GATE General Aptitude

Sample Paper – 6

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. Select the **grammatically correct** sentence. **[1 mark]**

(A) The committee, along with its two technical advisers, have issued their final report.

(B) The committee, along with its two technical advisers, has issued its final report.

(C) The committee, along with its two technical advisers, have issued its final report.

(D) The committee, along with its two technical advisers, were issuing their final report.

Q2. Read the passage below.

The city's new traffic management system was launched with a press conference, three ribbon cuttings and a promotional film. What it was not launched with was a single published figure for average journey time. The agency assures us that the numbers will follow in due course. It said the same about the two systems before this one, and those numbers never arrived. Perhaps this time will be different.

The **tone** of the author in this passage is best described as: [1 mark]

(A) Enthusiastic and admiring

(B) Neutral and purely factual

(C) Sceptical and mildly ironic

(D) Furious and openly abusive

Q3. Exactly one of the sentences below is free of **redundancy**, that is, free of words that repeat an idea already expressed. Select that sentence. [1 mark]

(A) The two engineers mutually cooperated with each other on the design.

(B) The engineers revised the design after the load test failed.

(C) In my personal opinion, I think the revised design is adequate enough.

(D) The final outcome of the test was that the beam collapsed down completely.

Quantitative Aptitude

Q4. Worker A is **twice as efficient** as worker B. Working together, A and B finish a job in 8 days. Working alone, B would finish the same job in: [1 mark]

(A) 24 days

(B) 12 days

(C) 16 days

(D) 48 days

Q5. A student was asked to **multiply** a number by $\frac{5}{3}$. By mistake the student **divided** the number by $\frac{5}{3}$. The percentage error in the result is: [1 mark]

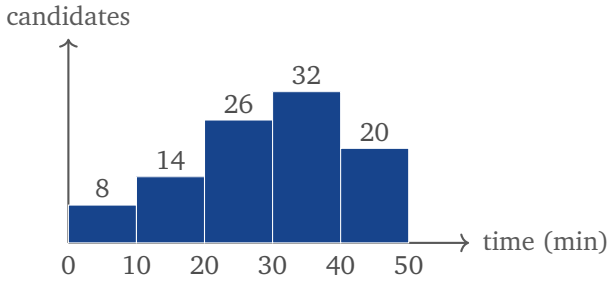
(A) 64%

(B) 36%

(C) Approximately 107%

(D) Approximately 178%

Q6. The histogram below shows the **grouped frequency distribution** of the time taken by a group of candidates to finish an online test. Each class interval is 10 minutes wide and the bars are drawn touching one another, as a grouped-frequency histogram requires. The number written above each bar is the frequency of that class. The percentage of candidates who took **30 minutes or more** is: [2 marks]



(A) 20%

(B) 32%

(C) 48%

(D) 52%

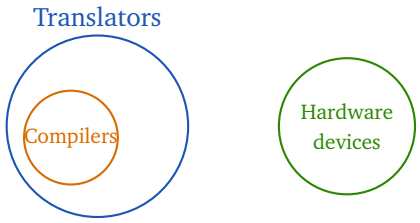
Analytical Aptitude

Q7. Read the two statements below and study the Venn diagram drawn from them.

I. All compilers are translators.

II. No translator is a hardware device.

Which one of the following conclusions **necessarily** follows? **[2 marks]**



(A) All translators are compilers.

(B) Some hardware devices are translators.

(C) No compiler is a hardware device.

(D) Some compilers are hardware devices.

Q8. In a certain system of **numerical relations**, each symbol stands for one arithmetic operation:

$a \# b$ means $a \times b$, $a \,@\, b$ means $a + b$,
$a \,\$\, b$ means $a - b$, $a \,\&\, b$ means $a \div b$.

