

GATE General Aptitude

Sample Paper – 5

Duration: 28 Minutes

Maximum Marks: 15

Instructions

- This paper contains **10** questions, modelled on the General Aptitude section of **GATE** conducted by the IITs and IISc.
- The **10-question** length and the **15-mark** total match the General Aptitude section of the real 65-question paper exactly: **5 questions of 1 mark** (Q1–Q5) and **5 questions of 2 marks** (Q6–Q10).
- Each question carries **negative marking of one-third of its allotted marks**: a wrong 1-mark question costs **0.33** and a wrong 2-mark question costs **0.67**. Unattempted questions carry no penalty.
- Every question here is a **Multiple Choice Question** with exactly one correct option. The real GA section may also include Multiple Select Questions (MSQ) and Numerical Answer Type (NAT) questions, and **those two types carry no negative marking** – never leave a NAT blank.
- Attempt this practice paper in one timed sitting of about **28 minutes**, the share this section earns at the paper's overall pace of 180 minutes for 65 questions.

Verbal Aptitude

Q1. Choose the option that fills the three blanks correctly.

_____ M.Tech student gave _____ hour-long talk on _____ Internet of Things. [1 mark]

- (A) An, an, the
- (B) A, a, the
- (C) An, a, the
- (D) A, an, an



Q2. Select the **single word** that can replace the phrase *a person who speaks and understands many languages*. [1 mark]

- (A) Polyglot
- (B) Philologist
- (C) Bilingual
- (D) Lexicographer

Q3. Choose the **connector** that best completes the sentence.

The new alloy is far lighter than structural steel; _____, it costs nearly four times as much per kilogram. [1 mark]

- (A) therefore
- (B) moreover
- (C) however
- (D) whereas

Quantitative Aptitude

Q4. A laboratory batch has two groups of specimens. The first group has **30** specimens of average mass **12 g**. The second group has **20** specimens of average mass **17 g**. The average mass of all 50 specimens taken together is: [1 mark]

- (A) 14 g
- (B) 14.5 g
- (C) 15 g
- (D) 17 g

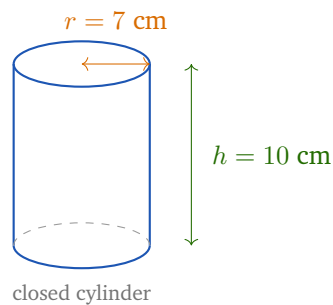
Q5. Two fair six-sided dice are rolled once. The probability that the sum of the two numbers shown is exactly **9** is: [1 mark]

- (A) $\frac{1}{18}$
- (B) $\frac{1}{9}$



- (C) $\frac{1}{6}$
(D) $\frac{5}{36}$

Q6. A closed cylindrical tank has a base radius of **7 cm** and a height of **10 cm**, as shown below. Its **total surface area** is: (take $\pi = 22/7$) [2 marks]



- (A) 440 cm^2
(B) 594 cm^2
(C) 1540 cm^2
(D) 748 cm^2

Analytical Aptitude

Q7. The first pair below is related in a definite way. Complete the second pair on the same relationship.

Thermometer : Temperature :: Anemometer : _____ [2 marks]

- (A) Humidity
(B) Wind speed
(C) Atmospheric pressure
(D) Rainfall

Q8. Three of the four items below share a property that the fourth does not. Pick the **odd one out**. [2 marks]

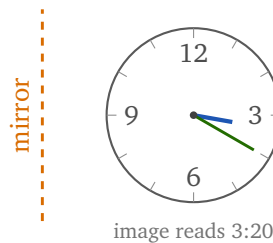
- (A) Copper
(B) Aluminium



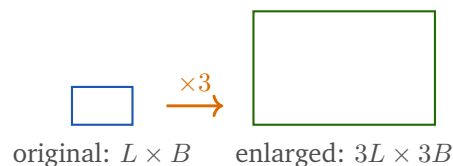
- (C) Graphite
(D) Silver

Spatial Aptitude

- Q9.** A wall clock hangs facing a plane mirror. The **image** of the clock seen in the mirror is sketched below, and that image reads **3:20**. The **actual** time on the clock is: [2 marks]



- (A) 9:40
(B) 8:20
(C) 9:20
(D) 8:40
- Q10.** A rectangular plate of length L and breadth B is enlarged so that **every linear dimension is multiplied by 3**, as shown below. Compared with the original plate, the enlarged plate has: [2 marks]



- (A) 3 times the perimeter and 3 times the area
(B) 3 times the perimeter and 9 times the area
(C) 9 times the perimeter and 9 times the area
(D) 6 times the perimeter and 9 times the area



Detailed Solutions**Q1.****Solution**

Concept – the a/an choice is decided by SOUND, not by spelling: Say the next word aloud. If it opens with a vowel *sound* the article is *an*, whatever letter it is written with.

