

CAT Mock Test 01

Full question paper

Set aside two uninterrupted hours. Attempt the sections in order, record your answers on the response sheet and open the separate solutions booklet only after you finish.

No registration, phone number or email is required to read these papers or their solutions.

Section	Questions	Time	Maximum marks
VARC	1 to 24	40 minutes	72
DILR	25 to 46	40 minutes	66
Quantitative aptitude	47 to 68	40 minutes	66
Total	68	120 minutes	204

How to take this paper

1. Start with VARC. At 40 minutes move to DILR; at 80 minutes move to Quant. Stop at 120 minutes. Do not return to an earlier section. Use a timer and separate rough paper.
2. MCQ questions have four options and one correct answer. Write A, B, C or D. TITA questions have no options: write the requested number or sentence sequence, without units or spaces. Leave unanswered items blank.
3. Award 3 marks for each correct answer. Deduct 1 mark for each incorrect MCQ. Incorrect TITA answers and unanswered questions receive 0. There are 45 MCQs and 23 TITA questions in this paper.
4. A basic four-function calculator may be used for this practice paper; do not use formula-solving tools. The official computer-based interface differs from a printed paper.

This original RCMB practice paper uses the CAT 2025 section structure. It is not an official CAT paper and is not endorsed by the IIMs. Check current exam instructions at iimcat.ac.in. Its difficulty has not been calibrated to CAT percentiles.

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Response sheet

T marks a TITA question. Write A, B, C or D for MCQs. Record a number or sequence for TITA questions. Keep blank answers blank.

Q	Your answer	Q	Your answer	Q	Your answer
01		24		47	
02		25 T		48 T	
03		26		49	
04		27 T		50 T	
05		28		51	
06		29 T		52 T	
07		30		53	
08		31 T		54 T	
09		32		55	
10		33 T		56	
11		34		57	
12		35		58	
13		36 T		59	
14		37 T		60 T	
15		38 T		61	
16		39		62	
17		40		63	
18		41		64 T	
19 T		42 T		65	
20 T		43		66	
21 T		44		67 T	
22 T		45 T		68 T	
23		46 T			

Section timing: VARC 0 to 40 min | DILR 40 to 80 min | Quant 80 to 120 min

VARC | 40 minutes

Verbal ability and reading comprehension

Passage 1

Read the passage and answer questions 1 to 4 on the following page.

Cities often describe a new public square as an investment in social life. The design drawings show people talking, children playing and older residents resting under trees. After opening day, however, the square's success is commonly reported through a much narrower measure: the number of people who pass through it. Counting is attractive because it produces a figure that can be compared across sites. Yet a place can become a busy shortcut without becoming somewhere that people feel able to remain. Conversely, a lightly used square may be indispensable to a small group whose needs are poorly served elsewhere.

This does not make pedestrian counts worthless. A sudden decline may reveal a broken crossing or a change in bus routes. The difficulty begins when a useful signal is made to stand for the entire purpose of a place. Suppose a square gains visitors after its benches are replaced by cafe tables. The increase might indicate a more inviting environment. It might also reflect the displacement of people who cannot afford to buy anything by customers whose presence is easier to count and commercially more welcome. The same aggregate trend is compatible with different changes in access.

One response is to add more indicators: length of stay, diversity of activities and visitors' reported comfort. This improves the picture, but does not remove judgement. A long stay may mean pleasure, or simply a long wait for transport. A wide range of activities may signal welcome, or conflict between uses that the space cannot accommodate simultaneously. No list of measures can decide, by itself, whose difficulty should receive priority when interests clash. That decision is part of public responsibility rather than a technical inconvenience that better measurement will eventually eliminate.

The most informative evaluation therefore treats numbers as invitations to investigate. It asks who is missing, what people must do to occupy the space, and how conditions vary across the day. Interviews with non-users can be as revealing as surveys of those already present. These enquiries need not produce a single league table. Their value may lie in identifying a modest change, such as seating outside a commercial area, that an overall attendance score would never suggest.

This approach is sometimes criticised as making comparison impossible. A better description is that it makes comparison answerable to a purpose. If two squares serve different neighbourhoods, placing them on one scale may conceal precisely what the city needs to learn. Comparable numbers remain useful, provided that their apparent precision does not exempt the choices behind them from discussion.

