INDEPENDENT CAT PREPARATION / ORIGINAL MOCK

CAT 2026 Prediction Paper 09

Answer key & worked solutions

68 questions · 120 minutes · Maximum 204 marks

This is an original practice paper informed by recent CAT patterns and the forecast in this study. It is not the official CAT 2026 paper and does not claim to reproduce unreleased questions. Its difficulty has not been calibrated on a candidate cohort.

SECTION	QUESTIONS	TIME	MARKS
Verbal Ability & Reading Comprehension	24	40 minutes	72
Data Interpretation & Logical Reasoning	22	40 minutes	66
Quantitative Ability	22	40 minutes	66

Correct answer: +3. Incorrect MCQ: –1. Incorrect TITA or unanswered question: 0. Each MCQ has exactly one correct option. TITA answers are whole numbers.

Design reference: IMS CAT 2025 exam analysis and the instructions of the official CAT 2026 mock (released 6 November 2026). The 24/22/22 structure, four-question RC passages and four- or five-question DILR sets inform this mock. Original contexts and exact question allocations are authoring choices. Method and source limitations: validation.html. Practice profile: IIM Indore 2020 replay.

Quick answer key

V01 A	**V02** C	**V03** D	**V04** B	**V05** B	**V06** D
V07 C	**V08** A	**V09** C	**V10** A	**V11** B	**V12** D
V13 D	**V14** B	**V15** A	**V16** C	**V17** A	**V18** C
V19 D	**V20** B	**V21** 2314	**V22** 2143	**V23** 4	**V24** 3
D01 6	**D02** C	**D03** 4	**D04** A	**D05** C	**D06** 1220
D07 B	**D08** 220	**D09** 370	**D10** D	**D11** 58	**D12** A
D13 218	**D14** C	**D15** 4	**D16** C	**D17** 2	**D18** B
D19 50	**D20** C	**D21** 35	**D22** D	**Q01** A	**Q02** C
Q03 15	**Q04** B	**Q05** D	**Q06** 60	**Q07** D	**Q08** 4
Q09 50	**Q10** B	**Q11** 3	**Q12** C	**Q13** 120	**Q14** 24
Q15 A	**Q16** B	**Q17** D	**Q18** A	**Q19** C	**Q20** 65
Q21 A	**Q22** C				

VARC · 24 questions

RC 1 · Will the rains be good?

Each year farmers across South Asia wait for the monsoon, and each year forecasters are asked a question that sounds simple: will the rains be good? The question is harder than it looks, because a good season combines several things that do not always move together. The total rainfall over a season matters, but so does its timing. A season with average rainfall can still ruin crops if the rains arrive late, stop for several weeks at a critical stage, or fall in a few violent bursts that run off the soil instead of soaking into it.

Seasonal forecasts usually address only the total. They are based on patterns in ocean temperatures and atmospheric pressure that, in the past, have tended to precede wetter or drier seasons. Such forecasts are expressed as probabilities: a sixty per cent chance of above-normal rain, for instance. Many users hear them as promises that the season will be good, and when the season disappoints, they conclude that forecasting is useless.

Both the forecasters and their critics bear some responsibility for this misunderstanding. A probability of sixty per cent means that, in four years out of ten with similar signals, the season would not be above normal. A forecast can be well calibrated, in the sense that its probabilities match outcomes over many years, and still be wrong about a particular year. Judging it by a single season is like judging a doctor's prognosis by one patient.

Forecasts for the coming week or two are a different matter. They can describe when rain is likely to start or pause in a particular district, and that is often what a farmer needs in order to decide when to sow, irrigate or harvest. Their accuracy has improved substantially, partly because of better observations from satellites and partly because greater computing power allows models to represent the atmosphere in finer detail. Yet they often reach farmers late, in language that is hard to apply, or not at all.

The most useful improvement may therefore lie not in the models but in the connection between forecasts and decisions. Advice that translates a forecast into a specific action, such as delaying sowing by a week, is easier to use than a probability. Advice of that kind also makes the forecaster's uncertainty visible in a practical form: what to do if the rain comes, and what to do if it does not.

V01. The passage is mainly concerned with MCQ

A. why monsoon forecasts are often misunderstood and how they could be made more useful to farmers.
B. proving that seasonal forecasts of total rainfall are useless.
C. explaining the physics of ocean temperatures and atmospheric pressure.
D. arguing that farmers should ignore short-range forecasts.

Answer: A. why monsoon forecasts are often misunderstood and how they could be made more useful to farmers.

The passage explains the gap between probabilistic seasonal forecasts and users' expectations, praises improving short-range forecasts and recommends linking forecasts to decisions. It defends seasonal forecasts against the charge of uselessness and does not explain the physics.

V02. According to the passage, a forecast giving a sixty per cent chance of above-normal rain MCQ

A. means that rainfall will be sixty per cent above the average.
B. guarantees that crops will not fail that year.
C. is not shown to be poor if that season turns out to be below normal.
D. can be properly tested by examining a single season.

Answer: C. is not shown to be poor if that season turns out to be below normal.

The third paragraph explains that such a forecast allows below-normal seasons four times in ten and should be judged over many years. The other options misread the probability or contradict the single-season warning.

V03. Which of the following does the passage give as a reason why a season with average total rainfall might still harm crops? MCQ

A. Satellites might record the rainfall inaccurately.
B. Short-range forecasts might be issued too early.
C. Ocean temperatures might rise after the season ends.
D. The rains might stop for several weeks at a critical stage of growth.

Answer: D. The rains might stop for several weeks at a critical stage of growth.

The first paragraph lists late arrival, long breaks at critical stages and violent bursts. Satellite errors, early issue of forecasts and later ocean temperatures are not given as causes of crop damage.

V04. Which of the following best matches the improvement recommended in the final paragraph?

MCQ

A. A more powerful computer model that forecasts total seasonal rainfall.
B. A message telling farmers in a district to delay sowing by a week because the rain is likely to pause.
C. A national bulletin announcing a sixty per cent chance of a good season.
D. A study showing that past seasonal forecasts were well calibrated.

Answer: B. A message telling farmers in a district to delay sowing by a week because the rain is likely to pause.

The author recommends advice that turns a forecast into a specific action. Better models and calibrated probabilities are not what the final paragraph proposes, and a national probability bulletin is the kind of message that is hard to apply.

RC 2 · Songs rebuilt in performance

Long poems that were performed for centuries before anyone wrote them down pose a puzzle. How could singers remember thousands of lines? Some performances lasted for several nights, and audiences expected the singer to continue where the previous night had stopped. Early scholars assumed that the poems were memorised word for word, as a modern actor learns a script. Field research among singers who still performed long narrative songs suggested a different answer.

