

CAT Mock Test 02

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

A scientific model can be illuminating precisely because it leaves things out. A model of falling objects may initially ignore air resistance; a model of a market may begin with traders who possess the same information. Neither description is a literal inventory of the world. The simplification makes a relationship easier to isolate. The important question is not whether an assumption is false in some everyday sense, but whether the conclusions for which the model is used depend on features that the assumption has removed.

This distinction is easy to acknowledge and difficult to maintain. A model developed to explain the direction of a change may later be asked to predict its exact size. Its original success can lend authority to the new use even though the second task requires details the first could neglect. Imagine a model that correctly predicts that adding a road will attract additional traffic. That achievement does not, by itself, establish that it can estimate how many travellers will switch routes next Tuesday. Explanatory insight and precise prediction are related accomplishments, but they are not interchangeable.

Adding detail is not an automatic remedy. Each additional process requires assumptions or measurements, some of which may be poorly known. A complex model can fit past observations closely by adjusting many parameters, yet respond badly when conditions change. A simpler model may travel better because it captures a stable relationship rather than the incidental features of one dataset. This is not an argument for simplicity as a universal virtue. Some questions cannot be answered without representing several interacting mechanisms. The appropriate level of detail follows from the question and the evidence, not from a preference for elegance or complexity.

One way to examine a model is to ask how its conclusion changes when plausible assumptions are varied. If the conclusion survives, confidence in that particular use may increase. If it changes sharply, the exercise identifies information worth obtaining or a decision that should remain cautious. Either result is useful. A sensitivity test need not discredit the model; it can clarify what the model is genuinely telling us and where its answer is being supplied by an uncertain assumption.

Models become most misleading when their conditional character disappears from the conversation. A number emerging from a calculation can seem less contestable than the judgement that selected its inputs. Good modelling practice keeps the two connected. It states the intended use, shows which omissions matter and makes revision possible when new evidence arrives. The aim is not to produce a miniature world containing everything, but to construct an argument whose relevance to a particular question can be examined.

Passage 1 questions

Q01 Which statement best expresses the main argument?

- A. Models become more trustworthy as their assumptions approach a complete description of the world.
- B. A model's value depends on the suitability of its simplifications and evidence for a specified use.
- C. Simple models usually outperform complex models when precise numerical predictions are required.
- D. Sensitivity analysis can replace the need to obtain accurate measurements of a model's inputs.

Q02 The road example is used to distinguish between:

- A. predicting a direction of change and reliably estimating a specific magnitude.
- B. models based on traffic observations and models based on travellers' intentions.
- C. the effects of adding roads and the effects of changing existing routes.
- D. assumptions that are literally true and assumptions that are deliberately false.

Q03 A model's conclusion reverses when a poorly measured input is changed slightly within a plausible range. The author would most likely recommend:

- A. adding more parameters until the original conclusion can be recovered.
- B. retaining the original input because the initial result fitted past observations.
- C. abandoning modelling in favour of an unquantified judgement.
- D. investigating that input and treating the affected conclusion cautiously.

Q04 Which inference is best supported by the passage?

- A. An assumption known to be unrealistic invalidates every conclusion derived from the model.
- B. Models intended to explain a change do not need to be checked against observations.
- C. Strong performance on past data is insufficient by itself to establish reliability under changed conditions.
- D. The most stable relationships can always be represented without interacting mechanisms.

Passage 2

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

An empty warehouse is readily described as waste. Space has been paid for but is not earning its keep; materials are being held rather than transformed into products. From this perspective, reducing inventories appears to be an uncomplicated improvement. It releases money, lowers storage costs and exposes mistakes that excess stock might otherwise conceal. In a stable environment, a tightly coordinated production system can indeed deliver these benefits. The difficulty is that the environment in which efficiency is measured may be narrower than the environment in which the system must survive.

Suppose several firms rely on the same distant supplier because it offers the lowest price and the most reliable service in ordinary conditions. Each firm's choice may be sensible in isolation. Together, however, the choices create a shared point of failure. A disruption affecting that supplier cannot be managed simply by ordering from a competitor if the competitor depends on the same source. What looked like many independent supply relationships may turn out to be one relationship repeated under different company names.