Passage 1 questions

Q01 Which statement best captures the central argument of the passage?

- A. Public squares should be evaluated chiefly through the experiences of their least frequent users.
- B. Numerical evaluation is useful when interpreted in relation to a public space's purpose and distribution of access.
- C. Comparisons between neighbourhoods become reliable once attendance is supplemented with several indicators.
- D. Commercial activity improves public spaces only when visitor numbers rise without changing their composition.

Q02 The example of replacing benches with cafe tables primarily demonstrates that:

- A. commercial users usually spend longer in public spaces than other visitors.
- B. commercial seating and freely available seating attract identical patterns of use.
- C. an increase in a headline measure can coexist with reduced access for some users.
- D. pedestrian counts systematically underestimate the number of people excluded.

Q03 Which finding would most strongly support the evaluation approach recommended by the author?

- A. Interviews with people absent from a busy square reveal that the lack of free seating prevents them from using it.
- B. Two squares have identical daily visitor counts after a change in the counting equipment.
- C. A square with more visitors also produces higher cafe revenue during weekends.
- D. Residents prefer an attendance ranking because it provides a single, easy comparison.

Q04 The author's response to the criticism that the proposed approach makes comparison impossible is that:

- A. subjective testimony is more comparable across neighbourhoods than numerical evidence.
- B. cities should compare only squares with the same attendance and facilities.
- C. comparisons should be postponed until conflicts between users have disappeared.
- D. the relevance of a comparison depends on the purpose and context it is meant to illuminate.

Passage 2

Read the passage and answer questions 5 to 8 on the following page.

Repair is often described as the opposite of innovation. Innovation supposedly introduces a new object, while repair restores an old one. This distinction is convenient for accounts that locate creativity at the moment a product leaves the workshop or laboratory. It is less convincing when we follow what happens after the product enters an unfamiliar household, climate or pattern of use. A device designed for stable electricity may acquire a locally assembled protective circuit. A water pump may be modified because the available replacement seal differs from the original. Keeping something in operation can require producing arrangements that its designers never anticipated.

The point is not that every repair is inventive. Many are routine, and their value lies precisely in their dependable repetition. Nor does an improvised repair necessarily improve an object. It can shift a risk from one component to another, making the immediate problem disappear while creating a less visible failure. Calling all improvisation innovation would merely reverse the original simplification. What matters is that use, maintenance and modification can generate knowledge, and that this knowledge is easily excluded when organisations treat users only as recipients of finished designs.

Consider a manufacturer that receives repeated complaints about a part. Its engineers may interpret the complaints as evidence of improper use, especially when the product performs well under laboratory conditions. A repairer might instead notice that failures cluster around a combination of dust, heat and interrupted power that the laboratory tests separately. Neither perspective is automatically correct. The engineer knows the tolerances of the original material; the repairer knows the environments in which the material has to function. Useful improvement depends on making those kinds of knowledge speak to each other rather than awarding either group permanent authority.

There is an institutional obstacle to this exchange. Records usually describe the replacement part and the time spent, not the sequence of observations that led to the repair. The practical reasoning disappears while the transaction remains. A company can accumulate thousands of service records and still know little about why a local modification worked. Collecting more records in the same format will deepen the archive without necessarily enriching its explanation.

Taking repair seriously would therefore change both the boundary of innovation and the way evidence about products is collected. It would encourage descriptions of conditions, failed attempts and trade-offs, while preserving checks on safety and reproducibility. It would also recognise that an object's design continues to be negotiated during its working life. The resulting account is less tidy than a story of invention followed by passive adoption, but it offers a better basis for deciding which modifications deserve to become part of the next design.

Passage 2 questions

Q05 Which distinction is most important to the author's argument?

- A. The difference between modifications that generate useful knowledge and the assumption that every modification is an improvement.
- B. The difference between inventive household users and repairers who depend on routine procedures.
- C. The difference between unreliable laboratory evidence and reliable observations of actual use.
- D. The difference between original products and replacement parts manufactured to different standards.

Q06 According to the passage, why might collecting more service records fail to improve understanding?

- A. A growing archive makes it harder for engineers to identify the most common replacement parts.
- B. Repairers are unlikely to remember the order in which they tested possible solutions.
- C. Replacement parts no longer have the tolerances recorded by the original designers.
- D. The records may continue to omit the conditions and reasoning that explain the repair.