Recordings showed that a singer's performances of the same song varied considerably. Episodes might be lengthened or shortened, and descriptions added or dropped, depending on the audience, the occasion and the singer's energy. Yet singers insisted that they performed the song exactly as they had learned it. What they meant by the same song was not the same sequence of words but the same story, told with the same kinds of scenes and expressions.

The singers relied on a stock of formulas: phrases that fitted the rhythm of the verse and could be used whenever a familiar situation arose, such as a hero arming for battle, a feast or the arrival of a messenger. They also relied on larger patterns, typical scenes whose order was predictable even if their details varied. Listeners who knew the tradition could often anticipate the next scene, which helped them follow very long performances. With these resources a skilled singer could compose in performance, rebuilding the song each time rather than recalling it.

This discovery changed how scholars read the written versions of old epics. Repetitions that had seemed clumsy now looked like traces of oral composition. The search for a single original text, from which later copies had strayed, began to seem misguided, since the poem may never have existed in one fixed form. Each written version might record one performance, or a scribe's combination of several.

The theory has limits. Not every oral tradition works in this way; some communities did value exact repetition and trained memorisers to achieve it, especially for sacred texts. And once poems were written down, writing itself shaped them, encouraging fixity and polish. Still, the research showed that memory

in oral cultures is not simply a weaker version of writing. It is a different technology, with its own strengths: it allows a song to adapt to every audience while remaining recognisably the same song.

V05. The passage primarily argues that MCQ

A. oral poets memorised thousands of lines exactly, as actors learn scripts.
B. many oral epics were recomposed in performance from formulas and typical scenes rather than recited word for word.
C. written versions of epics are always more accurate than oral performances.
D. every oral tradition valued variation over exact repetition.

Answer: B. many oral epics were recomposed in performance from formulas and typical scenes rather than recited word for word.

The field research shows composition in performance using formulas and typical scenes. The second option is the early view the passage corrects; the third and fourth contradict the passage's claims and its stated limits.

V06. When singers claimed to perform a song exactly as they had learned it, they most likely meant that MCQ

A. every word was repeated in the same order each time.
B. the song was always performed for the same audience.
C. the length of the performance never changed.
D. the story and its familiar kinds of scenes and expressions were preserved.

Answer: D. the story and its familiar kinds of scenes and expressions were preserved.

The second paragraph says their idea of the same song was the same story with the same kinds of scenes and expressions. Recordings showed variation in words and length, and audiences differed.

V07. According to the passage, the discovery of oral composition led scholars to MCQ

A. treat repetitions in written epics as evidence of careless copying.
B. prefer later written copies of epics to earlier ones.
C. doubt that a single original text of some epics ever existed.
D. conclude that sacred texts were never memorised exactly.

Answer: C. doubt that a single original text of some epics ever existed.

The fourth paragraph says the search for one original text began to seem misguided. Repetitions were reinterpreted as traces of oral composition, no preference for later copies is stated, and the fifth paragraph says some sacred texts were memorised exactly.

V08. The author's final assessment of memory in oral cultures is that it MCQ

A. is a distinct technology with its own strengths, not merely an inferior substitute for writing.
B. is less reliable than writing in every respect.
C. was abandoned because writing made poems more flexible.
D. works in the same way in every oral culture.

Answer: A. is a distinct technology with its own strengths, not merely an inferior substitute for writing.

The last paragraph calls oral memory a different technology that lets a song adapt while remaining recognisable. Writing is said to encourage fixity, not flexibility, and the passage notes that traditions differ.

RC 3 · The price of zero

Many of the most widely used digital services cost their users nothing. Searching, messaging, watching videos and following friends are free at the point of use. The familiar saying that if you are not paying, you are the product captures part of the arrangement: the services are paid for by advertisers, who buy access to users' attention and to information about their behaviour.

The saying is too simple in one respect. Users are not merely sold; they also receive something of value, and many would pay a modest price to keep the services they use. Economists who have tried to estimate this value, for instance by asking how much people would demand to give up a service for a month, often find figures far larger than the advertising revenue the service earns from each user. By that measure, users obtain a good deal.

The difficulty lies elsewhere. Because revenue depends on attention, services have strong reasons to increase the time users spend and the frequency with which they return. Features that do this, such as endless feeds, notifications and videos that play automatically, are not necessarily the ones users would choose if they were paying directly. A person paying a subscription might value a service that helps them finish quickly; an advertiser-funded service may profit from the opposite. The price of zero thus shapes not only who pays but what is built.

Some users respond by paying for versions without advertising, and some services offer them. Such options are useful, but they leave the overall incentives largely intact, since most users remain on the free version and continue to fund the design choices that maximise attention. Regulators have proposed other measures, from limits on data collection to rules requiring that users be able to turn off engagement features. Each faces the objection that it may reduce the free services people value.

The debate is therefore less about whether free services are good or bad than about which features the price of zero encourages. A service can be valuable and still be designed, in some respects, against the interests of the people who use it. Recognising both facts is the starting point for any serious response, and it explains why simple slogans on either side of the argument tend to mislead.

V09. Which of the following best captures the main point of the passage? MCQ

A. Free services harm users because advertisers pay for them.
B. Users receive little value from free services compared with the advertising revenue they generate.
C. Free digital services give users real value, but dependence on advertising rewards features that capture attention, which may not serve users.
D. Paid versions without advertising have solved the problems of free services.

Answer: C. Free digital services give users real value, but dependence on advertising rewards features that capture attention, which may not serve users.

The passage grants the value users receive and locates the problem in the design incentives created by attention-based revenue. It rejects the simple harm view, reports values larger than revenue per user, and says paid versions leave incentives intact.

V10. The author mentions estimates of how much people would demand to give up a service in order to MCQ

A. show that users gain substantial value from free services.
B. prove that advertising revenue is unimportant to service providers.
C. argue that services should charge every user a subscription.
D. illustrate how notifications increase engagement.

Answer: A. show that users gain substantial value from free services.

The estimates support the claim that users obtain a good deal. They are not used to dismiss advertising revenue, to recommend subscriptions or to discuss notifications.

V11. According to the passage, offering paid versions without advertising MCQ

A. has replaced the free versions of most services.
B. leaves the incentives created by the free version largely unchanged.
C. removes the incentive to maximise attention.
D. is prohibited by regulators.

Answer: B. leaves the incentives created by the free version largely unchanged.

