?

- (a) $1/4$
(c) $7/20$

- (b) $1/5$
(d) $1/10$

28. If the numerator and the denominator of a proper fraction are increased by the same positive quantity, then the resulting fraction is:

- (a) always greater than the original fraction
(c) always equal to the original fraction

- (b) always less than the original fraction
(d) none of these

DIRECTIONS (Qs. 29-30): Study the given table to answer the questions that follow:

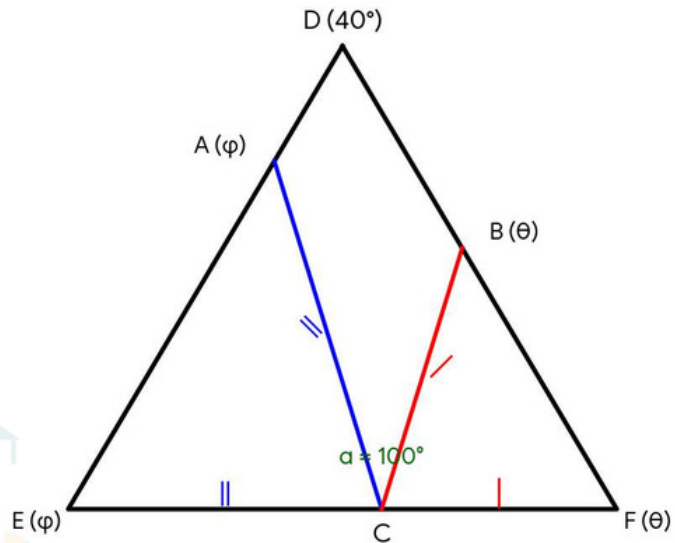
Industry	1986: No. of Sick Units (%)	1986: Bank Overdues (Rs. cr, %)	1991: No. of Sick Units (%)	1991: Bank Overdues (Rs. cr, %)
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(c) C is the smallest

(d) B is the smallest

33. In triangle DEF shown below, points A, B, and C are taken on DE, DF and EF respectively such that $EC = AC$ and $CF = BC$. If angle D = 40 degrees, then what is angle ACB in degrees?

Triangle DEF Geometry (Q33)

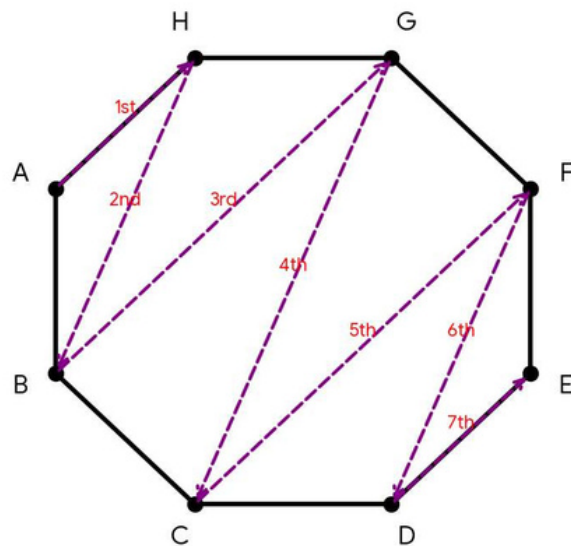


- (a) 100°
(c) 102.5°

- (b) 97°
(d) None of these

34. There is a regular octagon ABCDEFGH. A frog is at vertex A. It can jump on to any of the vertices except the exactly opposite vertex. The frog visits all the vertices exactly once and then reaches vertex E. How many times did it jump before reaching E?

Regular Octagon Frog Jump Path (Q34)



- (a) 7
(c) 6

- (b) $2n + 1$
(d) can't be determined

35. Two towns A and B are 100 km apart. A school is to be built for 100 students of town B and 30 students of town A. Expenditure on transport is Rs. 1.20 per km per student. If the total expenditure on transport by all 130 students is to be as small as possible, then the school should be built at:

- (a) 33 km from Town A
(c) Town A

- (b) 33 km from Town B
(d) Town B

SECTION-III: ANALYTICAL & LOGICAL REASONING

36. In a certain zoo, there are 42 animals in one sector, 34 in the second sector and 20 in the third sector. Out of this, 24 graze in sector one and also in sector two; 10 graze in sector two and sector three; 12 graze in sector one and sector three. These figures also include four animals grazing in all the three sectors. If all these animals are now transported to another zoo, then find the total number of animals.

- (a) 38

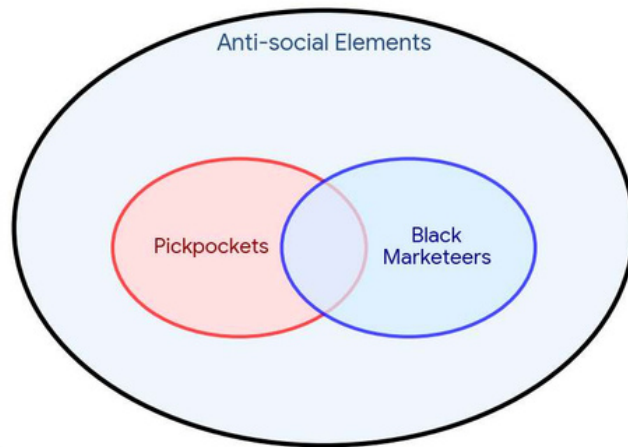
- (b) 56

(c) 54

(d) None of these

37. Which of the following diagrams best shows the relation between anti-social elements, pickpockets and black marketeers?