Q07 Which proposal is most consistent with the author's position?

- A. Approve local modifications whenever they have kept a product operating longer than expected.
- B. Have engineers and repairers jointly document failure conditions and test promising modifications for safety and repeatability.
- C. Replace laboratory tests with field reports because products are ultimately used outside laboratories.
- D. Standardise repairs by permitting only replacement parts specified in the first design.

Q08 The statement that design continues to be negotiated during an object's working life implies that:

- A. designers should leave final specifications undecided until users have modified the product.
- B. the distinction between safe and unsafe modifications can be settled only by long-term users.
- C. actual use can reveal constraints and solutions that should inform later versions of a product.
- D. a product's original design has little explanatory value once the first repair has occurred.

Passage 3

Read the passage and answer questions 9 to 12 on the following page.

A seed bank appears to offer a straightforward answer to the loss of crop diversity: collect seeds, store them carefully and preserve options for the future. Such collections can indeed protect material that might otherwise disappear after a disease outbreak or a change in cultivation. But the metaphor of a bank can mislead. Money deposited in an account is normally expected to retain the same unit of value; a seed's practical value depends on a changing relationship among its inherited traits, the conditions in which it grows and the people who know how to cultivate and use it.

A stored variety may remain genetically recognisable while the agricultural world around it changes. A pest may spread, rainfall may arrive at a different time, or a method of processing the harvest may cease to be familiar. Returning the seed to a field is therefore not the same as returning an intact farming system. Farmers may need to experiment to discover how the variety performs under present conditions. The knowledge once associated with it cannot always be reconstructed from a label describing where and when it was collected.

On farms, meanwhile, varieties do not simply wait. Farmers choose which plants supply the next season's seed, exchange material with neighbours and adjust practices. These activities may preserve diversity through continuing change rather than by preventing change. That creates an apparent contradiction for conservation: if the material evolves, what exactly is being conserved? One answer is that conservation can protect a capacity for adaptation as well as particular specimens. The two objectives overlap, but neither can replace the other in every circumstance.

Maintaining living systems also has costs. A rare variety may produce less than a commercial alternative, and the benefits of preserving it may reach people far beyond the household that grows it. Celebrating farmers as custodians without compensating their work can turn a collective interest into a private burden. At the same time, payment schemes that reward only a fixed inventory of named varieties may discourage the experimentation through which local diversity has been maintained. Support must recognise both the material being grown and the practices that allow it to remain useful.

The practical conclusion is not to choose fields over freezers. Stored collections provide insurance against losses that living cultivation may fail to prevent; cultivation reveals how material interacts with changing environments. A strong conservation system allows movement and learning between them. Its success cannot be judged solely by how many accessions fit on a shelf or by how many names appear in a village survey. It also depends on whether people can obtain, grow, evaluate and continue to develop the material when conditions demand it.

Passage 3 questions

Q09 The passage primarily argues that crop conservation should:

- A. prioritise varieties that currently produce more than commercial alternatives.
- B. preserve the original traits of each variety by restricting farmer selection.
- C. combine stored collections with support for cultivation and the knowledge that sustains adaptation.
- D. measure success through changes in the number of varieties grown by each household.

Q10 Why does the author regard the metaphor of a bank as potentially misleading?

- A. It suggests a stable unit of value although the usefulness of seeds depends on changing relationships and knowledge.
- B. It encourages institutions to sell seeds whose benefits should remain entirely outside markets.
- C. It assumes that stored seeds lose their genetic identity faster than cultivated seeds.
- D. It implies that conservation is valuable only when every stored variety can be grown immediately.

Q11 Which policy would most directly address both concerns about supporting farmers raised in the fourth paragraph?

- A. Pay farmers a fixed amount for every variety whose recorded traits remain unchanged.
- B. Fund storage facilities using revenue from farmers who obtain seeds from them.
- C. Require households to retain rare varieties in exchange for access to commercial seeds.
- D. Compensate the work of maintaining diverse crops while allowing documented local selection and experimentation.

Q12 Which inference follows most reasonably from the passage?