The value of $\big((12 \# 3) \,\$\, (18 \,\&\, 6)\big) \,@\, 5$ is: **[2 marks]**

(A) 33

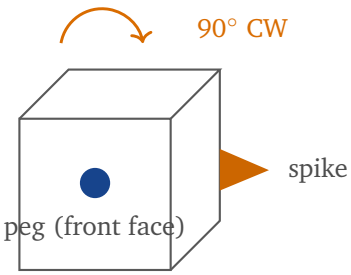
(B) 41

(C) 34

(D) 38

Spatial Aptitude

Q9. A solid cube rests on a table. A cylindrical **peg** projects from the middle of its **front** face and a conical **spike** projects from the middle of its **right** face, as shown. The cube is now turned through **90 degrees clockwise about its vertical axis**, the turn being seen as clockwise by an observer looking down on the cube from above. After the turn, the peg and the spike are on: **[2 marks]**



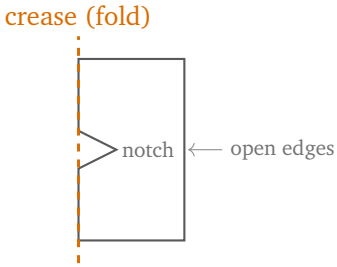
(A) The peg on the right face and the spike on the back face

(B) The peg on the left face and the spike on the front face

(C) The peg on the back face and the spike on the left face

(D) The peg on the front face and the spike on the right face

Q10. A square sheet of paper is folded once along its vertical centre line, so that the left half lies exactly on top of the right half. The folded sheet is shown below. A small **triangular notch** is then cut out of the **creased edge** of the folded sheet, at mid-height, with the scissors passing through both layers. When the sheet is opened out flat again, it has: **[2 marks]**



(A) One diamond-shaped hole in the interior, centred on the crease line

(B) Two separate triangular holes, one on each side of the crease line

(C) One triangular notch cut into the left edge of the sheet

(D) Two triangular notches, one cut into the left edge and one into the right edge

Detailed Solutions

Q1.

Solution

Concept – an intervening phrase never changes the subject, and a collective noun acting as one unit is singular: Two rules are being tested at once here. Strip the sentence down before you choose the verb.

Step 1 – find the grammatical subject: The subject is *The committee*. It sits at the head of the sentence, before any comma.

Step 2 – identify the intervening phrase: The words *along with its two technical advisers* sit between commas. Phrases introduced by *along with*, *as well as*, *together with*, *in addition to* and *besides* are **parenthetical**. They add information but they do **not** join a second subject to the first.

Step 3 – delete the phrase and re-read: Removing it leaves "The committee ... issued its final report." The plural word *advisers* has now vanished, so it can have no say in the verb.

Step 4 – fix the number of the subject: *Committee* is a collective noun. Here it is issuing one single report, so it is acting as **one unit**, and a collective noun acting as one unit takes a **singular** verb: **has issued**.

Step 5 – make the possessive agree as well: A singular subject needs a singular possessive. The report belongs to the committee, so it is **its** final report, not *their* final report.

Step 6 – match against the options: Only option B carries both the singular verb *has issued* and the singular possessive *its*. It is therefore the only fully correct sentence.

Why the other options are wrong:

- A, "have issued their": is wrong twice over. It lets the plural *advisers* inside the parenthetical phrase drag the verb into the plural, which is exactly the trap the phrase is placed there to set, and it then follows through with the plural *their*.
- C, "have issued its": is internally inconsistent. The plural verb *have* and the singular possessive *its* cannot both be describing the same subject. This option encodes the half-corrected error, where a candidate fixes the pronoun but forgets the verb.
- D, "were issuing their": is again plural in both the verb and the possessive, and it also switches the completed action of the report's issue into an ongoing past continuous, which does not fit a report that has been delivered.

Final Answer: Option B $\Rightarrow$ B

Answer: (B) Go Back to Q1

Q2.

Solution

Concept – tone is carried by the author's word choice and by what the author chooses to place side by side: A tone question is not asking what the passage says. It is asking how the author feels about what is being said, so hunt for loaded words and for deliberate contrasts.

Step 1 – read the first sentence for its list: The launch had "a press conference, three ribbon cuttings and a promotional film". Every item in that list is publicity. Not one of them is evidence.