Venn Diagram Representation (Q37 - Option A)



(a) Two intersecting circles inside a larger circle

(b) Three concentric circles

(c) Three mutually disjoint circles

(d) Three intersecting circles overlapping each other

38. Thirty-six vehicles are parked in a parking in a single row. After the first car, there is one scooter. After the second car, there are two scooters. After the third car, there are three scooters and so on. Work out the number of scooters in the second half of the row.

(a) 10

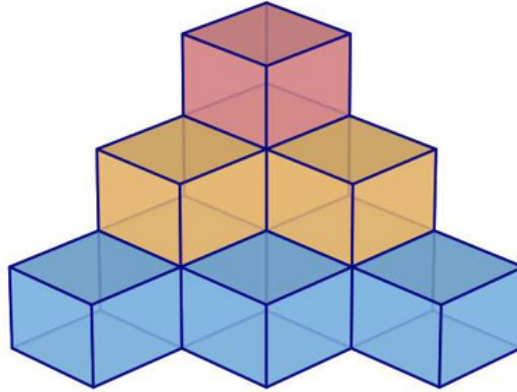
(b) 12

(c) 15

(d) 17

39. How many cubes are there in the following figure?

Cube Pyramid (1 + 3 + 6 = 10 Cubes) (Q39)



- (a) 6
(c) 12

- (b) 10
(d) 8

DIRECTIONS (Qs. 40-41): Answer on the basis of the following data:

A team of 3 reporters is to be chosen from amongst two groups. Group X has members M, N, O and P, and Group Y has members A, B and C. The selected team must have members from both groups.

- O refuses to work, unless A works.
- If M works then B works.
- C will not work, if M works.
- If O does not work, M will not work.

40. Which of the following teams cannot be selected?

- (a) MOA only
(b) MBC only
(c) NPC only
(d) MOA, MBC and NPC

41. Who else can be there in the team of which A is a member?

- (a) AB
(b) ON

(c) OPC

(d) NB

DIRECTIONS (Qs. 42-43): A goldsmith has five gold rings, each having a different weight. They are labelled as D, E, F, G and H.

Statement 1: Ring D weighs twice as much as ring E.

Statement 2: Ring E weighs four and a half times as much as ring F.

Statement 3: Ring F weighs half as much as ring G.

Statement 4: Ring G weighs half as much as ring H.

Statement 5: Ring H weighs less than ring D but more than ring F.

42. If these rings are sold according to their weights, which ring will fetch the highest value in rupees?

(a) D

(b) G

(c) F

(d) H

43. Ring H is heavier to which of the following two rings?

(a) G and E

(b) G and F

(c) D and F

(d) D and E

44. The diagram below is a 4x4 'magic square' in which all rows, columns and both diagonals add up to 34. Find $x \times y$.

| 1 | 8 | 13 | 12 | |

14 | 11 | 2 | 7 | | 4 |

x | 16 | y |

| 15 | 10 | 3 | 6 |

(a) 77

(b) 60

(c) 45

(d) 63

DIRECTIONS (Qs. 45-46): In each question below, a statement is followed by three conclusions. State whether the conclusions are implicit in the given statement.

45. Statement: The classic 'My Fair Lady' was based on the play Pygmalion by G.B. Shaw.

(I) My Fair Lady was the screen adaptation of the play.

(II) G.B. Shaw was a playwright.

(III) My Fair Lady tells the story of Liza Doolittle and Henry Higgins.

(a) Only I is implicit

(b) Only II is implicit

(c) I and III are implicit

(d) None is implicit

46. Statement: The Unit Trust of India (UTI) informed SEBI that it would now have to cut the

interest rates in its assured return monthly income plans.

(I) Assured return is a contradiction as far as UTI is concerned.

(II) Investors would feel cheated if that happens.

(III) SEBI is a regulatory body.

(a) Only I is implicit

(b) Only II is implicit

(c) I and III are implicit

(d) None is implicit

47. A watch reads 4:30 O'clock. If minute hand points towards the East, in which direction does the hour hand point?

(a) North-East

(b) South-East

(c) North-West

(d) North

48. Ram walks 10 m south from his house, turns left and walks 25 m, again turns left and walks 40 m, then turns right and walks 5 m to reach the school. In which direction is the school from his house?

(a) South-west

(b) North-east

(c) East

(d) North

49. If only the consonants in the word MEAT are changed in such a way that each of them becomes the next letter in the English alphabet and the remaining letters are kept unchanged, then how many meaningful words can be formed with the new set of letters using each letter only once in a word?

(a) None

(b) Two

(c) Three

(d) One

50. Malay Pratap is on 13th position from the starting and on 17th position from the end in his class. He is on 8th position from the starting and on 13th position from the end among the students who passed. How many students failed?

(a) 7

(b) 8

(c) 9

(d) Cannot be determined

51. Four alternatives are given, out of which three are alike in a certain way while one is different. Choose the odd one.

(a) ABDGK

(b) CDFIM

(c) BCEHL

(d) EFGIK

52. What is the missing element in the sequence represented by the question mark?
P3C, R5F, T8I, V12L, ?

(a) Y17O

(b) X17M

(c) X170

(d) X160

DIRECTIONS (Qs. 53-54): In each of the following questions, a related pair of words is followed by four pairs of words. Select the pair that best expresses a relationship similar to that expressed in the original pair.