- A. A variety that changes under farmer selection is no longer suitable for conservation.
- B. A large stored collection may still be inadequate if the material cannot be accessed and cultivated effectively.
- C. Farmers can recreate lost cultivation knowledge whenever viable seeds remain available.
- D. Cultivating rare varieties provides sufficient protection against every major source of crop loss.

Passage 4

Read the passage and answer questions 13 to 16 on the following page.

Historians sometimes describe an archive as incomplete, as though a complete archive would be an unproblematic mirror of the past. The description is understandable: a missing register or a destroyed correspondence can obstruct a specific enquiry. Yet incompleteness is not merely a defect that accidents impose on an otherwise neutral collection. Archives begin with decisions about what deserves to be written down, which documents an institution needs and whose statements acquire an official form. Preservation adds further selection to records that were selective from the start.

A factory's wage book, for example, may identify employees and payments with considerable precision while saying almost nothing about unpaid work that made employment possible. Its silence about childcare does not show that childcare was absent, nor does it make the wage figures useless. It marks a boundary in the purpose for which the record was produced. A historian must distinguish between a question the source answers badly and a question it was never organised to answer. Both require caution, but they require different kinds of corroboration.

Digitisation changes access to these materials, sometimes dramatically. A researcher who could not travel to a collection may now search thousands of pages. But the ease of retrieval introduces another temptation: to treat the searchable portion as the available past. Handwriting that software cannot recognise, inconsistent spellings and descriptions created under older cataloguing conventions can make some records harder to find than others. Search results are therefore shaped by technical decisions layered over the earlier institutional ones. An empty result may describe the search system rather than the historical world.

It would be equally mistaken to conclude that every absence can be filled by imaginative reconstruction. The fact that a source is selective does not license any account of what it leaves out. Alternative evidence, including objects, oral testimony and records produced for other purposes, can widen an enquiry, but it brings its own limits. A responsible interpretation makes the route from evidence to conclusion visible and distinguishes an established fact from a plausible possibility. Uncertainty is a condition to be described, not an embarrassment to be concealed.

The historian's task is thus neither to surrender to the archive nor to stand outside it as though unrestricted access to the past were possible. It is to ask how particular traces came to survive and what claims those traces can support. Better preservation and better search remain valuable. Their greatest contribution is not that they remove the need for interpretation, but that they allow more people to examine and contest the grounds on which an interpretation rests.

Passage 4 questions

Q13 Which statement best summarises the author's position?

- A. The expansion of digital archives will eventually resolve most disputes about historical interpretation.
- B. Archives are shaped by successive selections, so historical claims require attention to source purposes and evidential limits.
- C. Official records are less useful than oral testimony for reconstructing activities omitted from institutional accounts.
- D. Because archives are incomplete, historians should favour plausible reconstructions over documentary precision.

Q14 What is the function of the wage-book example?

- A. To show that accurate information about one activity can coexist with silence about related activities outside the source's purpose.
- B. To establish that institutions deliberately removed evidence of childcare from employment records.
- C. To demonstrate that unpaid work can be measured indirectly from recorded wages.
- D. To suggest that historians should avoid sources created for administrative purposes.

Q15 A researcher finds no references to a worker in a digitised archive. Which next step best reflects the passage?

- A. Treat the absence as evidence that the worker did not have formal employment.
- B. Construct an account from the experiences of other workers with the same occupation.
- C. Exclude the archive from the enquiry because its contents have been selectively preserved.
- D. Check spelling variants, catalogue coverage and recognition errors before interpreting the absence historically.

Q16 Which claim would the author be most likely to reject?

- A. Evidence from sources created for different purposes can help test an interpretation.
- B. Improved access can enable a wider group of people to challenge historical claims.
- C. Acknowledging that records are selective makes a plausible reconstruction sufficient without corroboration.
- D. A careful interpretation should distinguish supported conclusions from possibilities.

Verbal ability

Choose the option that best summarises each paragraph.

Q17 A forecasting model can become less accurate after people begin using it successfully. A prediction of congestion may lead drivers to change routes, preventing the predicted jam. The observed error then reflects a response to the forecast rather than a failure to understand traffic. Evaluation must distinguish predictions that merely describe a system from those that help alter it.

- A. Useful forecasts should be judged by whether they eliminate the event predicted rather than by accuracy.
- B. Traffic forecasting is unreliable because drivers can choose routes that the model does not observe.
- C. Forecasts that influence behaviour require evaluation that accounts for how their use changes outcomes.
- D. A model becomes accurate only when its users do not know the predictions in advance.