Step 2 – read the second sentence and see the contrast: "What it was not launched with was a single published figure for average journey time." The author has deliberately set a long list of ceremony against a complete absence of data. That contrast is the engine of the whole passage, and it is a criticism.

Step 3 – weigh the word "assures": "The agency assures us that the numbers will follow." The author does not write *states* or *confirms*. *Assures us* is quietly loaded. It reports a promise while signalling that the author is not persuaded by it.

Step 4 – weigh the appeal to the record: "It said the same about the two systems before this one, and those numbers never arrived." The author is supplying a track record of broken promises. This is the ground on which the doubt rests, so the doubt is reasoned rather than emotional.

Step 5 – weigh the closing line: "Perhaps this time will be different." Taken literally it is hopeful. Taken in the light of Step 4 it plainly means the opposite. Saying one thing while meaning its reverse is **irony**, and because it is delivered in a single mild sentence rather than a tirade, it is *mild* irony.

Step 6 – name the tone: Reasoned doubt backed by a record, plus a gently ironic closer, gives a **sceptical and mildly ironic** tone.

Why the other options are wrong:

- A, enthusiastic and admiring: is the exact reverse. The only enthusiasm in the passage belongs to the agency's launch event, and the author quotes it in order to hold it up against the missing data.
- B, neutral and purely factual: is the trap for a candidate who notices that every sentence reports something real. A neutral writer would not have built a contrast out of ribbon cuttings versus figures, would not have chosen

assures us, and would certainly not have ended on "Perhaps this time will be different."

- D, furious and openly abusive: overshoots. There is no insult, no raised voice and no accusation of bad faith anywhere in the passage. Doubt expressed in an even voice is scepticism, not fury.

Final Answer: Sceptical and mildly ironic $\Rightarrow$ C

Answer: (C) Go Back to Q2

Q3.

Solution

Concept – redundancy is not a grammatical error: Every one of these four sentences is grammatically legal. The fault being hunted is **wordiness**, where a word repeats an idea that another word in the same sentence has already delivered. The test is simple: can you delete a word and lose nothing?

Step 1 – test option A: *Cooperate* already means to work together with someone. So *mutually* adds nothing, and *with each other* adds nothing either. The sentence carries the same idea three times over. It is redundant.

Step 2 – test option C: *In my personal opinion* is itself doubled, because an opinion is personal by definition. It is then doubled again by *I think*, which says the same thing a third time. *Adequate* already means sufficient, so *enough* is a fourth repetition. Redundant.

Step 3 – test option D: An *outcome* is by definition what a process finally arrives at, so *final outcome* is a tautology. To *collapse* is to fall down, so *collapsed down* repeats the direction that *collapse* already contains. Redundant.

Step 4 – test option B: "The engineers revised the design after the load test failed." Take each word in turn. *Engineers* names the actors. *Revised* names the action. *The design* names what was acted on. *After the load test failed* gives the time and the cause. Remove any one of these and information is genuinely lost.

Step 5 – conclude: Option B is the only sentence in which no word repeats an idea already present. It is the sentence free of redundancy.

Why the other options are wrong:

- A: triples one idea. *Mutually* and *with each other* are both already contained in the *co-* of *cooperated*. The clean version is "The two engineers cooperated on the design."
- C: stacks four separate redundancies, *personal* inside *opinion*, *I think* on top

of *in my opinion*, and *enough* on top of *adequate*. The clean version is "In my opinion the revised design is adequate."

- D: pairs *final* with *outcome*, which already means the final result, and *down* with *collapsed*, which already means fell down. The clean version is "The outcome of the test was that the beam collapsed."

Final Answer: Option B $\Rightarrow$ B

Answer: (B) Go Back to Q3

Q4.

Solution

Concept – "twice as efficient" is a statement about RATE, not about time: Efficiency is work done per day. If A is twice as efficient as B, then A's rate is twice B's rate, and therefore A's *time* is half B's time. Rates add when people work together; times never do.