Step 1 – take the first blank, before "M.Tech": The abbreviation is read aloud as *em-tech*. It opens with the vowel sound /e/, even though the written letter M is a consonant. So the article is **an**.

Step 2 – take the second blank, before "hour-long": The *h* in *hour* is silent. The word is read as *ow-er*, which opens with a vowel sound. So the article is again **an**.

Step 3 – decide between "a/an" and "the" for the third blank: *A* and *an* introduce one unspecified member of a class. *The* points to something already unique and identifiable.

Step 4 – apply that to "Internet of Things": There is only one Internet of Things. It is a unique, named entity, so it takes the definite article **the**.

Step 5 – assemble: The sentence reads: *An M.Tech student gave an hour-long talk on the Internet of Things.*

Why the other options are wrong:

- B, "A, a, the": applies the **spelling rule** instead of the sound rule. It sees the consonant letters M and h and picks *a* both times, which is the classic misconception this question tests.
- C, "An, a, the": gets M.Tech right but then slips back into the spelling rule for *hour*, ignoring the silent h.
- D, "A, an, an": is wrong at the first blank for the reason given in B, and wrong at the third because *an Internet of Things* treats a unique entity as one of many.

Final Answer: An, an, the ⇒ A

Answer: (A) [Go Back to Q1](#)



Q2.

Solution

Concept – a one-word substitution must carry the WHOLE phrase, not most of it: Test each option against every part of the description and reject any word that drops a part or adds something extra.

Step 1 – break the phrase into its parts: The phrase says (i) a person, (ii) who speaks and understands, (iii) many languages.

Step 2 – note the load-bearing word: The word *many* is what decides the answer. Not two, not the study of language, but the ability to use several.

Step 3 – test "polyglot": *Poly* means many and *glot* comes from the Greek for tongue or language. A polyglot is a person who speaks many languages. All three parts are covered.

Step 4 – confirm nothing extra is smuggled in: Polyglot says nothing about studying, teaching or writing about language. It refers purely to the ability to use several languages, which is exactly what the phrase asks for.

Why the other options are wrong:

- B, philologist: is a person who studies the **history and development** of languages and texts. A philologist may know only one language well, so the option confuses *studying* language with *speaking* it.
- C, bilingual: means fluent in exactly **two** languages. It fails on the word *many*, and it is the intended trap for anyone who stops at "more than one".
- D, lexicographer: is a person who **compiles dictionaries**. That is a profession built around words, not a description of how many languages someone speaks.

Final Answer: Polyglot ⇒ A

Answer: (A) [Go Back to Q2](#)

Q3.

Solution

Concept – a connector is chosen by the LOGICAL relation between the two halves, then checked against grammar: First ask what the second half does to the first: does it agree, oppose, follow from it, or add to it? Then check that the chosen word can legally sit where the blank is.

Step 1 – read the first half: "The new alloy is far lighter than structural steel." This is a point in the alloy's favour.



Step 2 – read the second half: "It costs nearly four times as much per kilogram." This is a point against the alloy.

Step 3 – name the relation: A plus followed by a minus is a **contrast**. The second half does not follow from the first and does not reinforce it. It pulls the other way.

Step 4 – shortlist the contrast words: Of the four options only *however* and *whereas* express contrast. *Therefore* shows consequence and *moreover* shows addition, so both are eliminated on meaning alone.

Step 5 – apply the grammar test to the shortlist: The blank sits after a **semicolon** and is followed by a comma, which is the slot for a **conjunctive adverb**. *However* is a conjunctive adverb and fits that slot exactly. *Whereas* is a subordinating conjunction: it must join clauses directly, as in "the alloy is lighter, whereas it costs more", and it cannot stand after a semicolon with a comma behind it.

Step 6 – read the finished sentence back: "The new alloy is far lighter than structural steel; however, it costs nearly four times as much per kilogram." The contrast is clear and the punctuation is correct.

Why the other options are wrong:

- A, therefore: signals **consequence**. It would claim the high price is caused by the low weight, which the sentence never states. This is the misconception of reading any two related engineering facts as cause and effect.
- B, moreover: signals **addition** of a similar point. It would mean the high cost is a further advantage alongside the low weight, which reverses the sense of the second half.
- D, whereas: has the right meaning but the wrong grammar. It is a subordinating conjunction, not a conjunctive adverb, so it cannot follow a semicolon and take a comma after it.

