

GATE General Aptitude

Sample Paper – 9

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. Change the following sentence into the **passive voice**.

The committee has approved the revised design.

[1 mark]

- (A) The revised design was approved by the committee.
- (B) The revised design has approved by the committee.
- (C) The revised design has been approved by the committee.
- (D) The revised design is being approved by the committee.



Q2. Fill in the two blanks with the correct forms of *affect* and *effect*.

The new cooling system did not _____ the throughput of the line, but it had a clear _____ on the monthly power bill. [1 mark]

- (A) effect, affect
- (B) affect, affect
- (C) effect, effect
- (D) affect, effect

Q3. Read the passage and answer the question that follows.

A thermal plant in the district began a retrofit in March. The contractor replaced all four boiler feed pumps but left the condenser untouched, because its tubes had been renewed only two years earlier. The plant ran on a single unit for the whole retrofit, so its output stayed at 40 percent of the rated capacity for eleven weeks. Commissioning tests were finished in June, and the plant returned to full load in July.

According to the passage, for how long did the plant's output stay at 40 percent of the rated capacity? [1 mark]

- (A) Eleven weeks
- (B) Two years
- (C) Four months
- (D) From March to July

Quantitative Aptitude

Q4. The marked price of an instrument is Rs. 2000. A dealer offers a discount of **20%** on the marked price and then a further discount of **10%** on the already reduced price. The amount finally payable is: [1 mark]

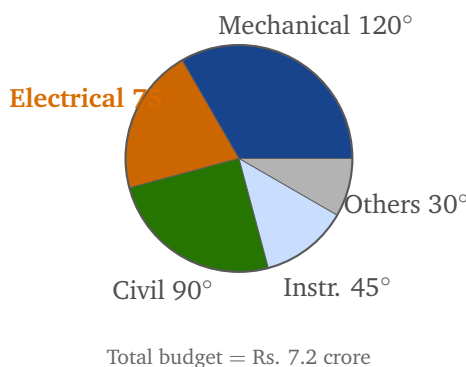
- (A) Rs. 1400
- (B) Rs. 1440
- (C) Rs. 1600
- (D) Rs. 1800



Q5. A car travels from town X to town Y at a steady **60 km/h** and returns to X along the same road at a steady **40 km/h**. The average speed of the car for the whole round trip is: [1 mark]

- (A) 48 km/h
- (B) 50 km/h
- (C) 24 km/h
- (D) 96 km/h

Q6. The pie chart below shows how a plant's annual maintenance budget of **Rs. 7.2 crore** is divided among five heads. The figure against each head is the **central angle** of its sector. The amount allocated to **Electrical** is: [2 marks]



- (A) Rs. 1.44 crore
- (B) Rs. 1.5 crore
- (C) Rs. 1.8 crore
- (D) Rs. 5.4 crore

Analytical Aptitude

Q7. In a certain code for family relationships:

- $A + B$ means A is the **father** of B
- $A - B$ means A is the **wife** of B
- $A \times B$ means A is the **brother** of B
- $A \div B$ means A is the **daughter** of B

The symbols are read strictly from left to right. Given the expression



$$P + Q \times R \div S$$

how is **S** related to **P**?

[2 marks]

- (A) Daughter of P
- (B) Wife of P
- (C) Mother of P
- (D) Sister of P

Q8. A sorting routine rearranges a list of numbers. In **each step** it picks the **largest** number that is not yet in its final place and shifts it to the **right-most position still available**, leaving all the remaining numbers in their existing relative order. For the input list

34 17 46 25 8

the list produced at the end of **Step 3** is:

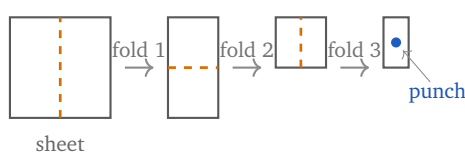
[2 marks]

- (A) 34 17 25 8 46
- (B) 17 25 8 34 46
- (C) 17 8 25 34 46
- (D) 8 17 25 34 46

Spatial Aptitude

Q9. A square sheet of paper is folded exactly in half **three** times in succession, as shown below: first the left half onto the right half (**fold 1**), then the bottom half onto the top half (**fold 2**), and then the left half onto the right half again (**fold 3**). A **single** hole is now punched straight through the folded packet at the point marked, so that the punch passes through every layer. When the sheet is fully unfolded, the number of holes in it is:

[2 marks]

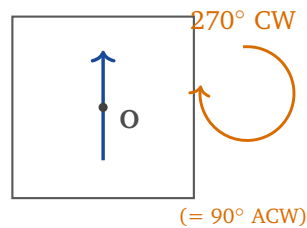


- (A) 8



- (B) 4
- (C) 6
- (D) 16

Q10. The square tile below carries an arrow that points towards the **top** of the page. The tile is rotated in its own plane through **270 degrees clockwise** about its centre **O**, which is the same as a rotation of **90 degrees anticlockwise**. After the rotation, the arrow points: [2 marks]



- (A) Towards the right edge of the page
- (B) Towards the bottom of the page
- (C) Towards the top of the page
- (D) Towards the left edge of the page



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

Concept – the passive keeps the TENSE of the active sentence: Converting to the passive changes who sits in the subject slot. It never changes when the action happened.