Step 1 – name the rates: Let B's one-day work $= b$.

Then A's one-day work $= 2b$, because A is twice as efficient.

Step 2 – add the rates for the joint work: Combined one-day work $= 2b + b = 3b$

Step 3 – turn the joint time into a joint rate: Together they finish the whole job in 8 days.

So their combined one-day work $= \frac{1}{8}$

Step 4 – equate the two expressions for the combined rate: $3b = \frac{1}{8}$

Step 5 – solve for b: $b = \frac{1}{8} \times \frac{1}{3}$

$b = \frac{1}{24}$

Step 6 – convert B's rate back into B's time: B does $\frac{1}{24}$ of the job per day.

So B alone takes 24 days.

Step 7 – find A's time as a check: A's rate $= 2b = \frac{2}{24} = \frac{1}{12}$, so A alone takes 12 days.

Step 8 – verify the pair: $\frac{1}{12} + \frac{1}{24} = \frac{2}{24} + \frac{1}{24} = \frac{3}{24} = \frac{1}{8}$

That is 8 days together, which matches the question. Also 24 days is exactly twice 12 days, as it must be when A is twice as efficient.

Why the other options are wrong:

- B, 12 days: is A's time alone, not B's. This is the answer of a candidate who solves the problem correctly but then hands the faster worker's time to the slower worker. B is the *less* efficient of the two, so B must take the *longer* time.
- C, 16 days: comes from reading "twice as efficient" as though B simply takes twice the joint time, giving $8 \times 2 = 16$. The joint time is a property of the pair, not a base that either worker's solo time is measured against.
- D, 48 days: comes from correctly reaching 24 days but mis-assigning it to A, and then doubling it for B. It doubles the right number from the wrong starting point.

Final Answer: 24 days $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q4

Q5.

Solution

Concept – percentage error is always measured against the CORRECT value:

$$\text{Percentage error} = \frac{|\text{correct value} - \text{obtained value}|}{\text{correct value}} \times 100$$

The denominator is what the answer *should* have been. It is never the wrong answer and never the original number.

Step 1 – take a symbol for the number: Let the number be x. The answer will not depend on x, so any x will do.

Step 2 – write the correct result: $\text{Correct} = x \times \frac{5}{3} = \frac{5x}{3}$

Step 3 – write the result the student actually got: Dividing by a fraction means multiplying by its reciprocal.

$\text{Obtained} = x \div \frac{5}{3} = x \times \frac{3}{5} = \frac{3x}{5}$

Step 4 – find the error: $\text{Error} = \frac{5x}{3} - \frac{3x}{5}$

Step 5 – take the LCM of 3 and 5, which is 15: $\text{Error} = \frac{25x}{15} - \frac{9x}{15}$

$\text{Error} = \frac{16x}{15}$

Step 6 – divide the error by the correct value: $\frac{\text{Error}}{\text{Correct}} = \frac{16x/15}{5x/3}$

Step 7 – invert and multiply, and cancel x: $= \frac{16x}{15} \times \frac{3}{5x}$

$$= \frac{16 \times 3}{15 \times 5}$$
$$= \frac{48}{75}$$

Step 8 – convert to a percentage: $\frac{48}{75} \times 100 = \frac{4800}{75} = 64$

Percentage error $= 64\%$.

Step 9 – sanity check with a number: Take $x = 15$. Correct $= 15 \times \frac{5}{3} = 25$. Obtained $= 15 \times \frac{3}{5} = 9$.

Error $= 25 - 9 = 16$, and $\frac{16}{25} \times 100 = 64\%$. The general result is confirmed.

Why the other options are wrong:

- B, 36%: is the obtained value expressed as a percentage of the correct one, $\frac{9}{25} \times 100 = 36\%$. That is the fraction *retained*, not the fraction *lost*. The error is the rest of it, $100 - 36 = 64\%$, so this option is the correct working stopped one step too early.
- C, approximately 107%: divides the error by the **original number** instead of the correct value, giving $\frac{16x/15}{x} = \frac{16}{15} \approx 107\%$. The original number is not what the answer was supposed to be, so it cannot be the base.
- D, approximately 178%: divides the error by the **obtained** value instead of the correct value, giving $\frac{16x/15}{3x/5} = \frac{80}{45} \approx 178\%$. Measuring an error against the wrong answer is circular; the standard always measures it against the right one.