Resilience is often proposed as the corrective, but the word can conceal another simplification. Keeping a large quantity of every input is costly, and some stock expires or becomes obsolete. Maintaining several suppliers can introduce inconsistency and reduce the learning that comes from a long partnership. A system designed to withstand every imaginable interruption would consume resources that might be better spent preventing the most consequential ones. The practical problem is to decide which dependencies matter, which disruptions are tolerable and how quickly alternatives can be made usable.

That last question directs attention away from inventories alone. A spare machine is of limited value if no one can operate it; an alternative supplier is only nominal if its output has never been tested. Capacity to respond includes knowledge, relationships and the authority to change plans. These resources are difficult to display in an ordinary balance sheet, but their absence becomes visible during an interruption. A modest reserve combined with practised switching arrangements may be more valuable than a much larger reserve whose use depends on unfamiliar procedures.

The lesson is not that efficiency should give way to permanent redundancy. It is that an efficiency claim should specify the disruptions and recovery costs it leaves outside the calculation. A reserve can look idle when every day resembles yesterday and indispensable when that resemblance breaks. Choosing its size is a judgement about risk and consequence. Making that judgement explicit allows a more useful debate than treating either the fullest warehouse or the emptiest one as evidence of superior management.

Passage 2 questions

Q05 Which statement best captures the author's recommendation?

- A. Firms should prefer local suppliers because distance is the principal source of disruption.
- B. Inventory reduction is beneficial only when competitors use entirely different suppliers.
- C. Supply systems should be assessed using explicit dependencies, disruption consequences and usable recovery options.
- D. Managers should retain enough stock to eliminate dependence on supplier performance.

Q06 Why might contracts with several different suppliers fail to provide resilience?

- A. Each contract may prevent the buyer from changing its production plans.
- B. The suppliers may themselves depend on the same underlying source.
- C. The buyer may lose the price reductions associated with a single contract.
- D. Different suppliers are unlikely to maintain equivalent product quality.

Q07 Which situation most directly illustrates the fourth paragraph's argument?

- A. A company increases warehouse capacity because its sales have grown steadily.
- B. A supplier lowers its prices after securing a longer contract.
- C. A factory closes temporarily because demand for its product falls.
- D. A factory resumes production quickly because staff have rehearsed switching to a previously tested substitute input.

Q08 In the context of the passage, describing reserves as "idle" is potentially misleading because:

- A. their usefulness may consist in reducing losses during interruptions rather than generating output in normal operation.
- B. the costs of storage are generally smaller than managers report in financial statements.
- C. reserve inputs usually become more valuable through storage even if they are never used.
- D. unused capacity is a reliable indicator that a firm can survive any interruption.

Passage 3

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

Learning a familiar piece of music can produce a curious disagreement between experience and performance. A student repeats a difficult passage several times, hears it become smoother and concludes that the problem has been solved. The next day the same passage falters. The improvement during repetition was real, but it did not necessarily represent a durable change in what the student could retrieve without the support of the immediately preceding attempt. Ease during practice and reliability later are different things to measure.

This helps explain why some less comfortable practice routines can be productive. Returning to a passage after working on something else requires the player to reconstruct an approach rather than continue an action already underway. The return may feel clumsier, yet it reveals which decisions can be recovered independently. Similarly, attempting a phrase before looking again at the score can expose a gap that fluent reading conceals. The value lies in the information produced by the difficulty, not in difficulty as an end in itself.

That qualification matters. If a task is so demanding that the learner cannot identify a workable beginning, repeated failure may provide little guidance. An unfamiliar rhythm might first need to be slowed down or separated from the notes. Once the underlying pattern is understood, the supports can be reduced. The useful challenge depends on what the learner already knows and on whether feedback makes the error interpretable. A practice routine cannot be judged merely by how much effort it appears to demand.

Teachers face a related problem when they assess learning only at the end of a lesson. The student may still be benefiting from prompts, examples and corrections that will not be present later. Delayed attempts, including attempts in a slightly different context, offer a different view. They can reveal both retention and the ability to use a skill beyond the exact exercise in which it was acquired. Such tests need not be high-stakes judgements; they can determine what kind of practice should come next.

None of this makes immediate fluency irrelevant. Smooth performance can motivate a learner and may be essential during a concert. The mistake is to use it as the sole measure of the learning process that supports future performance. A balanced routine can alternate explanation, supported practice, independent retrieval and later review. Its pace should follow the evidence of what the student can recover, not simply the reassuring sound of a passage played correctly while the teacher is still counting the beat.