Q18 A translation may sound natural because it replaces unfamiliar references with familiar ones. That ease can help a reader follow the narrative, but it can also erase distinctions important to the original. Retaining every unfamiliar term has a different cost: the reader may struggle to understand relationships that were ordinary for the first audience. Translation involves choosing which difficulties illuminate the work and which merely obstruct it.

- A. Translation requires judging how to balance accessibility with the preservation of meaningful differences.
- B. An accurate translation should retain unfamiliar references even when they interrupt the narrative.
- C. Natural language makes a translation accessible only by removing the original work's distinctive features.
- D. Translators should reproduce the first audience's reading experience by replacing all unfamiliar terms.

For each question, arrange the four numbered sentences into a coherent paragraph. Write the four-digit sequence without spaces. These are TITA questions.

Q19 [TITA]

1. This unevenness can make a citywide average appear reassuring even while one neighbourhood faces a serious shortage.
2. A city may receive enough water in total and still fail to supply every neighbourhood reliably.
3. Evaluating the service therefore requires information about distribution as well as the total quantity supplied.
4. Differences in pipe pressure and storage capacity mean that the same supply does not reach all households equally.

Answer: _____

Q20 [TITA]

1. Maintenance, energy use and the frequency of replacement contribute to the rest.
2. Comparing products on that basis changes the question from what is cheapest today to what will require fewer resources over time.
3. Purchase price is only one component of what an object costs over its working life.
4. Once those costs are included, a seemingly expensive durable object may become the cheaper choice.

Answer: _____

Four of the five sentences form a coherent paragraph. Identify the sentence that does not belong. Write its number. These are TITA questions.

Q21 [TITA]

1. A map simplifies a territory so that a particular kind of movement or enquiry becomes possible.
2. A transit map may therefore distort geographical distance while preserving the order of stations.
3. That distortion is useful when the traveller needs to identify a change of lines rather than a walking route.
4. Some transport authorities sell advertising space inside railway carriages.
5. Judging such a map requires asking what task its simplification is intended to support.

Answer: _____

Q22 [TITA]

1. Museums sometimes preserve a machine in working order rather than merely displaying its exterior.
2. Watching it operate can reveal relationships between parts that a static display leaves obscure.
3. Factory workers may negotiate shorter shifts when production targets increase.
4. Operation nevertheless causes wear, which creates a tension between demonstration and preservation.
5. Curators must therefore decide how often the educational value of a demonstration justifies that wear.

Answer: _____

Sentence placement

Choose where the given sentence best fits: position 1, 2, 3 or 4.

Q23 Sentence: "Such a rule changes the reward attached to the measure without necessarily improving the service itself."

Paragraph: (1) A hospital may use waiting time as one indicator of service quality. (2) If funding depends entirely on that figure, administrators may reclassify patients so that some waiting periods disappear from the calculation. (3) A lower reported figure can then coexist with unchanged patient experience. (4) Evaluation should therefore examine both the indicator and the practices used to produce it.

- A. Position 1
- B. Position 2
- C. Position 3
- D. Position 4

Q24 Sentence: "The apparent contradiction disappears when we distinguish access to information from the ability to assess it."

Paragraph: (1) Online repositories can make technical documents available to a much wider audience. (2) Yet readers may still depend on specialists to judge which claims are well supported. (3) Availability reduces one barrier; evaluating methods and evidence requires additional knowledge. (4) Public access and expert interpretation can consequently complement each other.

- A. Position 1
- B. Position 2
- C. Position 3
- D. Position 4

DILR | 40 minutes

Data interpretation and logical reasoning

Set 1 Questions 25 to 28

Six speakers A, B, C, D, E and F each give one presentation in six consecutive slots numbered 1 to 6, with one speaker per slot. B speaks immediately before E. C speaks before A. D speaks exactly two slots after A, so there is one presentation between A and D. F is neither first nor last. No other restrictions apply.

Q25 [TITA] How many different schedules satisfy all the conditions?

Answer: _____

Q26 Which speaker must occupy an odd-numbered slot?

- A. A
- B. D
- C. F
- D. E

Q27 [TITA] If B speaks first, in which slot does C speak?