53. AUTHOR : MANUSCRIPT ::

(a) optician : spectacles

(b) engineer : bridge

(c) architect : blueprint

(d) doctor : stethoscope

54. LIBERTINE : IMMORALITY ::

(a) victim : depravation

(b) miser : selfishness

(c) altruist : selflessness

(d) policeman : law

55. In a certain code, CAT is written as SATC and DEAR is written as SEARD. How would SING be written in that code?

(a) GNISS

(b) SINGS

(c) SGNIS

(d) BGINS

56. My friend and I started walking simultaneously towards each other from two places 100 m apart. After walking 30 m, my friend turns left and goes 10 m, then he turns right and goes 20 m and then turns right again and comes back to the road on which he had started walking. If we walk with the same speed, what is the distance between us at this point of time?

(a) 50 m

(b) 20 m

(c) 30 m

(d) 40 m

57. An application was received by inward clerk in the afternoon of a week day. Next day he forwarded it to the table of the senior clerk, who was on leave that day. The senior clerk put up the application to the desk officer next day in the evening. The desk officer studied the application and disposed off the matter on the same day i.e., Friday. Which day was the application received by the inward clerk?

(a) Monday

(b) Wednesday

(c) Tuesday

(d) Previous week's Saturday

DIRECTIONS (Qs. 58-60): Read the information carefully and answer the questions that follow:

The tourism department has organised 4 hours sightseeing tours in the city of Mumbai. The department operates 7 buses marked alphabetically as A, B, C, D, E, F and G.

•From Monday to Friday, the first bus leaves at 8:00 a.m. sharp. Subsequent buses leave at intervals of 45 minutes and 30 minutes alternatively.

- On Saturday and Sunday, the first bus leaves at 7:30 a.m. and others follow regularly after a gap of one hour each.
- Bus 'E' leaves immediately after 'A' and is immediately followed by 'G'.
- Bus 'C' is not followed by any other bus.
- Bus 'F' leaves immediately before 'A' but not immediately after 'D'.

58. On Sunday, when bus D completes its tour, which of the following buses will begin its tour?

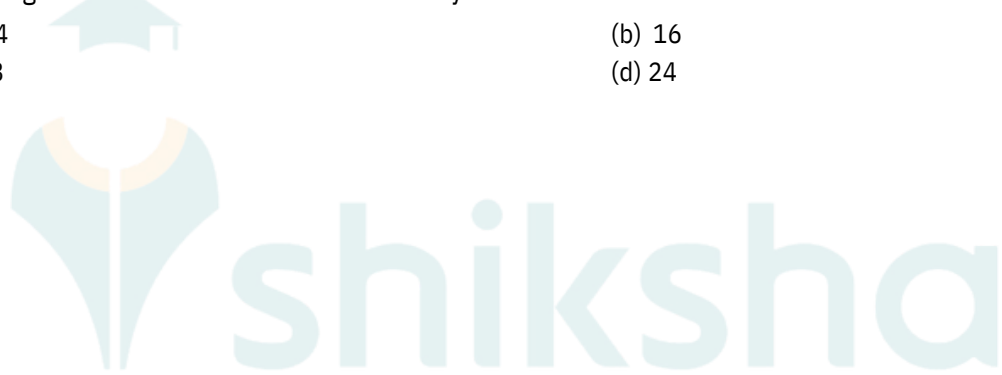
- | | |
|-------|-------|
| (a) E | (b) G |
| (c) C | (d) B |

59. If the time gap after bus A leaves on Saturday is increased by 30 minutes, then at what time will the tour of bus C be completed?

- | | |
|------------|-------------|
| (a) 3 p.m. | (b) 6 p.m. |
| (c) 7 p.m. | (d) 11 p.m. |

60. A party consists of grandmother, father, mother, four sons and their wives and one son and two daughters to each of the sons. How many females are there in all?

- | | |
|--------|--------|
| (a) 14 | (b) 16 |
| (c) 18 | (d) 24 |



ANSWER KEYS

Q.	Ans	Q.	Ans	Q.	Ans	Q.	Ans	Q.	Ans
1	(a)	7	(c)	13	(a)	19	(d)	25	(b)
2	(c)	8	(c)	14	(c)	20	(b)	26	(b)
3	(b)	9	(a)	15	(a)	21	(c)	27	(a)
4	(c)	10	(d)	16	(a)	22	(a)	28	(a)
5	(b)	11	(a)	17	(b)	23	(b)	29	(d)
6	(a)	12	(c)	18	(d)	24	(c)	30	(c)
31	(b)	37	(a)	43	(b)	49	(a)	55	(b)
32	(d)	38	(c)	44	(c)	50	(c)	56	(b)
33	(a)	39	(b)	45	(b)	51	(d)	57	(b)
34	(c)	40	(b)	46	(d)	52	(c)	58	(a)
35	(d)	41	(b)	47	(a)	53	(c)	59	(c)
36	(c)	42	(a)	48	(b)	54	(c)	60	(a)

HINTS & EXPLANATIONS (WITH DETAILED DIAGRAMS)

1. (a)

- Indigenous means native to a place, existing or produced naturally in a region; Indigent means poor, needy, lacking money, destitute.
 - Judicial means relating to a judge/court system; Judicious means showing sound judgment.
 - Insidious means gradual and subtle harm; Invidious means likely to arouse resentment or anger in others.
 - Impetuous means rash/impulsive; Vehement means showing strong feeling/forceful passion.
- Thus, the correct pair sequence is AABB.

2. (c)

The sentence is in Past Continuous tense: 'Mona was writing a letter to her father.'

Passive Voice format: Object + was/were + being + V3 + by + Subject.

Result: 'A letter was being written by Mona to her father.'

3. (b)

'Women like men to flatter them' translates in passive to 'Women like to be flattered by men.'

4. (c)

'Depleted' means reduced in number or quantity. 'Damaged' and 'destroyed' imply physical ruin, whereas money reserves get depleted.