Step 1 – break the active sentence into its three parts: Subject = *The committee*. Verb = *has approved*. Object = *the revised design*.

Step 2 – name the tense of the active verb: *Has approved* is the present perfect tense, formed as *has* + past participle.

Step 3 – recall the passive frame for the present perfect: The frame is *has/have been* + past participle. The word *been* is compulsory; it is what carries the perfect aspect across into the passive.

Step 4 – swap the subject and the object: The object *the revised design* moves to the front and becomes the new subject. The old subject *the committee* moves to the end behind *by*.

Step 5 – pick the auxiliary to match the new subject: *The revised design* is singular, so the auxiliary is *has*, not *have*.

Step 6 – assemble: *The revised design* + *has been* + *approved* + *by the committee*. That gives: *The revised design has been approved by the committee*.

Why the other options are wrong:

- A, "was approved": is a correct passive, but of the **simple past** *approved*. It shifts the tense back from present perfect, which a voice change is not allowed to do.
- B, "has approved by": drops *been*. Without *been* the verb is still **active**, so the sentence now claims the design did the approving.
- D, "is being approved": is the present continuous passive. It says the approval is still going on, whereas the original says it is already complete.

Final Answer: The revised design has been approved by the committee ⇒ C

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



Q2.

Solution

Concept – affect is normally the VERB, effect is normally the NOUN: Decide the part of speech the blank needs first. The spelling then follows automatically.

Step 1 – fix the meanings: *Affect* (verb) means to influence or to act on something. *Effect* (noun) means the result or the outcome of an influence.

Step 2 – read the first blank: The words around it are "did not ____ the throughput". After *did not* the sentence needs the bare form of a **verb**.

Step 3 – fill the first blank: The verb of the pair is *affect*, so the first blank is **affect**.

Step 4 – read the second blank: The words around it are "had a clear ____ on the power bill". The article *a* and the adjective *clear* both point to a **noun**, and the verb of that clause is already *had*.

Step 5 – fill the second blank: The noun of the pair is *effect*, so the second blank is **effect**.

Step 6 – read the finished sentence back: "The new cooling system did not **affect** the throughput of the line, but it had a clear **effect** on the monthly power bill." The order is **affect, effect**.

Step 7 – keep a quick test for the exam hall: Replace the blank with *influence*. If *influence* works as a verb, write *affect*. If the blank wants *result*, write *effect*.

Why the other options are wrong:

- A, "effect, affect": is the pair reversed. It puts the noun where a verb is needed and the verb where a noun is needed, so both blanks are wrong at once.
- B, "affect, affect": gets the verb slot right but then puts a verb after *a clear*, which no article can take.
- C, "effect, effect": gets the noun slot right but then puts a noun after *did not*, leaving that clause with no verb at all.

Final Answer: affect, effect ⇒ D

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



Q3.

Solution

Concept – a stated-detail question is answered by locating the exact line, not by reasoning: The answer is printed in the passage. Find the sentence that carries the number the question asks about and read it literally.

Step 1 – identify what the question asks for: It asks for the **duration** for which output stayed at 40 percent of the rated capacity.

Step 2 – scan for the phrase "40 percent": It appears in the third sentence: "its output stayed at 40 percent of the rated capacity for **eleven weeks**."

Step 3 – read the duration attached to that phrase: The duration tied directly to the 40 percent figure is **eleven weeks**. Nothing has to be computed.

Step 4 – check the other numbers in the passage so they do not distract: "Two years" belongs to the condenser tubes. "March" and "June" mark the retrofit and the commissioning tests. "July" marks the return to full load. None of these is attached to the 40 percent figure.

Step 5 – confirm: The answer is **eleven weeks**.

Why the other options are wrong:

- B, two years: is lifted from a different sentence. Two years is how long ago the condenser tubes were renewed, which has nothing to do with the output level.
- C, four months: is an **inferred** figure, counting March to June. The question asks what the passage states, and the passage states eleven weeks, which is under three months.
- D, from March to July: stitches the start of the retrofit to the return to full load. That spans the whole project, not the period at 40 percent output.