Final Answer: however $\Rightarrow$

Answer: (C) [Go Back to Q3](#)

Q4.

Solution

Concept – a combined average is TOTAL divided by TOTAL COUNT: Never average two averages directly unless the two groups happen to be the same size.

Step 1 – find the total mass of the first group: Total = count $\times$ average

$$\text{Total} = 30 \times 12$$



Total = 360 g

Step 2 – find the total mass of the second group: Total = 20×17

Total = 340 g

Step 3 – add the two totals: Combined mass = $360 + 340$

Combined mass = 700 g

Step 4 – add the two counts: Combined count = $30 + 20$

Combined count = 50

Step 5 – divide: Combined average = $\frac{700}{50}$

Combined average = 14 g

Step 6 – sanity check the position of the answer: The combined average must lie strictly between 12 and 17. The bigger group is the 12 g group, so the answer must be pulled **towards 12**, that is below the midpoint of 14.5. And 14 is below 14.5, which is consistent.

Why the other options are wrong:

- B, 14.5 g: is $\frac{12+17}{2}$, the plain average of the two averages. This is the central misconception of the question: it silently assumes the two groups are equal in size, but they are 30 and 20.
- C, 15 g: comes from **swapping the weights**, computing $\frac{30 \times 17 + 20 \times 12}{50} = \frac{750}{50} = 15$. It attaches 30 to the wrong average and lands above the midpoint instead of below it.
- D, 17 g: simply quotes the second group's average. It assumes the answer must be one of the two figures given, but a combined average is a new number that lies between them.

Final Answer: 14 g $\Rightarrow$ A

Answer: (A) [Go Back to Q4](#)

Q5.

Solution

Concept – with two dice the outcomes are ORDERED pairs: The two dice are distinguishable, so (3,6) and (6,3) are two different outcomes and both must be counted.

Step 1 – size the sample space: Each die shows one of 6 faces, independently of the other.



Total outcomes = 6×6

Total outcomes = 36

Step 2 – list every ordered pair that sums to 9: (3, 6)

(4, 5)

(5, 4)

(6, 3)

Step 3 – check the list is complete: The first die can show 1, 2, 3, 4, 5 or 6. For a sum of 9 the second die must show $9 - 1 = 8$, $9 - 2 = 7$, $9 - 3 = 6$, $9 - 4 = 5$, $9 - 5 = 4$, $9 - 6 = 3$. The first two are impossible on a six-sided die, so only 4 pairs survive. The list is complete.

Step 4 – count the favourable outcomes: Favourable = 4

Step 5 – form the probability: $P = \frac{4}{36}$

Step 6 – reduce the fraction: $P = \frac{1}{9}$

Why the other options are wrong:

- A, $\frac{1}{18}$: counts only the **unordered** pairs {3, 6} and {4, 5}, giving $\frac{2}{36} = \frac{1}{18}$. This is the misconception of treating the two dice as identical while still using a 36-outcome sample space, which mixes two incompatible models.
- C, $\frac{1}{6}$: comes from taking the sample space as $6 + 6 = 12$ instead of $6 \times 6 = 36$, then counting 2 favourable cases to get $\frac{2}{12}$. Rolling two dice is a product of choices, not a sum.
- D, $\frac{5}{36}$: is the correct probability for a sum of **8** or of **6**, each of which has 5 ordered pairs. It is placed to catch a miscount of the list in Step 2.

Final Answer: $\frac{1}{9} \Rightarrow$ B

Answer: (B) [Go Back to Q5](#)

Q6.

Solution

Concept – "closed" cylinder means curved surface PLUS both circular ends:
Total surface area is the sum of three pieces, and the word *closed* is what tells you how many pieces to add.

Step 1 – write down the given data: $r = 7$ cm

$h = 10$ cm



$$\pi = \frac{22}{7}$$

Step 2 – compute the curved surface area: $CSA = 2\pi rh$

$$CSA = 2 \times \frac{22}{7} \times 7 \times 10$$

$$CSA = 2 \times 22 \times 10$$

$$CSA = 440 \text{ cm}^2$$

Step 3 – compute the area of one circular end: $\text{Area} = \pi r^2$

$$\text{Area} = \frac{22}{7} \times 7 \times 7$$

$$\text{Area} = 22 \times 7$$

$$\text{Area} = 154 \text{ cm}^2$$

Step 4 – count the ends: The tank is closed, so it has a base and a lid.

$$\text{Both ends} = 2 \times 154$$

$$\text{Both ends} = 308 \text{ cm}^2$$

Step 5 – add the pieces: $TSA = 440 + 308$

$$TSA = 748 \text{ cm}^2$$

Step 6 – verify with the compact formula: $TSA = 2\pi r(r + h)$

$$TSA = 2 \times \frac{22}{7} \times 7 \times (7 + 10)$$

$$TSA = 44 \times 17$$

$$TSA = 748 \text{ cm}^2$$

The two routes agree, so the answer is confirmed.