5. (b)

'Railing against' means complaining or protesting bitterly about something. 'Neither railing against fate nor uttering any word of bitterness' correctly completes the parallel thought.

6. (a)

Criticism without constructive suggestions is destructive. Hence, 'constructive' fits best.

7. (c)

The conjunction 'and' connects the two imperative clauses appropriately: 'Be just and fear nothing.'

8. (c)

Sentence A introduces Valmiki Thapar and the cult of the tiger. Sentence B follows directly by stating the fear/respect across countries. C, D, E, F follow sequentially discussing religious status, power, legends, and journey across Eurasia to Indonesia. Correct sequence is ABCDEF.

9. (a)

'to provide excellent shade in summer and, in winter, shelter from the bitter winds' correctly uses proper prepositions ('in summer', 'in winter') and the infinitive 'to provide'.

10. (d)

'Egregious' means outstandingly bad or shocking; outrageous.

11. (a)

'Grotesque' means distorted, unnatural, or bizarre. Its exact antonym is 'Natural'.

12.(c)

'Discipline' is a root word in itself derived from discipulus, not formed by adding the prefix 'dis-'. In contrast, Dis-agree, Dis-connect, and Dis-crimination contain prefixes.

13.(a)

'give the Earth to own' is an obvious and deliberate exaggeration, which is a Hyperbole.

14.(c)

1. 'prophetic' (A) means foretelling events.
 2. 'emulate' (A) means to match or surpass a role model/standard.
 3. 'foment' (A) means to instigate or stir up revolution.
 4. 'diffident' (A) means modest or shy because of a lack of self-confidence.
- Thus, all choices are (A) -> AAAA.

15.(a)

The correctly spelled word is 'Continuum'.

16.(a)

Let Ronit's present age = x years.
Father is aged three times more than Ronit $\Rightarrow$ Father's age = $x + 3x = 4x$ years.
After 8 years: $(4x + 8) = 2.5(x + 8) \Rightarrow 4x + 8 = (5/2)(x + 8)$
 $8x + 16 = 5x + 40 \Rightarrow 3x = 24 \Rightarrow x = 8$ years.
Father's present age = 32 years.
After further 8 years (16 years from now):
Ronit's age = $8 + 16 = 24$ years.
Father's age = $32 + 16 = 48$ years.
Ratio = $48 / 24 = 2$ times.

17.(b)

Let total money = x .
Spent on clothes = $(1/3)x$; Remaining = $(2/3)x$.
Spent on food = $(1/5) * (2/3)x = (2/15)x$; Remaining = $(2/3)x - (2/15)x = (8/15)x$.
Spent on travel = $(1/4) * (8/15)x = (2/15)x$; Remaining = $(8/15)x - (2/15)x = (6/15)x = (2/5)x$.
Given: $(2/5)x = 100 \Rightarrow x = (100 * 5) / 2 = \text{Rs. } 250$.

18.(d)

Let the number of papers be n .
Total original marks = $63n$.
New marks = $63n + 20 + 2 = 63n + 22$.
New average = 65 $\Rightarrow 63n + 22 = 65n \Rightarrow 2n = 22 \Rightarrow n = 11$ papers.

19.(d)

Difference in selling prices = $5\% - (-7\%) = 12\%$ of CP.
 12% of CP = Rs. 48 $\Rightarrow \text{CP} = (48 / 12) * 100 = \text{Rs. } 400$.

20.(b)

Work formula: $(M1 * D1 * H1 * E1) / W1 = (M2 * D2 * H2 * E2) / W2$

$$(2 * 8 * 12 * 0.90) / 9000 = (3 * 6 * H_2 * 0.80) / 12000$$

$$(172.8) / 9000 = (14.4 * H_2) / 12000$$

$$0.0192 = 0.0012 * H_2 \Rightarrow H_2 = 0.0192 / 0.0012 = 16 \text{ hours/day.}$$

21.(c)

Let capacity = x litres.

After 4 litres of liquid is removed and replaced with water:

Liquid remaining = x - 4, Water = 4 litres.

$$\text{Ratio} = (x - 4) / 4 = 1 / 2 \Rightarrow 2(x - 4) = 4 \Rightarrow 2x - 8 = 4 \Rightarrow 2x = 12 \Rightarrow x = 6 \text{ litres.}$$

22.(a)

Difference between CI and SI for 2 years compounded annually = $P(r/100)^2$

$$16 = P(10/100)^2 = P(1/100) \Rightarrow P = \text{Rs. } 1600.$$

When compounded half-yearly:

Rate = 5% per half-year, Time = 4 half-years.

$$\text{Amount CI} = 1600 * (1 + 0.05)^4 = 1600 * 1.21550625 = \text{Rs. } 1944.81$$

$$\text{CI} = 1944.81 - 1600 = \text{Rs. } 344.81$$

$$\text{SI for 2 years} = (1600 * 10 * 2) / 100 = \text{Rs. } 320$$

$$\text{Difference} = 344.81 - 320 = \text{Rs. } 24.81.$$

23.(b)

Let the work last for x days. A works for (x - 3) days, B works for x days.

$$(x - 3)/9 + x/18 = 1$$

$$2(x - 3) + x = 18 \Rightarrow 3x - 6 = 18 \Rightarrow 3x = 24 \Rightarrow x = 8 \text{ days.}$$

24.(c)

$$\text{Relative speed in opposite directions} = 4.5 + 3.75 = 8.25 \text{ km/h}$$

$$8.25 \text{ km/h} = 8.25 * (1000 / 60) \text{ m/min} = 137.5 \text{ m/min.}$$

$$\text{Time to meet} = \text{Distance} / \text{Relative Speed} = 726 / 137.5 = 5.28 \text{ minutes.}$$