The fourth paragraph says such options are useful but leave incentives largely intact because most users stay on the free version. The other options contradict or go beyond the passage.

V12. Which feature would the author expect an advertiser-funded service to favour more than a subscription-funded one? MCQ

A. A summary that lets users finish their task quickly.
B. A setting that switches off all notifications by default.
C. A limit on the time users can spend each day.
D. A feed that keeps loading new items so that users keep scrolling.

Answer: D. A feed that keeps loading new items so that users keep scrolling.

The third paragraph names endless feeds as attention-maximising features that advertiser funding rewards, and contrasts them with helping users finish quickly. The other features reduce time spent.

RC 4 · Selected, not invented

Antibiotic resistance is often described as if bacteria were cleverly outwitting medicine. The more accurate description is less dramatic and more troubling. Bacterial populations are enormous and reproduce quickly, and among them some cells carry genetic differences that make them less vulnerable to a particular drug. When the drug is used, susceptible cells die and resistant cells survive to multiply. Resistance is not invented in response to the drug; it is selected by it.

This explains why resistance follows use. Every course of antibiotics, necessary or not, creates conditions in which resistant strains have an advantage. Prescribing antibiotics for viral infections, which they cannot treat, adds selection without benefit. So does their routine use to promote growth in farm animals. Bacteria can also share resistance genes with one another, sometimes across species, so resistance that arises in one setting can spread to others. Hospitals, where many patients receive antibiotics at the same time, can become places where resistant strains concentrate.

For decades the problem was managed by discovering new drugs. When resistance to one antibiotic became common, another was available. Discovery has slowed sharply. Most antibiotic classes in use today were found decades ago, and new ones are scientifically difficult and commercially unattractive to develop. A new antibiotic that works well will, sensibly, be held in reserve and used sparingly, which means that it sells in small quantities. A company that spends years developing it may never recover the cost.

Several remedies have been proposed. Better diagnosis could ensure that antibiotics are prescribed only when they will help. Rules on agricultural use could remove a large source of selection. Governments could pay developers for a successful antibiotic regardless of how much of it is sold, separating reward from volume. None of these remedies requires a scientific breakthrough, yet each faces obstacles: rapid tests are expensive, farmers rely on cheap growth promoters, and public payments must be large to attract investment.

What makes resistance unusual is that its costs are shared while its causes are dispersed. A single prescription contributes almost nothing to the overall problem, so neither doctor nor patient has a strong

individual reason to forgo it. Yet millions of such choices together determine whether common infections remain treatable. Problems with this structure are rarely solved by individual restraint alone; they require arrangements that change the incentives under which individual choices are made.

V13. The passage mainly argues that antibiotic resistance MCQ

A. occurs because bacteria deliberately adapt to defeat new medicines.
B. can be solved by individual doctors refusing to prescribe antibiotics.
C. will end once companies develop new classes of antibiotics.
D. arises through selection by antibiotic use and persists because its causes are dispersed while new drugs are scarce, so collective arrangements are needed.

Answer: D. arises through selection by antibiotic use and persists because its causes are dispersed while new drugs are scarce, so collective arrangements are needed.

The passage moves from selection to use, to the slowdown in discovery, to remedies and the need for arrangements that change incentives. It rejects the outwitting image and individual restraint alone, and explains why new drugs are scarce.

V14. Why, according to the passage, might a highly effective new antibiotic be commercially unattractive? MCQ

A. Bacteria could never become resistant to it.
B. It would sensibly be used sparingly, so it would sell in small quantities.
C. It would be used routinely in farm animals.
D. It would treat viral infections as well as bacterial ones.

Answer: B. It would sensibly be used sparingly, so it would sell in small quantities.

The third paragraph says a good new antibiotic would be held in reserve and used sparingly, so sales would be small. The other options are unsupported or contradict the passage.

V15. According to the passage, prescribing antibiotics for viral infections MCQ

A. adds selection for resistance without treating the infection.
B. is the only significant cause of resistance.
C. prevents resistance genes from spreading between species.
D. is necessary because viruses share genes with bacteria.

Answer: A. adds selection for resistance without treating the infection.

The second paragraph says such prescriptions add selection without benefit. Agricultural use is another cause, gene sharing is described as a separate mechanism, and nothing makes such prescriptions necessary.

V16. The author would most likely agree that paying developers a fixed reward for a successful antibiotic MCQ

A. would encourage doctors to prescribe the new drug as widely as possible.
B. is unnecessary because the discovery of new antibiotics is speeding up.
C. addresses the conflict between rewards based on sales and the need for sparing use.
D. would remove the need for rules on agricultural use.

Answer: C. addresses the conflict between rewards based on sales and the need for sparing use.

Separating reward from volume answers the commercial problem described in the third paragraph. It aims at the opposite of wide prescribing, discovery has slowed, and agricultural rules are a separate remedy.

V17. Choose the best summary.

Cities are often several degrees warmer than the surrounding countryside, especially at night. Dark roofs and roads absorb sunlight during the day and release it slowly after sunset, buildings block breezes, and there is less vegetation to cool the air through evaporation. The effect is not only uncomfortable; during heatwaves it raises the risk of illness and death, particularly for older people in poorly ventilated homes. Some remedies are inexpensive, such as painting roofs in light colours or planting trees along streets. Their benefits are greatest in the dense, low-income neighbourhoods that usually have the least shade, which makes the choice of where to act as important as the choice of what to do. MCQ

A. Cities trap heat for several reasons and so raise health risks in heatwaves; cheap remedies exist, and they matter most in dense, poorer neighbourhoods with little shade.
B. Cities are warmer than the countryside only because they have fewer trees.
C. Painting roofs in light colours will eliminate the health risks of heatwaves.
D. Older people should move from cities to the countryside during heatwaves.

Answer: A. Cities trap heat for several reasons and so raise health risks in heatwaves; cheap remedies exist, and they matter most in dense, poorer neighbourhoods with little shade.

The paragraph gives several causes, the health stakes, cheap remedies and the importance of targeting them. The second option keeps only one cause, the third overstates a remedy, and the fourth is not proposed.

V18. Choose the best summary.

Adults who learn a new language often keep a noticeable accent even after they master its grammar and vocabulary. This is sometimes taken as a sign of incomplete learning. Research suggests a more complicated picture. Listeners understand accented speech well when the speaker's rhythm and stress patterns are close to those they expect, even if individual sounds differ. Conversely, a speaker with near-perfect sounds but unusual stress can be hard to follow. Teaching that concentrates on eliminating every trace of an accent may therefore spend effort where it matters least. For most learners, the useful aim is to be easily understood, which depends more on rhythm and stress than on sounding like a native speaker. MCQ

A. Adults cannot learn the grammar of a second language completely.
B. Accented speech is always hard for native speakers to understand.
C. Being understood depends more on rhythm and stress than on native-like sounds, so teaching aimed at removing accents may misdirect effort.
D. Learners should aim to sound exactly like native speakers.