Why the other options are wrong:

- A, 440 cm^2 : is the **curved surface area alone**. It is the answer to a different question and ignores the word *closed* entirely, leaving out both circular ends.
- B, 594 cm^2 : is $440 + 154$, the curved surface plus **one** end. This is the open-tank or open-bucket answer, and it is the trap for reading past the word *closed*.
- C, 1540 cm^2 : is the **volume**, $\pi r^2 h = \frac{22}{7} \times 49 \times 10 = 1540$. It also carries the wrong unit: a volume is measured in cm^3 , not cm^2 , so the unit alone rules it out.

Final Answer: $748 \text{ cm}^2 \Rightarrow \boxed{\text{D}}$

Answer: (D) [Go Back to Q6](#)



Q7.

Solution

Concept – state the relation of the first pair as a SENTENCE, then force the second pair into the same sentence: An analogy is only solved once the link is put into words. Guessing from a general sense of "these belong together" is what makes analogies feel arbitrary.

Step 1 – write the relation of the given pair as a sentence: "A thermometer is the instrument that measures temperature."

Step 2 – name the type of relation: It is **instrument to the physical quantity it measures**. It is not a part-to-whole link, not a cause-and-effect link, and not a synonym link.

Step 3 – check the direction: The instrument comes first and the quantity second. So the blank must hold a **quantity**, not another instrument. All four options are quantities, so the direction is respected and the test must be on meaning.

Step 4 – unpack the word "anemometer": *Anemos* is Greek for wind, and *-meter* means a measuring device. So the word itself says "wind measurer".

Step 5 – fit it into the sentence from Step 1: "An anemometer is the instrument that measures wind speed." The sentence holds exactly, so wind speed is the answer.

Step 6 – confirm by elimination: Each remaining quantity already has its own well-known instrument, so none of them can pair with the anemometer.

Why the other options are wrong:

- A, humidity: is measured by a **hygrometer**. This is the trap for anyone who groups all weather-station quantities together and picks any one of them, instead of matching the specific instrument to its specific quantity.
- C, atmospheric pressure: is measured by a **barometer**, not an anemometer.
- D, rainfall: is measured by a **rain gauge**, and note that its name does not even end in *-meter*.

Final Answer: Wind speed $\Rightarrow$ B

Answer: (B) [Go Back to Q7](#)



Q8.

Solution

Concept – an odd-one-out question is solved by finding the property shared by exactly THREE items: A property that all four share cannot separate anything, so it is useless. Keep proposing properties until one of them splits the list 3 against 1.

Step 1 – try the first obvious property, electrical conduction: Copper conducts. Aluminium conducts. Silver conducts. Graphite also conducts, because its layered structure leaves one delocalised electron per carbon atom free to move.

Step 2 – reject that property: All **four** conduct, so conduction splits the list 4 against 0. It cannot be the basis of the answer. This is exactly why the question is worth 2 marks: the first property that comes to mind fails.

Step 3 – try the next property, chemical classification: Copper is a metal. Aluminium is a metal. Silver is a metal. Graphite is not a metal. It is an allotrope of carbon, and carbon is a non-metal.

Step 4 – confirm the 3 against 1 split: Three items are metallic elements and one is a non-metal. The split works, so graphite is the odd one out.

Step 5 – cross-check with a second independent property: Copper, aluminium and silver are all **ductile** and **malleable**, and can be drawn into wire. Graphite is brittle and flakes apart along its layers, which is why it works as a pencil lead and a dry lubricant. This second property gives the same 3 against 1 split, which confirms Step 4.

Why the other options are wrong:

- A, copper: is a metal that conducts, is ductile and is malleable, so it sits comfortably inside the group of three. There is no property it holds alone.
- B, aluminium: shares every one of those properties. Someone might single it out for being the lightest of the four, but density is a sliding scale, not a yes-or-no property, so it cannot produce a clean 3 against 1 split.
- D, silver: shares every one of those properties. It might be singled out as the best conductor or the most expensive, but again these are matters of degree. An odd-one-out needs a property that is present or absent, and "metal" is the only one here that behaves that way.

Final Answer: Graphite $\Rightarrow$ C

Answer: (C) [Go Back to Q8](#)



Q9.