25.(b)

$$\text{Term 1: } 1 / [1 + x^b/x^a + x^c/x^a] = x^a / (x^a + x^b + x^c)$$

$$\text{Term 2: } 1 / [1 + x^a/x^b + x^c/x^b] = x^b / (x^a + x^b + x^c)$$

$$\text{Term 3: } 1 / [1 + x^b/x^c + x^a/x^c] = x^c / (x^a + x^b + x^c)$$

$$\text{Sum} = (x^a + x^b + x^c) / (x^a + x^b + x^c) = 1.$$

26.(b)

$$\text{Radius } r = 24/2 = 12 \text{ m.}$$

$$\text{Height of cylinder } h_1 = 11 \text{ m.}$$

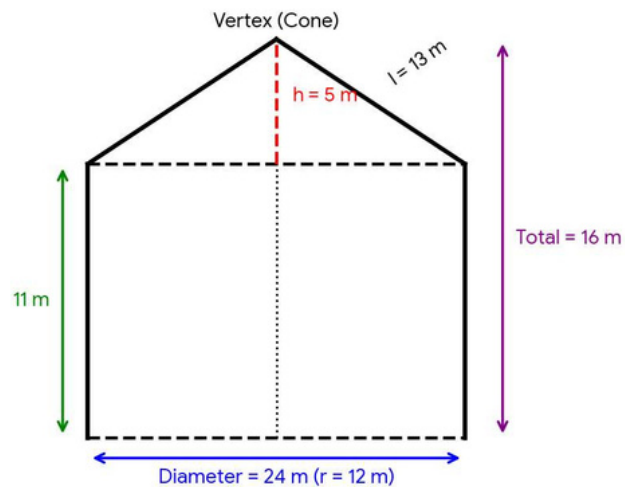
$$\text{Height of cone } h_2 = 16 - 11 = 5 \text{ m.}$$

$$\text{Slant height of cone } l = \sqrt{(12^2 + 5^2)} = \sqrt{(144 + 25)} = 13 \text{ m.}$$

Area of canvas = Curved surface area of cylinder + Curved surface area of cone

$$= 2\pi rh_1 + \pi rl = 2\pi(12)(11) + \pi(12)(13) = 264\pi + 156\pi = 420\pi = 420 * (22/7) = 1320 \text{ m}^2.$$

Tent Model (Cylinder surmounted by Cone)



27. (a)

Total attempts = 20. Favourable attempts on 3rd run = 5.

Probability = $5 / 20 = 1/4$.

28. (a)

For any proper fraction p/q where $0 < p < q$ and positive constant $c > 0$:

$(p + c)/(q + c) > p/q$.

Example: $(1 + 2)/(2 + 2) = 3/4 = 0.75 > 1/2 = 0.50$.

Hence, always greater than the original fraction.

29. (d)

From 1986 to 1991:

Cotton textiles: 4,123 $\rightarrow$ 6,057 (Increased)

Petroleum: 6,751 $\rightarrow$ 8,208 (Increased)

Paper: 1,881 $\rightarrow$ 2,634 (Increased)

All three have shown an increase. Since 'All I, II and III' is not in options, (d) None of these is correct.

30. (c)

Percentage increase in sick units:

•Electricity: $(16149 - 15308)/15308 * 100 = 5.49\%$

•Engineering: $(24941 - 19474)/19474 * 100 = 28.06\%$

•Cotton Textiles: $(6057 - 4123)/4123 * 100 = 46.90\%$

Clearly, Cotton Textiles has the maximum percentage increase.

31. (b)

$D = 0.a_1 a_2 a_1 a_2 \dots \Rightarrow 100D = a_1 a_2 . a_1 a_2 \dots$

$99D = a_1 a_2 \Rightarrow D = (a_1 a_2) / 99$.

To ensure D produces an integer, it must be multiplied by a multiple of 99.
Among the choices, $198 = 2 * 99$ is a multiple of 99.

32.(d)

Approximating the values:

$$A \approx 2 / (2^2 + 4) = 2 / 8 = 1/4 = 0.25$$

$$B \approx 3 / (3^2 + 9) = 3 / 18 = 1/6 \approx 0.167$$

$$C \approx 4 / (4^2 + 4) = 4 / 20 = 1/5 = 0.20$$

Thus, B is the smallest.

33.(a)

In $\triangle DEF$, $\angle D = 40^\circ$, let $\angle E = \varphi$ and $\angle F = \theta$. Then $\varphi + \theta + 40^\circ = 180^\circ \Rightarrow \varphi + \theta = 140^\circ$.

In isosceles $\triangle EAC$ ($EC = AC$), $\angle EAC = \angle E = \varphi \Rightarrow \angle ACE = 180^\circ - 2\varphi$.

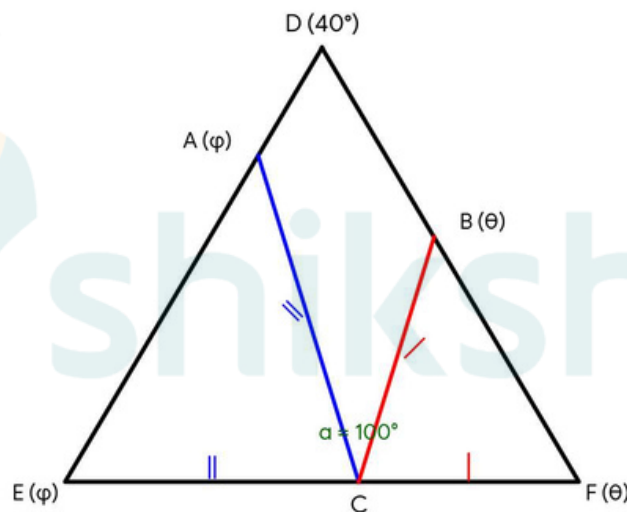
In isosceles $\triangle FBC$ ($CF = BC$), $\angle FBC = \angle F = \theta \Rightarrow \angle BCF = 180^\circ - 2\theta$.