Answer: C. Being understood depends more on rhythm and stress than on native-like sounds, so teaching aimed at removing accents may misdirect effort.

The correct summary captures the finding about rhythm and stress and its implication for teaching. The other options contradict the paragraph: learners master grammar, accented speech can be easy to follow, and native-like sound is not the recommended aim.

V19. Choose the best position for the missing sentence.

Sentence: The shortage, in other words, was of the right blood in the right place, not of blood as such.

Blood banks often appeal for donations when supplies run low. (1) Yet in some regions, total donations each year exceed the amount transfused. (2) The difficulty is that blood components have short shelf lives and are needed in particular types, in hospitals that may be far from where many donors live. Platelets, for example, can be stored for only a few days. (3) A surplus of one type in a city can coincide with a dangerous shortage of another type in a rural hospital a few hundred kilometres away. (4) Improving transport and coordination between blood banks can therefore do as much good as recruiting new donors. MCQ

A. Position (1)
B. Position (2)
C. Position (3)
D. Position (4)

Answer: D. Position (4)

The sentence sums up the mismatch just illustrated by the city surplus and rural shortage, and prepares the recommendation about transport and coordination. At earlier positions the mismatch has not yet been shown.

V20. Choose the best position for the missing sentence.

Sentence: Their silence, in other words, was itself evidence.

A company that wanted to improve its service studied every complaint it received over a year. (1) Most concerned billing errors, so it invested heavily in its billing system. Complaint handlers were even rewarded for resolving billing disputes quickly. (2) Customer satisfaction barely changed. Billing complaints fell, but the number of customers leaving stayed the same. (3) A later study contacted customers who had left without complaining and found that most had gone because of long waits on the telephone, a problem few of them had bothered to report. (4) The company had studied the people who still cared enough to write, and had missed those who simply walked away. MCQ

A. Position (1)
B. Position (4)
C. Position (2)
D. Position (3)

Answer: B. Position (4)

“Their silence” refers to the customers who left without reporting the telephone problem, introduced just before (4). At (3) and earlier these customers have not been mentioned.

V21. Arrange the sentences and enter their numbers without spaces.

1. The colour we see is the light that the leaf does not use.
2. Leaves look green because of chlorophyll, the pigment that captures energy from sunlight.
3. Chlorophyll absorbs red and blue light strongly but reflects much of the green.
4. In autumn, as chlorophyll breaks down, yellow and orange pigments that were present all along become visible. TITA

Answer: 2314

2 introduces chlorophyll; 3 explains which light it absorbs and reflects; 1 draws the conclusion about the colour we see; 4 extends the explanation to autumn.

V22. Arrange the sentences and enter their numbers without spaces.

1. Before that moment, any stone left unsupported would simply fall.
2. Builders of stone arches face a problem: an arch cannot support itself until its last stone, the keystone, is in place.
3. Once the keystone is set, the stones press against one another and the frame can be taken away.
4. That danger is why builders erect a temporary wooden frame to hold the stones in the meantime. TITA

Answer: 2143

2 states the problem; 1's "that moment" refers to the placing of the keystone; 4's "That danger" refers to 1; 3 describes the removal of the frame once the keystone is set.

V23. Four sentences form a coherent paragraph. Enter the odd sentence number.

1. A credit score summarises how reliably a person has repaid past debts.
2. Lenders use it to decide whether to lend and at what rate of interest.
3. People with no borrowing history may have no score at all, even if they are careful with money.
4. Many banks now offer mobile applications for checking account balances.
5. Such people can therefore find it hard to borrow, a problem sometimes called being credit invisible. TITA

Answer: 4

Sentences 1, 2, 3 and 5 explain credit scores and the difficulty faced by people without one. Banking apps for checking balances are unrelated.

V24. Four sentences form a coherent paragraph. Enter the odd sentence number.

1. Large volcanic eruptions can cool the planet for a year or two.
2. They inject sulphur gases high into the atmosphere.
3. Some volcanic islands have become popular destinations for hikers.
4. There the gases form tiny droplets that reflect sunlight back into space.
5. Less sunlight reaches the surface, so average temperatures fall until the droplets settle out.

TITA

Answer: 3

Sentences 1, 2, 4 and 5 explain how eruptions cool the climate. Sentence 3 is about tourism.

DILR · 22 questions

Meetings in two rooms

Six one-hour meetings A, B, C, D, E and F are held in two rooms, Room 1 and Room 2, on one morning. Each meeting starts at 9 a.m., 10 a.m., 11 a.m. or 12 noon, and a room can host only one meeting at a time.
Room 1 is not available from 11 a.m. to 12 noon, and Room 2 is not available from 10 a.m. to 11 a.m.
A and B have the same chairperson, so they are not held at the same time.
C is held earlier than D, and D is not held at the same time as F.
E is held in Room 2, and B is held later than E.
F starts at 12 noon.
A and C are held in the same room.

Any additional condition or change in a question applies only to that question.

D01. How many different schedules (rooms and times for all six meetings) are possible? TITA

Answer: 6

E must be in Room 2 and before B; F is at noon; Room 1 is closed at 11 and Room 2 at 10. With A and C sharing a room and C before D, six schedules remain:
Schedule | A | B | C | D | E | F
1 | R1 9 a.m. | R1 12 noon | R1 10 a.m. | R2 11 a.m. | R2 9 a.m. | R2 12 noon
2 | R1 9 a.m. | R2 12 noon | R1 10 a.m. | R2 11 a.m. | R2 9 a.m. | R1 12 noon
3 | R1 10 a.m. | R1 12 noon | R1 9 a.m. | R2 11 a.m. | R2 9 a.m. | R2 12 noon
4 | R1 10 a.m. | R2 12 noon | R1 9 a.m. | R2 11 a.m. | R2 9 a.m. | R1 12 noon
5 | R1 12 noon | R1 10 a.m. | R1 9 a.m. | R2 11 a.m. | R2 9 a.m. | R2 12 noon
6 | R1 12 noon | R2 11 a.m. | R1 9 a.m. | R1 10 a.m. | R2 9 a.m. | R2 12 noon

Six schedules satisfy every condition.