Final Answer: 64% $\Rightarrow$ A

Answer: (A) Go Back to Q5

Q6.

Solution

Concept – in a grouped-frequency histogram, a percentage needs the WHOLE total: No total is printed on the chart, so the first job is to build it by adding every class. Only then can "30 minutes or more" be turned into a percentage. And "30 minutes or more" is not one bar; it is every class whose lower boundary is 30 or higher.

Step 1 – list the classes and their frequencies from the histogram: 0–10 min: 8 candidates

10–20 min: 14 candidates

20–30 min: 26 candidates

30–40 min: 32 candidates

40–50 min: 20 candidates

Step 2 – add the frequencies to get the total, one addition per line: $8+14=22$

$22+26=48$

$48+32=80$

$80+20=100$

Total $=100$ candidates.

Step 3 – decide which classes mean "30 minutes or more": A class labelled 30–40 starts at 30, so every candidate in it took at least 30 minutes. It is included. The class 40–50 starts at 40, which is also above 30, so it is included too. The class 20–30 ends at 30, so its candidates took less than 30 minutes and it is excluded.

The required classes are **30–40** and **40–50**.

Step 4 – add those two frequencies: $32+20=52$ candidates.

Step 5 – convert to a percentage of the total: Percentage $=\frac{52}{100}\times 100$

$=52\%$

Step 6 – check by the complement: Candidates who took less than 30 minutes $=8+14+26=48$.

$48+52=100$, which is the whole group, so nobody has been counted twice and nobody has been dropped.

Step 7 – sanity check the size: The two tallest bars on the right are the 30–40 and 40–50 classes, and together they look like about half the ink on the chart. An answer close to 50% is what the picture leads you to expect, and 52% fits.

Why the other options are wrong:

- A, 20%: counts only the last class, 40–50. It reads "30 minutes or more" as though it meant the final bar alone, and forgets that the 30–40 class also satisfies the condition.
- B, 32%: counts only the 30–40 class. This is the trap for a candidate who spots the class that starts at 30, reads its frequency, and stops there instead of continuing to every class beyond it.
- C, 48%: is the **complement**. It is the percentage of candidates who took *less* than 30 minutes, that is $8+14+26=48$. The condition has been read the wrong way round.

Final Answer: 52% $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q6

Q7.

Solution

Concept – a Venn diagram turns a syllogism into a picture, and only what is TRUE IN EVERY VALID PICTURE follows: Draw the statements, then test each conclusion against the drawing. A conclusion survives only if no legal redrawing can break it.

Step 1 – draw statement I: "All compilers are translators" puts the whole Compilers circle **inside** the Translators circle. Compilers are a subset of translators. Nothing is left of Compilers outside Translators.

Step 2 – draw statement II: "No translator is a hardware device" puts the Hardware devices circle **completely apart** from the Translators circle. The two circles do not touch anywhere. This is what the diagram in the question shows.

Step 3 – locate the Compilers circle relative to Hardware devices: By Step 1, every point of Compilers lies inside Translators. By Step 2, no point of Translators lies inside Hardware devices. So no point of Compilers can lie inside Hardware devices either.

Step 4 – state the conclusion this forces: No compiler is a hardware device. A subset of a set that is wholly separate from a third set must itself be wholly separate from that third set. This is the transitive chain *all A are B* plus *no B is C* giving *no A is C*.

Step 5 – test whether any redrawing can break it: The Compilers circle can be moved anywhere you like, or made any size you like, so long as it stays inside Translators. Wherever it goes, it is still inside Translators, and Translators is still nowhere near Hardware devices. The separation of Compilers from Hardware devices cannot be broken. So the conclusion is **necessary**, not merely possible.