On straight line EF: $\angle ACE + \angle ACB + \angle BCF = 180^\circ$

$$(180^\circ - 2\varphi) + \angle ACB + (180^\circ - 2\theta) = 180^\circ$$

$$\angle ACB = 2(\varphi + \theta) - 180^\circ = 2(140^\circ) - 180^\circ = 280^\circ - 180^\circ = 100^\circ.$$

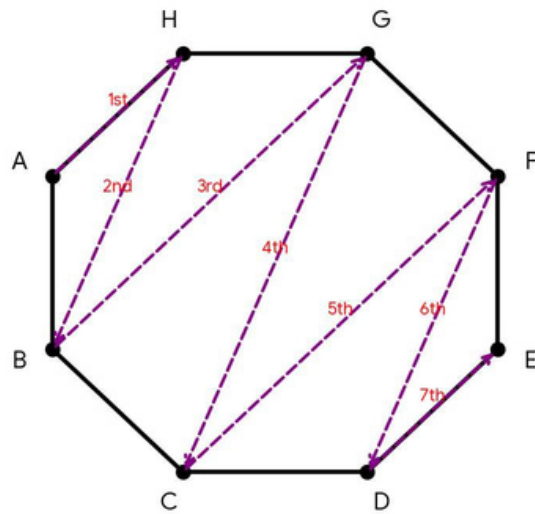
Triangle DEF Geometry (Q33)



34.(c)

The frog visits all 8 vertices exactly once. Starting at A, to avoid visiting the opposite vertex directly while visiting all intermediate vertices before landing on E, it makes exactly 6 jumps before reaching E ($A \rightarrow H \rightarrow B \rightarrow G \rightarrow C \rightarrow F \rightarrow D \rightarrow E$).

Regular Octagon Frog Jump Path (Q34)



35. (d)

Let the school be built at distance x km from Town B (so $100 - x$ km from Town A).

Total cost = $[100 * x + 30 * (100 - x)] * 1.20 = [70x + 3000] * 1.20$.

Cost is minimized when x is minimized, i.e., $x = 0$ (at Town B).

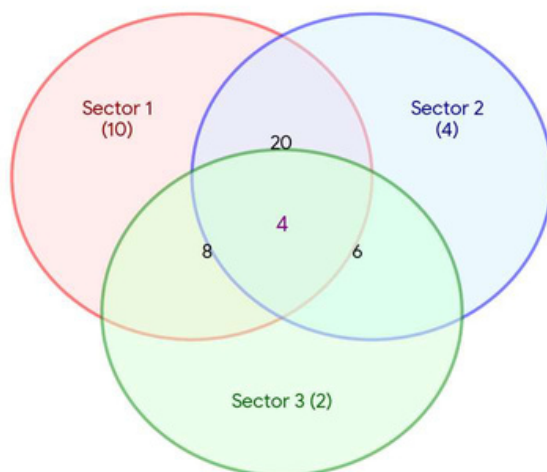
36. (c)

Using Principle of Inclusion-Exclusion:

$$n(I \cup II \cup III) = n(I) + n(II) + n(III) - n(I \cap II) - n(II \cap III) - n(I \cap III) + n(I \cap II \cap III)$$

$$= 42 + 34 + 20 - 24 - 10 - 12 + 4 = 54 \text{ animals.}$$

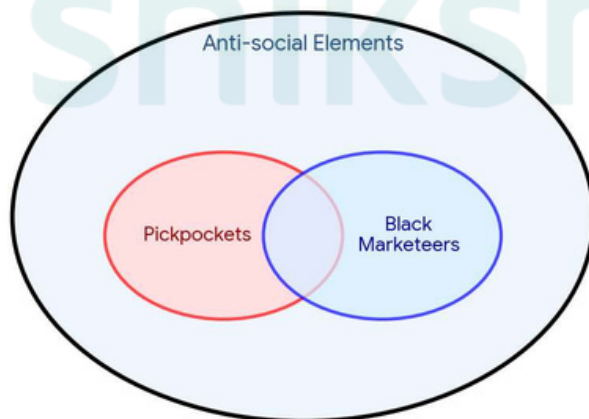
Zoo Animals 3-Sector Venn Diagram (Sol 36)



37. (a)

Both pickpockets and black marketeers are types of anti-social elements, and some pickpockets can also be black marketeers. Hence, two intersecting circles inside a large circle represents this.

Venn Diagram Representation (Q37 - Option A)



38. (c)

Pattern: C, S, C, 2S, C, 3S, C, 4S, C, 5S, C, 6S, C, 7S...

Cumulative count: $1+1 + 1+2 + 1+3 + 1+4 + 1+5 + 1+6 + 1+7 = 2 + 3 + 4 + 5 + 6 + 7 + 8 = 35 + 1(C) =$

36 vehicles.

Total cars = 8, total scooters = 28. Total vehicles = 36.

First half (18 vehicles): C, S, C, 2S, C, 3S, C, 4S, C, 3S (Total 18 vehicles -> 5 cars + 13 scooters).

Second half (18 vehicles): 2S, C, 6S, C, 7S, C (Total 18 vehicles -> 3 cars + 15 scooters).