Passage 3 questions

Q09 Which statement best expresses the passage's central argument?

- A. Practice should be evaluated by later independent performance as well as by immediate fluency.
- B. Students learn music best when teachers avoid prompting or correcting them during practice.
- C. The most demanding exercises produce the most durable learning across ability levels.
- D. Immediate improvement is an unreliable observation and should be excluded from assessment.

Q10 The author's discussion of a task with no workable beginning is intended to:

- A. explain why learners should repeat a task continuously until it becomes fluent.
- B. argue that learners need complete explanations before attempting any unfamiliar task.
- C. qualify the claim that difficulties during practice can be productive.
- D. show that feedback is useful only after a learner has mastered the underlying pattern.

Q11 Which observation would best indicate learning of the kind the author wants teachers to examine?

- A. A student plays a phrase correctly immediately after the teacher demonstrates each note.
- B. A student spends twice as long on a passage as on the previous day.
- C. A student reports that the score looks increasingly familiar after repeated reading.
- D. A student plays the phrase without prompts several days later and adapts it to a changed rhythm.

Q12 What does the phrase "the information produced by the difficulty" most nearly refer to?

- A. Evidence that a student is willing to continue despite an unpleasant experience.
- B. Evidence about which parts of an approach the learner can reconstruct and where support is still needed.
- C. A numerical measure of how much harder one exercise is than another.
- D. The teacher's explanation of why the original musical passage was composed in a particular way.

Passage 4

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

When a museum displays a woven basket as an artwork, the decision can correct an old hierarchy. Objects previously classified as anonymous craft may receive the attention given to named painters and sculptors. Visitors are invited to notice formal invention, material intelligence and the choices of an individual maker. This recognition matters. Yet the movement from a household or workshop to an art gallery can also change what becomes visible. A basket admired for its shape may become detached from the practices of gathering, carrying and exchanging that helped give the shape its meaning.

There is no simple way to preserve an object in all its original relationships. Leaving it in a storeroom does not solve the problem, and exhibiting it as a tool is itself an interpretation. A label that explains function may reduce an inventive maker to a representative of a timeless tradition. A label that celebrates individual originality may imply that skill emerged independently of teachers, shared patterns and collective work. The two accounts need not be mutually exclusive, but exhibition conventions often encourage a choice between them.

Some curators respond by adding recordings, photographs and accounts from makers. These materials can widen the range of questions a visitor asks. However, context is not a substance that can simply be poured back around an object. A recording is selected and edited; a photograph frames one moment; a maker may address a present audience differently from an earlier one. The additional material is valuable when it makes those relations available for examination, not when it claims to abolish the distance between the gallery and the object's other settings.

The question of authority then becomes unavoidable. Who can name the object, describe its significance or decide whether it should be displayed at all? Consultation can alter an exhibition, but only if it can affect decisions rather than supply a quotation after the main choices have been settled. Disagreement among makers or community members also cannot be resolved by finding one voice to stand for everyone. A museum may need to present an unresolved difference instead of producing a single smooth account.

Recognising craft as art is thus a beginning rather than a complete solution. The aim need not be to withdraw aesthetic attention; looking closely at a curve or a pattern can itself be a serious form of understanding. The challenge is to let that attention coexist with questions about work, use and authority. A successful exhibition might leave visitors with a more complicated object than the one they first saw, and with a clearer sense of why no single label exhausts it.

Passage 4 questions

Q13 Which statement best represents the author's overall position?

- A. Craft objects are best understood in functional displays rather than art galleries.
- B. Consultation enables museums to recover a single authentic interpretation of an object.
- C. Aesthetic attention inevitably obscures the social relationships through which craft is produced.
- D. Recognising craft as art is valuable but should be accompanied by attention to use, relationships and interpretive authority.

Q14 The statement that context cannot simply be "poured back around an object" means that:

- A. additional materials make aesthetic judgement impossible when too many sources are displayed.
- B. contextual materials are themselves selected representations rather than a complete restoration of original relationships.
- C. museums should rely on the object alone because recordings and photographs are unreliable.
- D. makers' present accounts are less authoritative than labels written when an object was first collected.

Q15 Which practice would most directly meet the author's standard for meaningful consultation?