Step 6 – match it to the options: That is exactly option C.

Why the other options are wrong:

- A, all translators are compilers: is the **illicit converse** of statement I. "All compilers are translators" says the small circle is inside the big one; it says nothing about the part of the big circle lying outside the small one. The diagram plainly shows a region of Translators that is not Compilers, so this can be false.
- B, some hardware devices are translators: directly **contradicts** statement II. Statement II says the two circles have no overlap at all, so no hardware

device can be a translator. A conclusion that fights the statements can never follow from them.

- D, some compilers are hardware devices: is refuted by Step 4. Compilers sit entirely inside Translators, and Translators is entirely separate from Hardware devices, so the overlap this option claims cannot exist anywhere in the diagram.

Final Answer: No compiler is a hardware device $\Rightarrow$ C

Answer: (C) Go Back to Q7

Q8.

Solution

Concept – substitute the operations first, then obey the brackets: In a numerical-relations question the symbols are only disguises. Replace every symbol by the operation it stands for, rewrite the expression in ordinary arithmetic, and then evaluate from the innermost bracket outwards. Do not try to shortcut it in your head, because the symbols are chosen to look like operations they are not.

Step 1 – write out the dictionary: $\#$ means $\times$

$@$ means $+$

$\$$ means $-$

$\&$ means $\div$

Step 2 – rewrite the expression with the operations put in: $\big((12 \,\#\, 3) \,\$\, (18 \,\&\, 6)\big) \,@\, 5$

becomes $\big((12 \times 3) - (18 \div 6)\big) + 5$

Step 3 – evaluate the first inner bracket: $12 \times 3 = 36$

Step 4 – evaluate the second inner bracket: $18 \div 6 = 3$

Step 5 – substitute both back: The expression is now $(36 - 3) + 5$

Step 6 – evaluate the outer bracket: $36 - 3 = 33$

Step 7 – apply the last operation: $33 + 5 = 38$

Step 8 – read the brackets once more as a check: The outer bracket closes around the subtraction, and the $@\,5$ sits outside it. So the addition of 5 must be the *last* thing done, on the result of the subtraction. That is what Step 7 does. The value is 38.

Why the other options are wrong:

- A, 33: is the value of the outer bracket alone. It stops at Step 6 and never applies the final $@5$. This is the trap for a candidate who treats the closing of a bracket as the end of the expression.
- B, 41: computes $36 + 5$. It applies the final addition to the product but skips the subtraction of 3, that is, it loses the $18\,\&\,6$ term entirely.
- C, 34: comes from **swapping** the meanings of $\$$ and $@$, giving $(36 + 3) - 5 = 39 - 5 = 34$. The $\$$ symbol looks like money and tempts the eye towards addition, which is precisely why this distractor is here. Always copy the dictionary out before starting.

Final Answer: $38 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q8

Q9.

Solution

Concept – for a turn about the vertical axis, work in the TOP VIEW and rotate the four side faces as a cycle: The vertical axis is untouched by the turn, so the top face stays the top face and the bottom stays the bottom. Everything that moves is a side face, and the four side faces simply take one another's places in a fixed cycle. Track the cycle, not the picture.

Step 1 – record the starting positions: The peg is on the **front** face. The spike is on the **right** face.

Step 2 – set up the top view: Look straight down on the cube. You now see a square. Its four edges are the four side faces of the cube: the near edge is the *front* face, the far edge is the *back* face, and the two side edges are the *left* and *right* faces.

Step 3 – work out the cycle for a 90 degree clockwise turn seen from above: Clockwise, seen from above, sends the far edge across to the right, the right edge to the near side, the near edge to the left, and the left edge to the far side. Written as faces:

back $\rightarrow$ right

right $\rightarrow$ front

front $\rightarrow$ left

left $\rightarrow$ back

Step 4 – apply the cycle to the peg: The peg started on the **front** face. From Step 3, front $\rightarrow$ left.

So the peg ends up on the **left** face.