Answer: _____

Q28 If E speaks last, who speaks immediately before D?

- A. A
- B. F
- C. C
- D. B

Set 2 Questions 29 to 32

A manufacturer operates four plants. Monthly capacity is the maximum number of units a plant can produce. Utilisation is actual production as a percentage of capacity. Defective units are a percentage of actual production; all remaining units are saleable. Assume the percentages below are exact and every saleable unit is sold. Each question uses the original table unless it explicitly changes a condition.

Plant	Capacity in units	Utilisation	Defect rate
A	500	80%	5%
B	600	75%	4%
C	800	60%	2.5%
D	400	90%	5%

Q29 [TITA] How many saleable units do the four plants produce in total?

Answer: _____

Q30 What is the ratio of saleable output from A to saleable output from C?

- A. 20 : 39
- B. 95 : 117
- C. 19 : 24
- D. 100 : 117

Q31 [TITA] If C's utilisation rises to 75% while its defect rate remains unchanged, how many additional saleable units does C produce?

Answer: _____

Q32 A sells each saleable unit for Rs. 120 and B for Rs. 100. By how much does A's sales revenue exceed B's?

- A. Rs. 1200
- B. Rs. 1800
- C. Rs. 3000
- D. Rs. 2400

Set 3 Questions 33 to 36

Five teams A, B, C, D and E play a round-robin tournament. Every pair plays exactly once. A win earns 3 points, a draw earns 1 point for each team, and a loss earns 0. Final points are A 8, B 7, C 5, D 4 and E 2. It is also known that A defeated B. There are no deductions or bonus points.

Q33 [TITA] How many matches ended in a draw?

Answer: _____

Q34 Which statement must be true?

- A. B lost exactly two matches.
- B. C won exactly two matches.
- C. A did not lose any match.
- D. D drew exactly two matches.

Q35 Which team did not win any match?

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

Q36 [TITA] If D defeated C, how many of E's points came from matches against B and C combined?

Answer: _____

Set 4 Questions 37 to 41

Among 120 students, 65 attend workshop A, 55 attend workshop B and 40 attend workshop C. Ten students attend none. Exactly 30 attend both A and B, 20 attend both A and C, and 15 attend both B and C. Each pairwise count includes students attending all three workshops. There are no other workshops in this survey.

Q37 [TITA] How many students attend only C?

Answer: _____

Q38 [TITA] How many students attend exactly two workshops?

Answer: _____

Q39 How many students attend exactly one workshop?

- A. 60
- B. 65
- C. 70
- D. 75

Q40 All students attending A are unavailable on Friday. How many of the remaining students attend at least one of B and C?

- A. 40
- B. 45
- C. 50
- D. 55

Q41 A student is chosen uniformly at random from those attending A. What is the probability that the student also attends B or C or both?

- A. $7/13$
- B. $4/13$
- C. $9/13$
- D. $10/13$

Set 5 Questions 42 to 46

A committee selects exactly three of six projects P, Q, R, S, T and U. The total cost must not exceed 15 budget units. It must select exactly one of P and R. Q and T cannot both be selected. If U is selected, S must also be selected. Benefits add directly across projects. Each question uses the same rules unless an additional budget limit is stated.

Project	Cost	Benefit
P	4	7
Q	5	9
R	6	12
S	3	5
T	7	14
U	2	4

Q42 [TITA] How many different selections are feasible?

Answer: _____

Q43 What is the maximum total benefit?

- A. 24
- B. 25
- C. 26
- D. 27

Q44 Which project appears in every feasible selection?

- A. P
- B. R
- C. U
- D. S

Q45 [TITA] What is the minimum total cost of a selection that attains the maximum benefit?

Answer: _____

Q46 [TITA] If the budget limit is reduced to 12 units, what is the maximum attainable benefit?

Answer: _____

QA | 40 minutes

Quantitative aptitude

Answer each question independently. For TITA questions, write the numerical answer without units.

Q47 A shopkeeper marks an item 50% above cost price and gives successive discounts of 20% and $x\%$. The final profit is 8% of cost price. What is x ?

- A. 8
- B. 10
- C. 12
- D. 15

Q48 [TITA] An 80-litre mixture contains milk and water in the ratio 3 : 1. x litres of the well-mixed liquid are removed and replaced with water. The mixture is stirred, and the same operation is repeated with x litres. The final milk-to-water ratio is 27 : 37. Find x .