D02. Which meeting is held at 9 a.m. in every possible schedule? MCQ

A. D
B. C
C. E
D. A

Answer: C. E

E must be in Room 2 and before B; F is at noon; Room 1 is closed at 11 and Room 2 at 10. With A and C sharing a room and C before D, six schedules remain:
Schedule | A | B | C | D | E | F
1 | R1 9 a.m. | R1 12 noon | R1 10 a.m. | R2 11 a.m. | R2 9 a.m. | R2 12 noon
2 | R1 9 a.m. | R2 12 noon | R1 10 a.m. | R2 11 a.m. | R2 9 a.m. | R1 12 noon
3 | R1 10 a.m. | R1 12 noon | R1 9 a.m. | R2 11 a.m. | R2 9 a.m. | R2 12 noon
4 | R1 10 a.m. | R2 12 noon | R1 9 a.m. | R2 11 a.m. | R2 9 a.m. | R1 12 noon
5 | R1 12 noon | R1 10 a.m. | R1 9 a.m. | R2 11 a.m. | R2 9 a.m. | R2 12 noon
6 | R1 12 noon | R2 11 a.m. | R1 9 a.m. | R1 10 a.m. | R2 9 a.m. | R2 12 noon

E is in Room 2 at 9 a.m. in all six schedules.

D03. In how many of the possible schedules is B held at 12 noon? TITA

Answer: 4

E must be in Room 2 and before B; F is at noon; Room 1 is closed at 11 and Room 2 at 10. With A and C sharing a room and C before D, six schedules remain:
Schedule | A | B | C | D | E | F
1 | R1 9 a.m. | R1 12 noon | R1 10 a.m. | R2 11 a.m. | R2 9 a.m. | R2 12 noon
2 | R1 9 a.m. | R2 12 noon | R1 10 a.m. | R2 11 a.m. | R2 9 a.m. | R1 12 noon
3 | R1 10 a.m. | R1 12 noon | R1 9 a.m. | R2 11 a.m. | R2 9 a.m. | R2 12 noon
4 | R1 10 a.m. | R2 12 noon | R1 9 a.m. | R2 11 a.m. | R2 9 a.m. | R1 12 noon
5 | R1 12 noon | R1 10 a.m. | R1 9 a.m. | R2 11 a.m. | R2 9 a.m. | R2 12 noon
6 | R1 12 noon | R2 11 a.m. | R1 9 a.m. | R1 10 a.m. | R2 9 a.m. | R2 12 noon

Schedules 1 to 4 hold B at noon.

D04. If A is held at 12 noon and D at 10 a.m., where and when is B held? MCQ

A. Room 2 at 11 a.m.
B. Room 1 at 12 noon
C. Room 1 at 10 a.m.
D. Room 2 at 12 noon

Answer: A. Room 2 at 11 a.m.

E must be in Room 2 and before B; F is at noon; Room 1 is closed at 11 and Room 2 at 10. With A and C sharing a room and C before D, six schedules remain:
Schedule | A | B | C | D | E | F
1 | R1 9 a.m. | R1 12 noon | R1 10 a.m. | R2 11 a.m. | R2 9 a.m. | R2 12 noon
2 | R1 9 a.m. | R2 12 noon | R1 10 a.m. | R2 11 a.m. | R2 9 a.m. | R1 12 noon
3 | R1 10 a.m. | R1 12 noon | R1 9 a.m. | R2 11 a.m. | R2 9 a.m. | R2 12 noon
4 | R1 10 a.m. | R2 12 noon | R1 9 a.m. | R2 11 a.m. | R2 9 a.m. | R1 12 noon
5 | R1 12 noon | R1 10 a.m. | R1 9 a.m. | R2 11 a.m. | R2 9 a.m. | R2 12 noon
6 | R1 12 noon | R2 11 a.m. | R1 9 a.m. | R1 10 a.m. | R2 9 a.m. | R2 12 noon

Only schedule 6 fits, with B in Room 2 at 11 a.m.

D05. Which of the following can never happen? MCQ

A. C is held at 10 a.m.
B. B is held at 10 a.m.
C. D is held at 9 a.m.
D. A is held at 12 noon

Answer: C. D is held at 9 a.m.

E must be in Room 2 and before B; F is at noon; Room 1 is closed at 11 and Room 2 at 10. With A and C sharing a room and C before D, six schedules remain:
Schedule | A | B | C | D | E | F
1 | R1 9 a.m. | R1 12 noon | R1 10 a.m. | R2 11 a.m. | R2 9 a.m. | R2 12 noon
2 | R1 9 a.m. | R2 12 noon | R1 10 a.m. | R2 11 a.m. | R2 9 a.m. | R1 12 noon
3 | R1 10 a.m. | R1 12 noon | R1 9 a.m. | R2 11 a.m. | R2 9 a.m. | R2 12 noon
4 | R1 10 a.m. | R2 12 noon | R1 9 a.m. | R2 11 a.m. | R2 9 a.m. | R1 12 noon
5 | R1 12 noon | R1 10 a.m. | R1 9 a.m. | R2 11 a.m. | R2 9 a.m. | R2 12 noon
6 | R1 12 noon | R2 11 a.m. | R1 9 a.m. | R1 10 a.m. | R2 9 a.m. | R2 12 noon

C must come before D, so D cannot take the first hour; each other option occurs in some schedule.

Sales of three car models

A dealer sells three car models X, Y and Z. In January it sold 400 X, 350 Y and 250 Z cars. The table shows the percentage change in each model's sales over the previous month.

Model | February change | March change
X | +25% | -10%
Y | -20% | +25%
Z | +20% | +40%

Any additional condition or change in a question applies only to that question.

D06. How many cars did the dealer sell in March? TITA

Answer: 1220

Apply each month's change to the previous month's sales.
Model | Jan | Feb | Mar
X | 400 | 500 | 450
Y | 350 | 280 | 350
Z | 250 | 300 | 420
Totals: 1000, 1080, 1220.

450 + 350 + 420 = 1,220 cars.

D07. Which model sold the most cars in March? MCQ

A. Z
B. X
C. X and Z sold equal numbers
D. Y

Answer: B. X

Apply each month's change to the previous month's sales.
Model | Jan | Feb | Mar
X | 400 | 500 | 450
Y | 350 | 280 | 350
Z | 250 | 300 | 420
Totals: 1000, 1080, 1220.

March sales: X 450, Y 350, Z 420.

D08. By how many cars did total monthly sales rise from January to March? TITA

Answer: 220

Apply each month's change to the previous month's sales.
Model | Jan | Feb | Mar
X | 400 | 500 | 450
Y | 350 | 280 | 350
Z | 250 | 300 | 420
Totals: 1000, 1080, 1220.