- A. Allowing makers' objections to change display decisions and acknowledging disagreements that remain.
- B. Adding a maker's quotation after the exhibition design and interpretation are finalised.
- C. Asking the most prominent community member to approve one account on behalf of everyone.
- D. Displaying more photographs while retaining exclusive curatorial control over all interpretive choices.

Q16 Why does the author discuss the limitations of both functional and originality-focused labels?

- A. To establish that labels are less useful than a close visual inspection of the object.
- B. To argue that originality cannot exist in a practice learned from other people.
- C. To show that different exhibition frames can each illuminate one aspect while obscuring another.
- D. To demonstrate that the original use of an object cannot be investigated by museums.

Verbal ability

Choose the option that best summarises each paragraph.

Q17 A platform may offer thousands of products while directing most visitors towards a small, prominently ranked group. Formal availability and practical visibility are therefore different. Assessing the range of choices a user encounters requires examining how options are organised, not merely counting how many are listed.

- A. A large product catalogue prevents users from making informed decisions unless rankings are removed.
- B. The choices users effectively encounter depend on presentation and ranking as well as the number available.
- C. Platforms rank products primarily to reduce the cost of storing a large catalogue.
- D. Product rankings are useful only when every listed option receives equal visibility.

Q18 A standard makes cooperation easier by allowing people to rely on a shared specification. Once equipment and training are built around it, however, changing the standard becomes expensive. Its continued use may then reflect the cost of coordination rather than technical superiority. Evaluating an alternative requires considering both its benefits and the transition needed to realise them.

- A. Standards should be retained because replacing equipment costs more than technical improvements are worth.
- B. The most widely adopted standard is usually the one with the strongest technical performance.
- C. Technical improvements become valuable only after all users adopt the same replacement standard.
- D. Standards aid coordination, but persistence can reflect switching costs that must be weighed when evaluating alternatives.

Arrange the numbered sentences into a coherent paragraph. Write the four-digit sequence without spaces. These are TITA questions.

Q19 [TITA]

1. Repeating the measurement at several points in the cycle gives a better basis for comparison.
2. A single reading taken just after the doors open may therefore suggest that the room is usually well ventilated.
3. The concentration of a pollutant inside a room can change as people enter and windows are opened.
4. That conclusion would overlook the accumulation that occurs during a long period of occupancy.

Answer: _____

Q20 [TITA]

1. Those missing cases can make a successful-looking programme appear more representative than it is.
2. An evaluation that follows only participants who complete a course records the experience of a selected group.
3. It should therefore investigate departures as well as outcomes among those who remain.
4. People who leave early may have faced the very obstacles that the course was meant to address.

Answer: _____

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

Q21 [TITA]

1. A building's energy use depends partly on decisions made by its occupants.
2. Office rents can vary sharply between neighbouring streets.
3. Opening windows while mechanical cooling is running can undermine the assumptions used in its design.
4. Understanding such behaviour may therefore improve performance without replacing the main equipment.
5. Designers who study actual use can identify controls that are confusing or inconvenient.

Answer: _____

Q22 [TITA]

1. Restoring a damaged manuscript requires choices about how much missing material to reconstruct.
2. Filling every gap may make the text easier to read while concealing the extent of the loss.
3. Leaving all gaps untouched can preserve that evidence but make the argument difficult to follow.
4. Clearly distinguishing original material from reconstruction helps readers judge both the text and its restoration.
5. Publishers sometimes release the same novel with different cover designs in different markets.

Answer: _____

Sentence placement

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

Q23 Sentence: "This difference in exposure can create an apparent difference in skill."

Paragraph: (1) Two drivers may have the same ability to respond to hazards. (2) One, however, drives mainly on quiet roads, while the other regularly travels through heavy traffic. (3) Comparing their accident counts without considering those conditions could mislead an insurer. (4) A fairer assessment would account for the opportunities each driver had to encounter danger.

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

Q24 Sentence: "A digital purchase may instead provide access that depends on an ongoing service."

Paragraph: (1) Buying a printed book normally gives the reader a physical copy that can be used without contacting the seller again. (2) For instance, a digital reader may have to keep an account active to open a purchased title. (3) If the service closes, access may disappear even though the purchase was paid for. (4) The conditions of continued use therefore matter as well as the price.

- 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

Seven different books A, B, C, D, E, F and G are placed in a row in positions 1 to 7 from left to right. B is immediately to the right of A. F is immediately to the right of E. G is fourth. D is to the left of C, and C is to the right of G. No other restrictions apply.