Number of scooters in second half = 15.

39.(b)

In a 3-layer cubic pyramid:

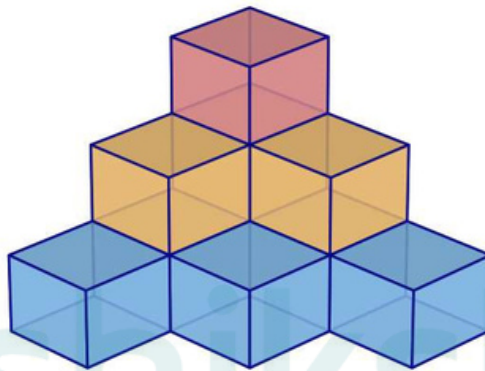
Top tier = 1 cube

Middle tier = 3 cubes (or $1+2 = 3$)

Bottom tier = 6 cubes ($1+2+3 = 6$)

Total = $1 + 3 + 6 = 10$ cubes.

Cube Pyramid ($1 + 3 + 6 = 10$ Cubes) (Q39)



40.(b)

Given conditions: If M works, then B must work, and C will NOT work. Team MBC has both M and C together, which violates 'C will not work if M works'. Hence MBC cannot be selected.

41.(b)

Since O works only when A works, when A is selected, O can be chosen with N from Group X to make team (A, O, N).

42.(a)

Let ring weights be defined relative to $F = 1$ unit.

Ring E = 4.5F = 4.5

Ring D = 2E = 9.0

Ring G = 2F = 2.0

Ring H = 2G = 4.0

Weight order: D(9.0) > E(4.5) > H(4.0) > G(2.0) > F(1.0).

Ring D is the heaviest and will fetch the highest value.

43.(b)

Ring H (4.0) is heavier than Ring G (2.0) and Ring F (1.0).

44.(c)

In Row 3: $4 + x + 16 + y = 34 \Rightarrow x + y = 14$.

In Column 2: $8 + 11 + x + 10 = 34 \Rightarrow 29 + x = 34 \Rightarrow x = 5$.

Then $y = 14 - 5 = 9$.

Value of $xy = 5 \times 9 = 45$.

45.(b)

The statement indicates that the work was based on a play by G.B. Shaw, directly implying Shaw is a playwright. Whether it was a screen adaptation or specific character names cannot be assumed strictly from the text. Hence only II is implicit.

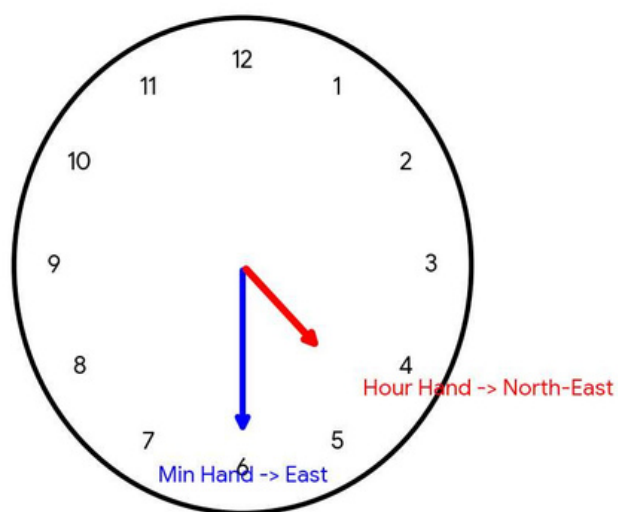
46.(d)

None of the conclusions logically and strictly follow as direct implicit assumptions of the statement alone.

47.(a)

At 4:30, the minute hand points towards 6 (South normally). If South is taken as East (a 90° counter-clockwise rotation), then the hour hand pointing between 4 and 5 (normally South-East) rotates 90° counter-clockwise to North-East.

Clock Hand Directions at 4:30 (Sol 47)



48. (b)

Coordinates tracking:

Start: (0, 0)

10 m South: (0, -10)

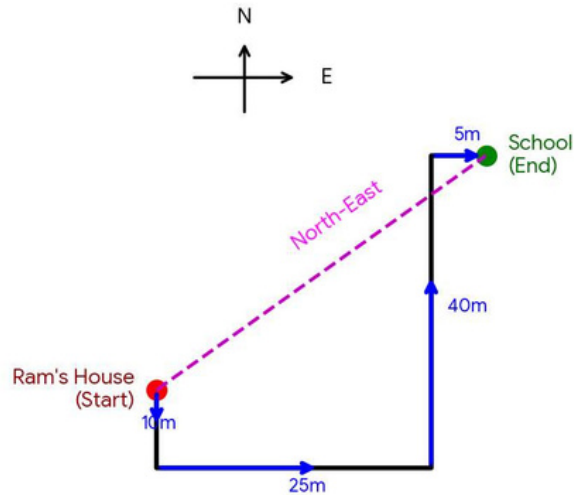
Turn left (East) 25 m: (25, -10)

Turn left (North) 40 m: (25, +30)

Turn right (East) 5 m: (30, +30)

The final position (+30 East, +30 North) is in the North-East direction from his house.

Ram's Walking Route (Sol 48)



49. (a)

In MEAT, consonants are M and T. Next letters: M $\rightarrow$ N, T $\rightarrow$ U. Vowels remain: E, A. Letters are N, E, A, U.

No meaningful standard English 4-letter word can be formed using each of {N, E, A, U} exactly once.

50. (c)

Total students in class = $13 + 17 - 1 = 29$.

Passed students = $8 + 13 - 1 = 20$.

Failed students = Total - Passed = $29 - 20 = 9$.