1,220 – 1,000 = 220.

D09. Over the three months together, how many more X cars than Y cars were sold? TITA

Answer: 370

Apply each month's change to the previous month's sales.
Model | Jan | Feb | Mar
X | 400 | 500 | 450
Y | 350 | 280 | 350
Z | 250 | 300 | 420
Totals: 1000, 1080, 1220.

X sold 400 + 500 + 450 = 1,350 and Y sold 350 + 280 + 350 = 980: a difference of 370.

D10. In which month was model Z's share of the dealer's total sales the largest? MCQ

A. February
B. January
C. It was the same in all three months
D. March

Answer: D. March

Apply each month's change to the previous month's sales.
Model | Jan | Feb | Mar
X | 400 | 500 | 450
Y | 350 | 280 | 350
Z | 250 | 300 | 420
Totals: 1000, 1080, 1220.

Z's share was 25% in January, 300/1,080 ≈ 27.8% in February and 420/1,220 ≈ 34.4% in March.

A preferential vote

One hundred members elected a chairperson from candidates A, B, C and D. Each member ranked all four candidates. Identical rankings are grouped below (first preference on the left).

Ranking | Members
A > B > C > D | 34
B > C > A > D | 24
C > B > A > D | 20
D > C > B > A | 14
B > A > C > D | 8

Counting rule: if a candidate has more than half of the first preferences, that candidate wins. Otherwise the candidate with the fewest votes is eliminated, and each of that candidate's ballots counts for its highest-ranked remaining candidate; this repeats until someone has more than half.

Any additional condition or change in a question applies only to that question.

D11. How many votes does the winner have in the final round of counting? TITA

Answer: 58

Count first preferences, remove the weakest candidate, pass each removed ballot to its next remaining preference and repeat until someone has a majority (over 50) of the 100 votes.
Round 1: A 34, B 32, C 20, D 14
Round 2: A 34, B 32, C 34
Round 3: A 42, C 58
Points (3, 2, 1, 0): A 162, B 218, C 178, D 42.

In the last round C has 58 votes against A's 42.

D12. Who wins under the counting rule? MCQ

A. C
B. B
C. A
D. D

Answer: A. C

Count first preferences, remove the weakest candidate, pass each removed ballot to its next remaining preference and repeat until someone has a majority (over 50) of the 100 votes.
Round 1: A 34, B 32, C 20, D 14
Round 2: A 34, B 32, C 34
Round 3: A 42, C 58
Points (3, 2, 1, 0): A 162, B 218, C 178, D 42.

D is eliminated first (C rises to 34), then B (32); B's ballots split 24 to C and 8 to A, so C wins 58–42.

D13. Under a different rule, each ballot gives 3 points to its first choice, 2 to its second, 1 to its third and 0 to its fourth. What is the highest points total any candidate receives? TITA

Answer: 218

Count first preferences, remove the weakest candidate, pass each removed ballot to its next remaining preference and repeat until someone has a majority (over 50) of the 100 votes.
Round 1: A 34, B 32, C 20, D 14
Round 2: A 34, B 32, C 34
Round 3: A 42, C 58
Points (3, 2, 1, 0): A 162, B 218, C 178, D 42.

B receives 96 + 108 + 14 = 218 points, the most.

D14. If the 14 members who ranked D first had instead ranked the candidates D > B > C > A, who would win under the original counting rule? MCQ

A. C
B. No candidate would reach a majority
C. B
D. A

Answer: C. B

Count first preferences, remove the weakest candidate, pass each removed ballot to its next remaining preference and repeat until someone has a majority (over 50) of the 100 votes.
Round 1: A 34, B 32, C 20, D 14
Round 2: A 34, B 32, C 34
Round 3: A 42, C 58
Points (3, 2, 1, 0): A 162, B 218, C 178, D 42.

D is still eliminated first, but those ballots now go to B (46). C (20) is eliminated next and C's ballots go to B, giving B 66 votes.

Professions and cities

Anil, Bina, Chitra, Dev and Esha are a doctor, an engineer, a lawyer, a pilot and a teacher, in some order.
They live in Agra, Bhopal, Chennai, Delhi and Pune, one person per city.
The doctor lives in Delhi and the engineer lives in Bhopal.
Chitra is the teacher.
Anil is neither the pilot nor the teacher, and does not live in Agra.
Bina lives in Chennai and is not the lawyer.
Dev is not the doctor and does not live in Agra.
Esha does not live in Pune.

Any additional condition or change in a question applies only to that question.

D15. How many complete assignments of professions and cities are possible? TITA

Answer: 4

Chitra is the teacher. The doctor lives in Delhi and the engineer in Bhopal, while Bina lives in Chennai, so Bina is neither of those and not the lawyer: Bina is the pilot. Checking the remaining cases gives four assignments:
Anil | Bina | Chitra | Dev | Esha
doctor, Delhi | pilot, Chennai | teacher, Pune | engineer, Bhopal | lawyer, Agra
doctor, Delhi | pilot, Chennai | teacher, Agra | lawyer, Pune | engineer, Bhopal
engineer, Bhopal | pilot, Chennai | teacher, Agra | lawyer, Pune | doctor, Delhi
lawyer, Pune | pilot, Chennai | teacher, Agra | engineer, Bhopal | doctor, Delhi

Four assignments remain.

D16. What is Bina's profession? MCQ

A. lawyer
B. doctor
C. pilot
D. engineer

Answer: C. pilot

Chitra is the teacher. The doctor lives in Delhi and the engineer in Bhopal, while Bina lives in Chennai, so Bina is neither of those and not the lawyer: Bina is the pilot. Checking the remaining cases gives four assignments:
Anil | Bina | Chitra | Dev | Esha
doctor, Delhi | pilot, Chennai | teacher, Pune | engineer, Bhopal | lawyer, Agra
doctor, Delhi | pilot, Chennai | teacher, Agra | lawyer, Pune | engineer, Bhopal
engineer, Bhopal | pilot, Chennai | teacher, Agra | lawyer, Pune | doctor, Delhi
lawyer, Pune | pilot, Chennai | teacher, Agra | engineer, Bhopal | doctor, Delhi

Chennai rules out doctor and engineer, and Bina is not the lawyer or the teacher.

