

**How to use this sheet.** Every question below is solved by drawing, not by reasoning in your head. Blank boxes are left after the harder sets so you can draw the Venn diagrams by hand. Target time is 40 seconds per question. Attempt the whole sheet in one sitting, then check against the key.

## Section A · Multiple choice questions

*In each question decide which conclusion or conclusions definitely follow.*

1. Statements: All strips are boards. No board is plastic. Conclusion: No strip is plastic. Does it follow?  
(1) Yes (2) No (3) Only partly (4) Cannot be determined
2. Statements: All fans are lights. All lights are bulbs. Which follows?  
(1) All fans are bulbs (2) All bulbs are fans (3) Some bulbs are not fans (4) No fan is a bulb
3. Statements: Some radars are new. All new things are costly. Which definitely follows?  
(1) All radars are costly (2) Some radars are costly (3) No radar is costly (4) All costly things are radars
4. "Some A are not B" definitely implies:  
(1) Some B are not A (2) No A is B (3) At least one A lies outside B (4) All A are outside B
5. Statements: All charts are maps. Some maps are old. Conclusion: Some charts are old.  
(1) Follows (2) Does not follow (3) Follows only if all maps are old (4) Either way
6. Statements: All towers are tall. No tall thing is short. Conclusion: Some towers being short is a possibility.  
(1) Follows (2) Does not follow (3) Follows partly (4) Cannot be determined
7. Which combination always produces a definite "No" conclusion?  
(1) All + Some (2) All + No (3) Some + Some (4) Some-not + Some
8. Statements: Some controllers are engineers. All engineers are graduates. Conclusion: Some graduates are controllers.  
(1) Follows (2) Does not follow (3) Only if all controllers are engineers (4) Cannot be determined

### Diagram space — Questions 5 and 8

*Draw the minimum-overlap diagram for each. Label every circle.*

## Section B · Assertion and reason

*Mark (a) both true and reason explains assertion, (b) both true but reason does not explain, (c) assertion true reason false, (d) assertion false reason true.*

9. **Assertion:** "Some pens are books" also means "Some books are pens".  
**Reason:** A Some statement converts freely.
10. **Assertion:** A possibility conclusion follows if it is true in at least one diagram.  
**Reason:** Possibility asks what can happen, not what must happen.
11. **Assertion:** "Some A are not B" implies "Some B are not A".  
**Reason:** All four statement forms can be converted.

**12. Assertion:** Either–or can be chosen only when both conclusions fail individually.

**Reason:** Complementary pairs cover every possible case between them.

## Section C · Match the following

Match each statement pair in Column I with its definite result in Column II.

| Column I — statement pair       | Column II — definite result |
|---------------------------------|-----------------------------|
| (a) All A are B + All B are C   | (i) No definite conclusion  |
| (b) All A are B + No B is C     | (ii) All A are C            |
| (c) Some A are B + Some B are C | (iii) Some C are A          |
| (d) Some A are B + All B are C  | (iv) No A is C              |

Answer: (a) \_\_\_\_\_ (b) \_\_\_\_\_ (c) \_\_\_\_\_ (d) \_\_\_\_\_

## Section D · Fill in the blanks

**13.** A conclusion follows only if it is true in \_\_\_\_\_ possible diagrams.

**14.** The only statement form that cannot be converted is \_\_\_\_\_.

**15.** “All A are B” combined with “No B is C” gives the definite conclusion \_\_\_\_\_.

**16.** The two complementary pairs are All  $\leftrightarrow$  \_\_\_\_\_ and Some  $\leftrightarrow$  \_\_\_\_\_.

**17.** A possibility conclusion fails only when the statements make it \_\_\_\_\_.

## Section E · True or false

**18.** Two “Some” statements can produce a definite conclusion. ( True / False )

**19.** “No A is B” can be reversed to “No B is A”. ( True / False )

**20.** A possibility conclusion fails only when the statements make it impossible. ( True / False )

**21.** Either–or can be chosen even when one conclusion already follows on its own. ( True / False )

**22.** In AAI papers, “All bins are not papers” is read as “no bin is a paper”. ( True / False )

**Diagram space — your working for  
Sections D and E**

*Sketch the diagrams that justify each answer.*

## Section F · Short answer

*Two to three sentences each.*

**23.** State the minimum-overlap principle in one sentence and explain why it matters.

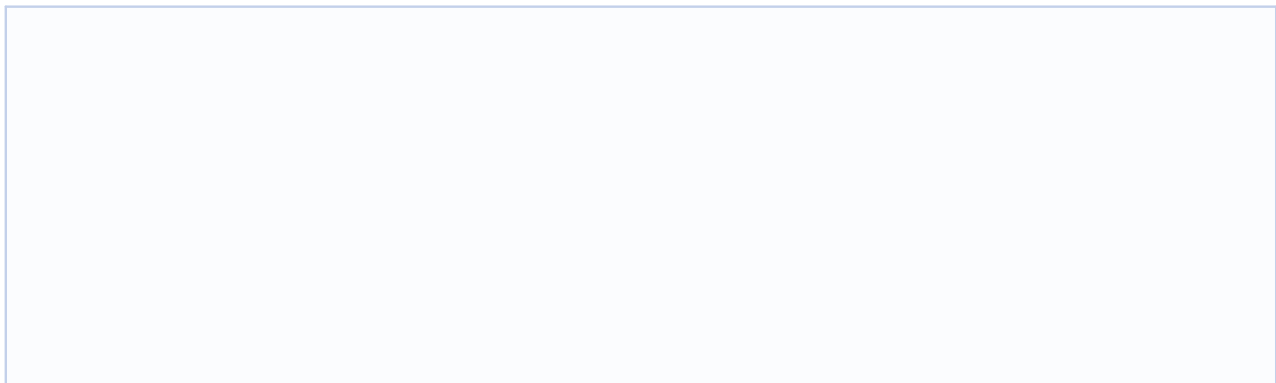
24. Write both complementary pairs and give one example of each.
25. Why does “Some A are not B” fail to convert? Give a counter-example.
26. Explain the difference between what a normal conclusion and a possibility conclusion each demand.