Q25 [TITA] How many arrangements satisfy all the conditions?

Answer: _____

Q26 Which book cannot be seventh?

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

Q27 [TITA] If D is first, how many different books can occupy position 5?

Answer: _____

Q28 If C is fifth, which statement must be true?

- A. D is first.
- B. E is sixth.
- C. The seventh book is either B or F.
- D. A is first.

Set 2 Questions 29 to 32

A bus travels from P to T through Q, R and S in that order. It leaves P with 60 passengers. At Q, 25% of the passengers on arrival alight and 25 new passengers board. At R, half the arriving passengers alight and some new passengers board; the bus leaves R with 80 passengers. At S, 40% of the arriving passengers alight and 12 new passengers board. Everyone still on the bus alights at T. Passengers who alight never reboard. Distances are P-Q 10 km, Q-R 15 km, R-S 20 km and S-T 10 km. A passenger-kilometre means one passenger travelling one kilometre.

Q29 [TITA] How many passengers board at R?

Answer: _____

Q30 [TITA] How many different passengers travel on the bus during the entire journey?

Answer: _____

Q31 How many passenger-kilometres are travelled in total?

- A. 3500
- B. 3850
- C. 4000
- D. 4200

Q32 What is the maximum number of the original 60 passengers who can remain on the bus until T?

- A. 25
- B. 30
- C. 35
- D. 45

Set 3 Questions 33 to 36

A courier travels from S to T using directed links. The table lists every available link and its travel time in minutes. Links may be used only in the stated direction. A route is a sequence of links from S to T; there is no waiting time at intermediate locations. Each question starts with the full network unless a link closure is stated.

From	To	Minutes
S	A	4
S	B	6
A	B	1
A	C	5
A	D	7
B	C	2
B	D	4
C	D	1
C	T	6
D	T	3

Q33 [TITA] How many different routes from S to T are available?

Answer: _____

Q34 What is the shortest travel time from S to T?

- A. 10 minutes
- B. 11 minutes
- C. 12 minutes
- D. 13 minutes

Q35 [TITA] What is the maximum number of links that can be used on a route from S to T?

Answer: _____

Q36 If the B-to-C link is closed, what is the shortest remaining travel time?

- A. 11 minutes
- B. 13 minutes
- C. 14 minutes
- D. 12 minutes

Set 4 Questions 37 to 41

Four courses A, B, C and D together enrol 400 students. Every student takes exactly one course, and the records classify each student as a woman or a man. Overall, 75% of the 400 students pass. The table gives enrolment, female enrolment, female passes and the overall pass rate for each course. The overall pass rate for C is missing. All counts and percentages are exact.

Course	Enrolled	Women enrolled	Women passing	Overall pass rate
A	100	50	40	80%
B	120	60	42	75%
C	80	40	36	Not given
D	100	50	32	60%

Q37 What is the overall pass rate for course C?

- A. 80%
- B. 82.5%
- C. 85%
- D. 87.5%

Q38 [TITA] How many men pass across all four courses?

Answer: _____

Q39 Which course has the greatest absolute difference between its male and female pass rates?

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

Q40 What is the ratio of students who pass C to students who pass D?

- A. 7 : 6
- B. 4 : 5
- C. 6 : 7
- D. 8 : 9

Q41 [TITA] How many men fail course D?

Answer: _____

Set 5 Questions 42 to 46

A warehouse distributes exactly 100 boxes among stores A, B, C and D. Each store receives a different whole number of boxes, between 10 and 40 inclusive. A and B together receive 55 boxes. B and C together receive 50 boxes. A receives more than C, and C receives more than D. No other restrictions apply.

Q42 [TITA] How many distributions satisfy all the conditions?

Answer: _____

Q43 What is the greatest possible difference between A's allocation and D's allocation?

- A. 25
- B. 28
- C. 30
- D. 35

Q44 [TITA] If B receives 24 boxes, how many boxes do A and C receive together?

Answer: _____

Q45 What is the minimum number of boxes that A can receive?

- A. 25
- B. 27
- C. 28
- D. 30

Q46 [TITA] What is the smallest possible positive difference between C's allocation and D's allocation?

Answer: _____

QA | 40 minutes

Quantitative aptitude

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

Q47 A person earns Rs. 50,000 a month and saves 20% of it. Income rises by 20%. By what percentage must expenditure rise if monthly savings are to rise by 50%?