51. (d)

Letter gap analysis:

(a) A (+1) B (+2) D (+3) G (+4) K (Follows pattern +1, +2, +3, +4)

(b) C (+1) D (+2) F (+3) I (+4) M (Follows pattern)

(c) B (+1) C (+2) E (+3) H (+4) L (Follows pattern)

(d) E (+1) F (+1) G (+2) I (+2) K (Fails the pattern).

52. (c)

Pattern:

1st letter: P (+2) $\rightarrow$ R (+2) $\rightarrow$ T (+2) $\rightarrow$ V (+2) $\rightarrow$ X

Number: 3 (+2) $\rightarrow$ 5 (+3) $\rightarrow$ 8 (+4) $\rightarrow$ 12 (+5) $\rightarrow$ 17

2nd letter: C (+3) $\rightarrow$ F (+3) $\rightarrow$ I (+3) $\rightarrow$ L (+3) $\rightarrow$ O

Missing term = X17O.

53. (c)

An Author creates a Manuscript; similarly, an Architect creates a Blueprint.

54.(c)

A Libertine is characterized by Immorality; similarly, an Altruist is characterized by Selflessness.

55.(b)

Pattern: First letter moved to last and replaced by 'S' at the beginning.

CAT -> S + AT + C = SATC

DEAR -> S + EAR + D = SEARD

SING -> S + ING + S = SINGS.

56.(b)

Initial distance = 100 m.

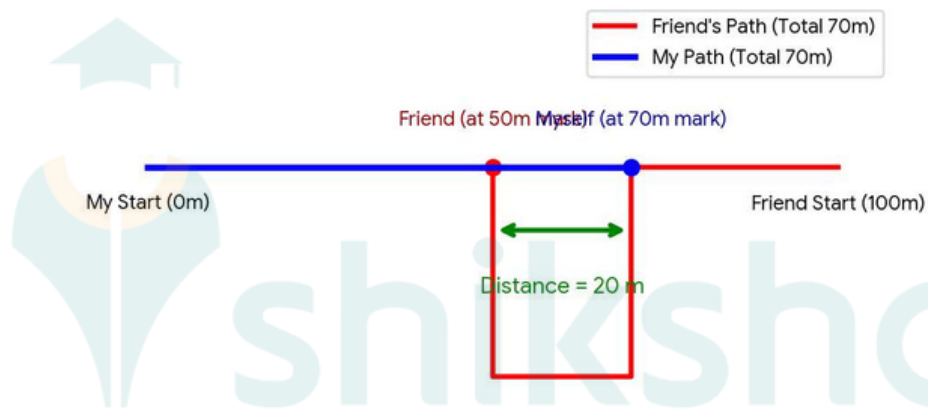
Friend walks: 30m forward + 10m left + 20m right + 10m right = 70m total travel.

Net forward progress along the track by friend = 30 + 20 = 50 m.

Since I walk at the same speed, I also travel 70 m along the straight track from the opposite side.

Remaining distance between us = $100 - (50 + 70 - 40) = 20$ m.

Meeting Track & Relative Distance (Sol 56)



57.(b)

Working backward:

- Desk officer disposed on Friday.
- Senior clerk put up application on Friday evening.
- Senior clerk was on leave the previous day (Thursday).
- Inward clerk forwarded it next day after receiving (forwarded on Thursday, received on Wednesday).

58.(a)

Bus sequence on Sunday (7:30 start, 1 hr gap): D (7:30), B (8:30), F (9:30), A (10:30), E (11:30), G (12:30), C (1:30).

Bus D completes its 4-hour tour at 11:30 a.m. At 11:30 a.m., Bus E begins its tour.

Buses	A	B	C	D	E	F	G
Order	4th	2nd	7th	1st	5th	3rd	6th
Mon -Fri	10:00 am	8:45 am	12:00 pm	8:00 am	10:45 am	9:15 am	11:15 am
Sat -Sun	10:30 am	8:30 am	1:30 pm	7:30 am	11:30 am	9:30 am	12:30 pm

59.(c)

If the gap after Bus A on Saturday increases by 30 mins (total 1 hr 30 min gap):

Bus E departs at 12:00 p.m., Bus G at 1:30 p.m., and Bus C at 3:00 p.m.

Since tour duration is 4 hours, Bus C completes its tour at 3:00 p.m. + 4 hours = 7:00 p.m.

60.(a)

Female count:

1. Grandmother = 1 (F1)

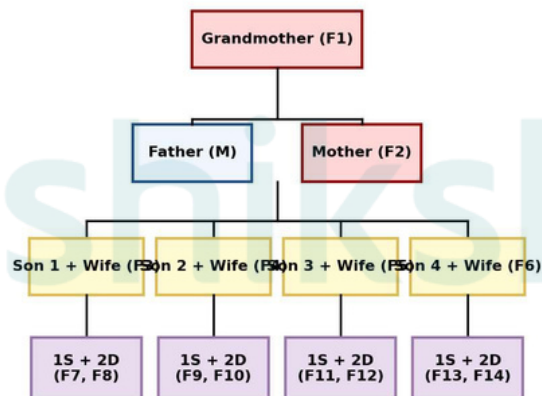
2. Mother = 1 (F2)

3. 4 Sons' wives = 4 (F3, F4, F5, F6)

4. 2 daughters to each of the 4 sons = $4 \times 2 = 8$ (F7 to F14)

Total females = $1 + 1 + 4 + 8 = 14$ females.

Family Tree Breakdown (Sol 60)



Total Females = 1 (Grandmother) + 1 (Mother) + 4 (Wives) + 8 (Daughters) = 14 Females