D17. In how many of the possible assignments does Esha live in Delhi? TITA

Answer: 2

Chitra is the teacher. The doctor lives in Delhi and the engineer in Bhopal, while Bina lives in Chennai, so Bina is neither of those and not the lawyer: Bina is the pilot. Checking the remaining cases gives four assignments:
Anil | Bina | Chitra | Dev | Esha
doctor, Delhi | pilot, Chennai | teacher, Pune | engineer, Bhopal | lawyer, Agra
doctor, Delhi | pilot, Chennai | teacher, Agra | lawyer, Pune | engineer, Bhopal
engineer, Bhopal | pilot, Chennai | teacher, Agra | lawyer, Pune | doctor, Delhi
lawyer, Pune | pilot, Chennai | teacher, Agra | engineer, Bhopal | doctor, Delhi

Esha is the doctor in Delhi in two of the four assignments.

D18. If Chitra lives in Pune, what is Dev's profession? MCQ

A. pilot
B. engineer
C. doctor
D. lawyer

Answer: B. engineer

Chitra is the teacher. The doctor lives in Delhi and the engineer in Bhopal, while Bina lives in Chennai, so Bina is neither of those and not the lawyer: Bina is the pilot. Checking the remaining cases gives four assignments:
Anil | Bina | Chitra | Dev | Esha
doctor, Delhi | pilot, Chennai | teacher, Pune | engineer, Bhopal | lawyer, Agra
doctor, Delhi | pilot, Chennai | teacher, Agra | lawyer, Pune | engineer, Bhopal
engineer, Bhopal | pilot, Chennai | teacher, Agra | lawyer, Pune | doctor, Delhi
lawyer, Pune | pilot, Chennai | teacher, Agra | engineer, Bhopal | doctor, Delhi

Only the assignment with Dev as the engineer in Bhopal and Esha as the lawyer in Agra has Chitra in Pune.

Pipes between tanks

Water flows from tank S to tank T through one-way pipes. The table gives each pipe's maximum flow in litres per minute. Water is not stored or lost at the intermediate junctions A, B, C and D.

Pipe | Capacity (litres/min)
S → A | 30
S → B | 25
A → B | 10
A → C | 20

B → C | 10
B → D | 25
C → T | 30
D → C | 5
D → T | 20

Any additional condition or change in a question applies only to that question.

D19. What is the maximum flow, in litres per minute, from S to T? TITA

Answer: 50

Push flow along paths with spare capacity until none remains. The largest flow is 50 litres per minute: S→A→C→T carries 20, S→A→B→C→T 10 and S→B→D→T 20. The two pipes into T (C→T 30, D→T 20) can carry only 50 in total, so no larger flow exists.

Flows S→A→C→T 20, S→A→B→C→T 10, S→B→D→T 20 reach the two pipes into T at full capacity: 50.

D20. Raising the capacity of which one of these pipes by 10 litres per minute increases the maximum flow? MCQ

A. A → C
B. B → D
C. D → T
D. S → A

Answer: C. D → T

Push flow along paths with spare capacity until none remains. The largest flow is 50 litres per minute: S→A→C→T carries 20, S→A→B→C→T 10 and S→B→D→T 20. The two pipes into T (C→T 30, D→T 20) can carry only 50 in total, so no larger flow exists.

With D → T at 30 the two pipes into T can take 60, and the limit becomes the two pipes out of S (30 + 25 = 55): the maximum rises to 55. Raising A → C, S → A or B → D leaves both pipes into T full at 50.

D21. If pipe A → C is shut, what is the maximum flow, in litres per minute, from S to T? TITA

Answer: 35

Push flow along paths with spare capacity until none remains. The largest flow is 50 litres per minute: S→A→C→T carries 20, S→A→B→C→T 10 and S→B→D→T 20. The two pipes into T (C→T 30, D→T 20) can carry only 50 in total, so no larger flow exists.

Water from A must then pass through A → B (10). Together with S → B (25), at most 35 reaches B, and B can deliver it via C and D: 35.

D22. What is the smallest number of pipes that must be shut to stop all flow from S to T? MCQ

A. 4
B. 6
C. 3
D. 2

Answer: D. 2

Push flow along paths with spare capacity until none remains. The largest flow is 50 litres per minute: S→A→C→T carries 20, S→A→B→C→T 10 and S→B→D→T 20. The two pipes into T (C→T 30, D→T 20) can carry only 50 in total, so no larger flow exists.

Shutting C → T and D → T cuts every route; no single pipe does.

QA · 22 questions

Q01. The price of sugar rises by 25%. By what percentage must a household reduce its consumption so that its expenditure on sugar stays the same? MCQ

A. 20
B. 25
C. 18
D. 22.5

Answer: A. 20

Expenditure is price × quantity. With the price multiplied by 5/4, the quantity must be multiplied by 4/5, a reduction of 1/5, which is 20%.

Q02. If $\sqrt{(x + 7)} + \sqrt{x} = 7$, what is the value of x? MCQ

A. 4
B. 16
C. 9
D. 1

Answer: C. 9

Write $\sqrt{(x + 7)} = 7 - \sqrt{x}$ and square: $x + 7 = 49 - 14\sqrt{x} + x$. Then $14\sqrt{x} = 42$, so $\sqrt{x} = 3$ and $x = 9$. Check: $\sqrt{16} + \sqrt{9} = 7$.

Q03. Twelve men can finish a job in 18 days. After they have worked for 6 days, 4 more men join them. In how many days in total is the job completed? TITA

Answer: 15

The job is 12 × 18 = 216 man-days. Six days by 12 men complete 72 man-days, leaving 144. Sixteen men finish that in 144/16 = 9 days, so the total is 6 + 9 = 15 days.

Q04. What real value of x satisfies 3^(2x – 1) × 9^(x + 1) = 27^(x + 2)? MCQ

A. 4
B. 5
C. 6
D. 7

Answer: B. 5

Write every term as a power of 3: 3^(2x – 1) × 3^(2x + 2) = 3^(3x + 6). Equating the exponents gives 4x + 1 = 3x + 6, so x = 5.

Q05. A sum lent at simple interest amounts to ₹9,800 in 5 years and to ₹12,005 in 8 years. What is the rate of interest per annum, in percent? MCQ

A. 10
B. 15
C. 11
D. 12

Answer: D. 12

Three extra years add 12,005 – 9,800 = ₹2,205, so the yearly interest is ₹735. Five years' interest is ₹3,675, making the principal 9,800 – 3,675 = ₹6,125. The rate is 735/6,125 = 12%.

Q06. In how many distinct ways can the letters of the word BANANA be arranged? TITA

Answer: 60

There are 6 letters with A repeated three times and N twice. The number of distinct arrangements is 6!/(3! × 2!) = 720/12 = 60.