- A. 10%
- B. 12.5%
- C. 15%
- D. 20%

Q48 Rice costing Rs. 40 per kg is mixed with rice costing Rs. 60 per kg. The mixture is sold at Rs. 63 per kg for a 20% profit on cost. In what ratio by weight are the cheaper and dearer varieties mixed?

- A. 3 : 5
- B. 5 : 3
- C. 2 : 3
- D. 3 : 2

Q49 [TITA] A and B together complete a job in 10 days. A works at a rate 60% higher than B. How many days would B take to complete the job alone?

Answer: _____

Q50 A boat travels 30 km downstream in 2 hours and the same distance upstream in 3 hours. Assuming constant speeds, what is the speed of the current?

- A. 2 km/h
- B. 3 km/h
- C. 2.5 km/h
- D. 5 km/h

Q51 [TITA] Two trains of lengths 300 m and 200 m move in opposite directions at 54 km/h and 36 km/h. How many seconds do they take to cross each other completely, measured from the instant their front ends meet?

Answer: _____

Q52 An investment compounded annually grows to Rs. 12,100 after 2 years and Rs. 13,310 after 3 years at a constant annual rate. What was the initial investment?

- A. Rs. 9000
- B. Rs. 9500
- C. Rs. 11,000
- D. Rs. 10,000

Q53 [TITA] The present ages of A and B are in the ratio 4 : 7. Six years from now their ages will be in the ratio 5 : 8. What is B's present age in years?

Answer: _____

Q54 For what real value of k does $x^2 - (k + 2)x + 2k = 0$ have equal roots?

- A. 0
- B. 1
- C. 2
- D. 4

Q55 [TITA] Find the sum of all real solutions of $|x - 2| + |x + 3| = 9$.

Answer: _____

Q56 If x is nonzero and $x + 1/x = 3$, what is $x^3 + 1/x^3$?

- A. 9
- B. 12
- C. 18
- D. 27

Q57 A rectangle is inscribed in a circle of diameter 10 cm. What is the largest possible area of the rectangle?

- A. 50 cm^2
- B. 40 cm^2
- C. 60 cm^2
- D. 100 cm^2

Q58 [TITA] Two similar triangles have corresponding side lengths in the ratio 2 : 3. Their areas differ by 45 cm^2 . What is the area of the smaller triangle in cm^2 ?

Answer: _____

Q59 The radius of a right circular cylinder increases by 20% while its height decreases by 25%. By what percentage does its volume change?

- A. It decreases by 5%.
- B. It increases by 5%.
- C. It decreases by 8%.
- D. It increases by 8%.

Q60 What is the remainder when 3 raised to the power 100 is divided by 13?

- A. 1
- B. 3
- C. 9
- D. 12

Q61 [TITA] A positive integer N has no prime factors other than 2 and 3, is divisible by 12, and has exactly 18 positive divisors. Find the smallest possible N .

Answer: _____

Q62 A committee of 4 is chosen from 3 men and 4 women. How many committees contain at least 2 women?

- A. 24
- B. 28
- C. 31
- D. 35

Q63 A fair six-sided die is rolled twice. What is the probability that the product of the two outcomes is divisible by 6?

- A. $1/3$
- B. $5/12$
- C. $1/2$
- D. $7/12$

Q64 For real x in the domain of the logarithms, $\log_3(x - 1) + \log_3(x + 1) = 2$. What is x ?

- A. $\sqrt{8}$
- B. 3
- C. $-\sqrt{10}$
- D. $\sqrt{10}$

Q65 [TITA] The sum of the first n terms of a sequence is $3n^2 + 2n$ for every positive integer n . What is the 12th term?

Answer: _____

Q66 An assessment gives 30% weight to a project and 70% to an examination. A student scores 60 out of 100 on the project and has a final weighted score of 74 out of 100. What is the examination score out of 100?

- A. 78
- B. 80
- C. 82
- D. 84

Q67 [TITA] Positive real numbers x and y satisfy $x + 2y = 12$. What is the maximum possible value of xy ?

Answer: _____

Q68 At exactly 4:00, the minute hand of a clock is at 12 and the hour hand is at 4. After how many minutes will the hands first coincide?

- A. $240/11$
- B. 20
- C. $250/11$
- D. 24

End of test

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