Answer: _____

Q49 A, B and C can complete a job alone in 12, 18 and 36 days respectively. A and B work together for 3 days. A then leaves and B and C finish the remaining job. How many days does the whole job take?

- A. 7
- B. 8
- C. 9
- D. 10

Q50 [TITA] P and Q are 300 km apart. A leaves P for Q at 60 km/h. Half an hour later B leaves Q for P at 90 km/h. Both continue to their destinations after meeting. How many minutes later than B does A reach the destination?

Answer: _____

Q51 For a principal invested at 12% per annum, the difference between compound interest compounded annually and simple interest over 2 years is Rs. 288. What is the principal?

- A. Rs. 18,000
- B. Rs. 24,000
- C. Rs. 20,000
- D. Rs. 25,000

Q52 [TITA] Twenty students have an average score of 48. Four more students join the group, and the average becomes 50. What is the average score of the four new students?

Answer: _____

Q53 A invests Rs. 30,000 for 12 months, B invests Rs. 40,000 for 9 months and C invests Rs. 50,000 for 6 months. They share a profit of Rs. 1,02,000 in proportion to capital multiplied by time. What is C's share?

- A. Rs. 30,000
- B. Rs. 32,000
- C. Rs. 34,000
- D. Rs. 36,000

Q54 [TITA] The equation $x^2 - 11x + k = 0$ has two positive roots whose difference is 3. Find k.

Answer: _____

Q55 How many integers x satisfy $|2x - 3| + |x + 1| \leq 10$?

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

Q56 Real numbers x and y satisfy $x + y = 7$ and $xy = 10$. Find $x^3 + y^3$.

- A. 123
- B. 143
- C. 153
- D. 133

Q57 A right-angled triangle has hypotenuse 10 cm and inradius 2 cm. What is its area?

- A. 20 cm^2
- B. 24 cm^2
- C. 25 cm^2
- D. 30 cm^2

Q58 A rectangle has perimeter 60 cm and area 216 cm^2 . What is the length of its diagonal?

- A. $6\sqrt{13} \text{ cm}$
- B. $6\sqrt{10} \text{ cm}$
- C. $12\sqrt{3} \text{ cm}$
- D. $3\sqrt{58} \text{ cm}$

Q59 A chord of a circle is 24 cm long and is 5 cm from the centre. What is the area of the circle?

- A. $144\pi \text{ cm}^2$
- B. $156\pi \text{ cm}^2$
- C. $169\pi \text{ cm}^2$
- D. $196\pi \text{ cm}^2$

Q60 [TITA] Find the smallest positive integer that leaves remainders 3, 4 and 5 when divided by 5, 7 and 9 respectively.

Answer: _____

Q61 How many zeros appear at the end of the decimal representation of 125 factorial?

- A. 25
- B. 30
- C. 31
- D. 32

Q62 How many five-digit even numbers can be formed using the digits 0, 1, 2, 3, 4, 5 and 6 without repeating any digit?

- A. 1080
- B. 1200
- C. 1260
- D. 1440

Q63 A bag contains 5 red, 4 blue and 3 green balls. Two balls are selected uniformly at random without replacement. What is the probability that they are of different colours?

- A. $19/66$
- B. $47/66$
- C. $7/11$
- D. $5/6$

Q64 [TITA] For $x > 0$, $\log_2 x + \log_4 x = 6$. Find x .

Answer: _____

Q65 The first 20 terms of an arithmetic progression sum to 650. Its common difference is 3. What is its 15th term?

- A. 43
- B. 45
- C. 49
- D. 46

Q66 Two articles are sold for Rs. 1200 each. One is sold at a profit of 20% and the other at a loss of 20%, each calculated on its own cost price. What is the overall result?

- A. 4% loss
- B. No profit or loss
- C. 4% profit
- D. 5% loss

Q67 [TITA] What is the minimum value of $x^2 - 6x + 11$ over all real x ?

Answer: _____

Q68 [TITA] How many ordered pairs (a, b) of nonnegative integers satisfy $3a + 5b = 60$?

Answer: _____

End of test

Stop the timer before opening the solutions booklet. Calculate your section scores and review the questions you found difficult.