Solution

Concept – a mirror sends every clock position to its reflection about the 12–6 line, so actual time = 11:60 minus the mirror time: The subtraction is done in clock arithmetic, borrowing 60 minutes rather than 100.

Step 1 – understand why 11:60 and not 12:00: Reflecting about the vertical 12–6 line sends the mark at x minutes past 12 to the mark at $60 - x$ minutes past 12. Writing the whole clock reading this way, the reflection of a time t is $12:00 - t$. Since 12:00 has no minutes to borrow from, it is rewritten as 11:60, which is the same instant but is in a form the subtraction can use.

Step 2 – write down the subtraction: Actual time = $11:60 - 3:20$

Step 3 – subtract the minutes: $60 - 20 = 40$ minutes

Step 4 – subtract the hours: $11 - 3 = 8$ hours

Step 5 – assemble: Actual time = 8:40

Step 6 – verify the reflection directly on the hands: In the image the minute hand is at the 20-minute mark, which is 4 minutes past the 4 o'clock position. Its reflection about the 12–6 line lands at the 40-minute mark, which agrees with Step 3. In the image the hour hand sits one third of the way from 3 towards 4. Its reflection sits one third of the way from 9 towards 8, which is where the hour hand belongs at 8:40. Both hands check out.

Step 7 – note the useful shortcut: Whenever the mirror time and the actual time are added, they must total 12:00. Here $3:20 + 8:40 = 12:00$, which confirms the answer in one line.

Why the other options are wrong:

- A, 9:40: comes from subtracting from **12:60** instead of 11:60, giving $12 - 3 = 9$ hours and $60 - 20 = 40$ minutes. That adds a spurious extra hour. The check in Step 7 exposes it at once: $3:20 + 9:40 = 13:00$, not 12:00.
- B, 8:20: gets the hours right by subtracting from 11 but then **leaves the minutes untouched**. A mirror reflects the minute hand as surely as the hour hand, so 20 minutes cannot survive the reflection unchanged.
- C, 9:20: makes **both** of the errors above. It subtracts the hour from 12 and copies the minutes across unchanged.

Final Answer: 8:40 $\Rightarrow$ D

Answer: (D) [Go Back to Q9](#)



Q10.

Solution

Concept – under a scaling by a factor k , lengths scale by k and areas scale by k^2 : A perimeter is a length, so it follows k . An area is a product of two lengths, so it follows $k \times k$.

Step 1 – write the original quantities: Perimeter $P_1 = 2(L + B)$

Area $A_1 = L \times B$

Step 2 – write the enlarged dimensions: New length $= 3L$

New breadth $= 3B$

Step 3 – compute the new perimeter: $P_2 = 2(3L + 3B)$

$$P_2 = 2 \times 3 \times (L + B)$$

$$P_2 = 3 \times 2(L + B)$$

$$P_2 = 3P_1$$

So the perimeter becomes **3 times** the original.

Step 4 – compute the new area: $A_2 = 3L \times 3B$

$$A_2 = 3 \times 3 \times L \times B$$

$$A_2 = 9 \times (L \times B)$$

$$A_2 = 9A_1$$

So the area becomes **9 times** the original.

Step 5 – test the result on concrete numbers: Take $L = 4$ and $B = 2$.

Original: $P_1 = 2(4 + 2) = 12$ and $A_1 = 4 \times 2 = 8$.

Enlarged: sides are 12 and 6, so $P_2 = 2(12 + 6) = 36$ and $A_2 = 12 \times 6 = 72$.

Ratios: $36/12 = 3$ and $72/8 = 9$. This matches Steps 3 and 4.

Step 6 – state the general rule: For any shape scaled by k , perimeter scales by k , area by k^2 and volume by k^3 . With $k = 3$ that gives 3, 9 and 27.

Why the other options are wrong:

- A, 3 times and 3 times: gets the perimeter right but treats area as if it were a length. It applies the factor once instead of twice and misses that both dimensions grew.
- C, 9 times and 9 times: gets the area right but applies the squared factor to the perimeter as well. A perimeter is a sum of four sides, and adding scaled lengths keeps the factor at 3.
- D, 6 times and 9 times: gets the area right but computes the perimeter factor



as $2 \times 3 = 6$. This is the misconception of multiplying the scale factor by the 2 that already sits in the formula $P = 2(L + B)$. That 2 is present in both P_1 and P_2 , so it cancels in the ratio and cannot contribute to the factor.

Final Answer: 3 times the perimeter and 9 times the area $\Rightarrow$ B

Answer: (B) [Go Back to Q10](#)



Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	A	2	A	3	C	4	A	5	B
6	D	7	B	8	C	9	D	10	B