Step 5 – apply the cycle to the spike: The spike started on the **right** face. From Step 3, right → front.

So the spike ends up on the **front** face.

Step 6 – check that the two features keep their relationship: Before the turn, the spike was one quarter-turn clockwise from the peg (front to right). After the turn, the peg is on the left and the spike is on the front, and front is still one quarter-turn clockwise from left. The rigid body has not distorted, so this must hold, and it does.

Step 7 – physical check: Put your right hand flat on the front face of an imaginary cube and turn the cube a quarter turn clockwise as seen from above. Your hand is carried round to the left side of the cube. That is Step 4 confirmed.

Why the other options are wrong:

- A, peg right and spike back: is the result of a 90 degree **anticlockwise** turn, which runs the cycle backwards (front → right, right → back). This is the standard direction trap, and it catches anyone who reads "clockwise" while looking at the cube from the front rather than from above.
- C, peg back and spike left: is a **180 degree** turn, that is two clockwise quarter turns instead of one. It sends every face to the one opposite it.
- D, peg front and spike right: is the starting arrangement, unchanged. It would be right only for no rotation at all, or for a full 360 degree turn.

Final Answer: Peg on the left face, spike on the front face ⇒ B

Answer: (B) Go Back to Q9

Q10.

Solution

Concept – unfolding is mirroring, and WHERE the cut is made decides what you get: A cut through a folded sheet appears twice when the sheet is opened, once where it was made and once as its mirror image in the crease. Whether the two copies join into one shape or stay apart depends entirely on whether the cut touched the crease.

Step 1 – count the layers under the scissors: The sheet is folded once, so it is 2 layers thick. The scissors pass through both, so the notch is removed from both layers at once.

Step 2 – locate the crease on the folded sheet: The left half was folded onto the

right half. The folded shape you are left with is the right half, and its **left-hand edge is the crease**. Its other three edges are open edges, that is, free edges of the paper.

Step 3 – note exactly where the notch was cut: The notch is cut out of the **creased** edge. So the triangle removed has its base sitting *on* the crease itself, with its apex pointing into the sheet.

Step 4 – unfold and mirror the cut: Opening the sheet swings the left half back out about the crease. Whatever was cut from the folded sheet appears again on the left half, mirrored in the crease. So there is now a triangle missing on the right of the crease and its mirror-image triangle missing on the left of the crease.

Step 5 – see what the two triangles do at the crease: Both triangles have their base on the crease, and it is the *same* base, because the mirror of a segment lying on the mirror line is that segment itself. So the two triangles are not separate. They are joined edge to edge along the crease, and together they form a single four-sided shape: a **diamond**, that is, a rhombus with its long diagonal across the crease and its short diagonal along it.

Step 6 – decide whether the hole is on an edge or in the interior: The crease is the vertical centre line of the full sheet. It runs down the middle of the paper, nowhere near the outer boundary. So the diamond sits in the **interior** of the sheet, centred on that centre line, with paper all around it. It is a hole, not a notch.

Step 7 – state the result: One diamond-shaped hole in the interior, centred on the crease line.

Why the other options are wrong:

- B, two separate triangular holes: is what you would get if the notch had been cut out of the **middle** of the folded sheet, clear of the crease and clear of every edge. Then the cut and its mirror would have no common edge to join along, and they would open out as two distinct triangles either side of the centre line. Here the cut touches the crease, so they fuse into one shape.
- C, one triangular notch on the left edge: is what you would get if the paper had **not been folded at all**, so that the scissors went through a single layer only. It ignores the fold completely and therefore ignores the mirror image.
- D, two notches on the left and right edges: is what you would get if the notch had been cut from an **open** edge instead of the creased edge. A cut on the open right-hand edge of the folded sheet mirrors to the open left-hand edge of the full sheet, giving two notches biting into the two outer edges. The question puts the cut on the crease, which is the opposite side.

Final Answer: One diamond-shaped hole in the interior, centred on the crease

line $\Rightarrow$ A

Answer: (A) Go Back to Q10

Answer Key

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