## Section G · Long answer

27. Explain the complete four-step Venn routine, then apply it to: All controllers are staff. Some staff are trainees. Test both “Some controllers are trainees” and “Some trainees are staff”, showing every diagram you consider.
28. Compare a normal conclusion with a possibility conclusion. Give one worked example of each in which the two rules produce opposite answers from the same pair of statements.

### Diagram space — Question 27

*Draw all cases you test. Mark clearly which case defeats the conclusion.*

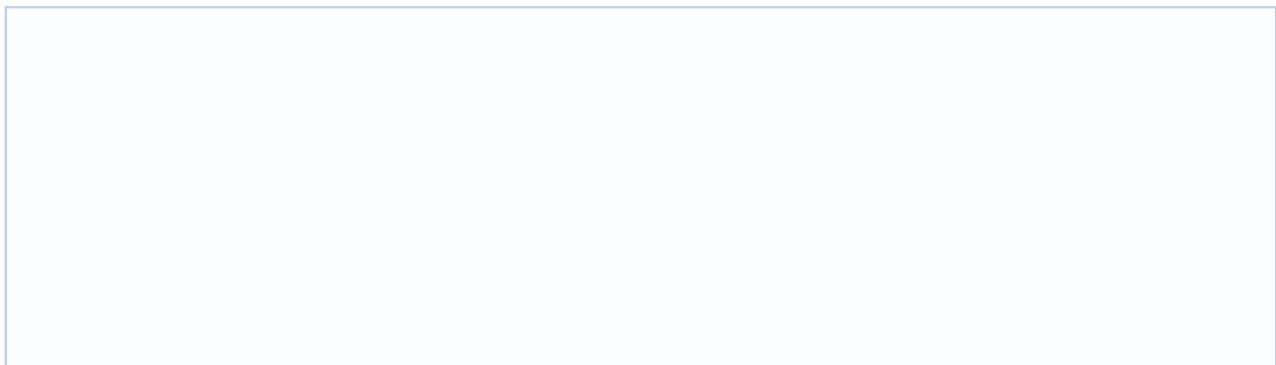


## Section H · HOTS — higher order thinking

29. Three statements: All A are B. Some B are C. No C is D. Determine every definite conclusion that can be drawn about A and D, and justify each with a diagram.
30. Construct a statement pair for which “Either I or II follows” is the correct answer, and prove that neither conclusion holds on its own.
31. A candidate claims that if a conclusion is true in the first diagram they draw, it follows. Explain with a counter-example why this reasoning fails, and state the correct test.

### Diagram space — Question 29

*Three circles minimum. Show the position of D relative to A in each case.*



## Section I · Previous year exam style

Questions 32 and 33 appeared in the AAI ATC Junior Executive paper. Attempt them under time.

**32.** Statements: 1. Some parrots are sparrows. 2. Some crows are parrots.

Conclusions: I. Some sparrows are parrots. II. Some crows are sparrows.

(1) Both follow (2) Only I follows (3) Only II follows (4) Neither follows [PYQ 2021 · Shift 2]

**33.** Statements: 1. All pins are bins. 2. All bins are not papers.

Conclusions: I. Some papers are pins. II. All pins are not papers.

(1) Both follow (2) Only I follows (3) Only II follows (4) Neither follows [PYQ 2021 · Shift 3]

**34.** Statements: All flights are delayed. No delayed thing is cheap.

Conclusions: I. No flight is cheap. II. Some delayed things are flights.

(1) Both follow (2) Only I follows (3) Only II follows (4) Neither follows [ATC Pattern]

**Diagram space — Questions 32 to 34**

One diagram per question. These are the real exam pattern — time yourself.

## Section J · Mixed revision test

Ten questions. Seven minutes. No calculator, no phone.

**35.** All maps are charts. Some charts are digital. Conclusion: Some maps are digital.

**36.** No runway is a taxiway. All taxiways are paved. Conclusion: Some paved things are not runways.

**37.** Some files are red. Some red things are heavy. Conclusion: All files being heavy is a possibility.

**38.** All A are B. All B are C. Conclusion: Some C are A.

**39.** Some pens are books. Conclusion I: All pens are books. Conclusion II: Some pens are not books.

**40.** No aircraft is a bus. All buses are vehicles. Conclusion: Some vehicles being aircraft is a possibility.

**41.** All pilots are trained. Some trained people are calm. Conclusions: I. Some pilots are calm. II. No pilot is calm.

**42.** Some strips are charts. All charts are boards. Conclusions: I. All strips are boards. II. Some strips are not boards.

**43.** All doctors are humans. Some humans are tall. Conclusion: Some doctors are tall.

**44.** No pilot is a clerk. All clerks are graduates. Conclusion: Some graduates are not pilots.

### Stuck on any of these? Bring them to a live class.

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