Q07. In triangle ABC, AB = 12 cm, AC = 18 cm and BC = 20 cm. The bisector of angle A meets BC at D. What is BD, in cm? MCQ

A. 10
B. 12
C. 9
D. 8

Answer: D. 8

The bisector divides BC in the ratio of the adjacent sides: BD : DC = 12 : 18 = 2 : 3. So BD = 20 × 2/5 = 8 cm.

Q08. How many integers x satisfy $x^2 - 9x + 14 < 0$? TITA

Answer: 4

The quadratic factors as $(x - 2)(x - 7)$, which is negative strictly between the roots 2 and 7. The integers there are 3, 4, 5 and 6.

Q09. Two trains, 150 m and 100 m long, run on parallel tracks in the same direction at 72 km/h and 54 km/h. How many seconds does the faster train take to pass the slower one completely? TITA

Answer: 50

The relative speed is 72 − 54 = 18 km/h = 5 m/s. Passing requires covering 150 + 100 = 250 m, which takes 250/5 = 50 seconds.

Q10. For how many integers x is $|3x - 7| < 11$? MCQ

A. 6
B. 7
C. 8
D. 5

Answer: B. 7

The inequality means $-11 < 3x - 7 < 11$, so $-4 < 3x < 18$ and $-4/3 < x < 6$. The integers −1, 0, 1, 2, 3, 4 and 5 qualify, which is 7 values.

Q11. What is the remainder when $1! + 2! + 3! + \ldots + 50!$ is divided by 15? TITA

Answer: 3

Every factorial from 5! = 120 onwards is divisible by 15. The remainder therefore comes from 1 + 2 + 6 + 24 = 33, and 33 leaves remainder 3 on division by 15.

Q12. A 60-litre mixture contains milk and water in the ratio 2 : 1. How many litres of water must be added to make the ratio 1 : 2? MCQ

A. 40
B. 50
C. 60
D. 80

Answer: C. 60

The mixture has 40 litres of milk and 20 of water. For a 1 : 2 ratio the water must be 80 litres, so 60 litres must be added.

Q13. Positive integers x and y satisfy x + y = 20. What is the greatest possible value of xy + x + y? TITA

Answer: 120

Since x + y is fixed at 20, the expression equals xy + 20. The product xy is greatest when x = y = 10, giving 100, so the maximum is 120.

Q14. A point is 25 cm from the centre of a circle of radius 7 cm. What is the length, in cm, of a tangent drawn from the point to the circle? TITA

Answer: 24

The radius to the point of contact is perpendicular to the tangent, so the tangent length is $\sqrt{(25^2 - 7^2)} = \sqrt{576} = 24$ cm.

Q15. Two cars start at the same moment from towns P and Q, 720 km apart, and drive towards each other at constant speeds. After they meet, the faster car takes 4 hours to reach Q and the slower car takes 9 hours to reach P. If the faster car travels at 72 km/h, what is the speed of the slower car, in km/h? MCQ

A. 48
B. 54
C. 45
D. 50

Answer: A. 48

Let them meet after t hours. Each car then covers in its remaining time what the other covered before the meeting, so $4v_1 = t\,v_2$ and $9v_2 = t\,v_1$. Dividing gives $(v_1/v_2)^2 = 9/4$, so $v_1/v_2 = 3/2$ and the slower car travels at $72 \times 2/3 = 48$ km/h. Check: they meet after $720/120 = 6$ hours, and $48 \times 6/72 = 4$.

Q16. The monthly incomes of A and B are in the ratio 5 : 7 and their monthly expenses are in the ratio 3 : 5. If each of them saves ₹4,000 a month, what is A's monthly income, in rupees? MCQ

A. 12000
B. 10000
C. 8000
D. 15000

Answer: B. 10000

Let the incomes be 5k and 7k and the expenses 3m and 5m. Then 5k − 3m = 4000 and 7k − 5m = 4000. Multiplying the first by 5 and the second by 3 and subtracting gives 25k − 21k = 20000 − 12000, so k = 2000 and m = 2000. A's income is 5 × 2000 = ₹10,000.

Q17. Positive numbers a, b and c, none equal to 1, satisfy log_a b = 2 and log_b c = 3. What is the value of log_c (a^{12})? MCQ

A. 6
B. 3
C. 4
D. 2

Answer: D. 2

From the definitions, b = a^2 and c = b^3 = a^6. So a = c^(1/6), and log_c(a^{12}) = 12 × log_c a = 12 × 1/6 = 2.

Q18. Using $\log_{10}2 = 0.3010$, how many digits does 2^50 have? MCQ

A. 16
B. 15
C. 17
D. 14

Answer: A. 16

Take logarithms: $\log_{10}(2^{50}) = 50 \times 0.3010 = 15.05$. A positive number whose common logarithm has integer part 15 lies between 10^15 and 10^16, so it has 16 digits.

Q19. Plan X costs ₹199 a month, includes 300 free minutes and charges ₹0.50 for every minute beyond them. Plan Y costs a flat ₹349 a month. What is the smallest whole number of minutes in a month for which Plan Y is strictly cheaper than Plan X? MCQ

A. 600
B. 500
C. 601
D. 650

Answer: C. 601

For m > 300 minutes, Plan X costs 199 + 0.5(m − 300). Plan Y is strictly cheaper when 199 + 0.5(m − 300) > 349, that is 0.5(m − 300) > 150, so m > 600. The smallest whole number of minutes is 601; at exactly 600 minutes both plans cost ₹349.

Q20. The average of five consecutive odd numbers is 61. What is the largest of them? TITA

Answer: 65

The middle number of five consecutive odd numbers equals their average, 61. The numbers are 57, 59, 61, 63 and 65, so the largest is 65.

Q21. A job can be finished by 12 men in 14 days or by 18 women in 14 days. In how many days will 8 men and 16 women, working together, finish the same job? MCQ

A. 9
B. 8
C. 10
D. 12

Answer: A. 9

Since 12 men and 18 women each finish the job in 14 days, one man does the work of 18/12 = 1.5 women. So 8 men equal 12 women, and the team is worth 28 women. The job needs 18 × 14 = 252 woman-days, so the team takes 252/28 = 9 days.

Q22. For $x \neq 1$, let $f(x) = (x + 1)/(x - 1)$. What is the value obtained by applying f to 3 a total of 2027 times, that is $f(f(...f(3)...))$? MCQ

A. 3
B. 1/2
C. 2
D. 1/3

Answer: C. 2

Here $f(3) = 2$ and $f(2) = 3$; in fact $f(f(x)) = x$ for every allowed x. An odd number of applications therefore returns $f(3) = 2$.