Final Answer: Eleven weeks $\Rightarrow$ A

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

Q4.

Solution

Concept – successive discounts are taken one after another on a SHRINKING base: The second discount is charged on the reduced price, not on the marked price, so two discounts never simply add up.

Step 1 – write down the marked price: Marked price = Rs. 2000



Step 2 – compute the first discount of 20%: First discount = $2000 \times \frac{20}{100}$
= 400

Step 3 – find the price after the first discount: Price = $2000 - 400$
= 1600

Step 4 – compute the second discount of 10% on the REDUCED price: Second discount = $1600 \times \frac{10}{100}$
= 160

Step 5 – find the final payable amount: Final price = $1600 - 160$
= 1440

So the amount payable is Rs. 1440.

Step 6 – verify with the multiplier method: Net multiplier = $0.80 \times 0.90 = 0.72$
Final price = $2000 \times 0.72 = 1440$. The two methods agree.

Step 7 – read the net discount off the multiplier: $1 - 0.72 = 0.28$, so the single equivalent discount is **28%**, not 30%. The 2% gap is exactly $20\% \times 10\%$, the part of the second discount that the first one had already removed.

Why the other options are wrong:

- A, Rs. 1400: **adds** the discounts as $20 + 10 = 30\%$ and takes Rs. 600 off. This is the classic error and ignores that the 10% is charged on Rs. 1600, not on Rs. 2000.
- C, Rs. 1600: stops after the **first** discount and forgets to apply the second one.
- D, Rs. 1800: applies only the **10%** discount and ignores the 20% one.

Final Answer: Rs. 1440 $\Rightarrow$ B

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

Q5.

Solution

Concept – average speed is TOTAL distance divided by TOTAL time, never the average of the two speeds: The car spends more hours on the slow leg than on the fast one, so the slow speed weighs more heavily and pulls the answer below the midpoint.

Step 1 – assume a convenient one-way distance: Let the distance from X to Y



be $d = 120$ km. 120 is chosen because it divides evenly by both 60 and 40, which keeps the arithmetic clean. The final answer does not depend on this choice.

Step 2 – find the time for the outward leg: $\text{Time} = \frac{\text{distance}}{\text{speed}} = \frac{120}{60}$

$= 2$ hours

Step 3 – find the time for the return leg: $\text{Time} = \frac{120}{40}$

$= 3$ hours

Step 4 – find the total distance: Total distance $= 120 + 120$

$= 240$ km

Step 5 – find the total time: Total time $= 2 + 3$

$= 5$ hours

Step 6 – divide: Average speed $= \frac{240}{5}$

$= 48$ km/h

Step 7 – see exactly why 50 km/h is WRONG: The arithmetic mean of the two speeds is $\frac{60 + 40}{2} = 50$ km/h. Taking that mean silently assumes the car spends **equal time** at each speed. It does not. Step 2 and Step 3 show it spends only 2 hours at 60 km/h but a full 3 hours at 40 km/h. The slow speed occupies more of the journey's time, so it must count for more. That is why the true value 48 sits **below** 50, and the arithmetic mean 50 overstates the answer. The arithmetic mean would only be correct if the question said the car drove for equal *times* at 60 and 40, which it does not; it says equal *distances*.

Step 8 – record the shortcut for equal distances at two speeds: Average speed $= \frac{2uv}{u + v}$, the harmonic mean.

$$= \frac{2 \times 60 \times 40}{60 + 40}$$

$$= \frac{4800}{100}$$

$= 48$ km/h, matching Step 6.

Step 9 – keep a sanity rule: The harmonic mean is always **less than** the arithmetic mean, and the answer must always lie strictly between 40 and 60. So 48 is safe.

Why the other options are wrong:

- B, 50 km/h: is the **arithmetic mean** of 60 and 40. It is the intended trap and it wrongly assumes equal time on each leg instead of equal distance, as Step 7 shows.
- C, 24 km/h: comes from writing $\frac{uv}{u + v} = \frac{2400}{100}$ and **dropping the factor of**



2 in the numerator. It also fails the sanity rule of Step 9, since 24 is below both speeds, which is impossible.

- D, 96 km/h: is 2×48 , the result of forgetting to divide the round-trip distance correctly. It is above both 40 and 60, so it too fails the sanity rule at once.

Final Answer: 48 km/h $\Rightarrow$ A

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

Q6.

Solution

Concept – a pie chart’s whole circle of 360 degrees represents the GRAND TOTAL: So any sector’s actual value is its angle divided by 360, multiplied by the total.

Step 1 – write down the grand total: Total budget = Rs. 7.2 crore, and this corresponds to the full 360° .

Step 2 – check that the given angles are consistent: $120 + 75 + 90 + 45 + 30 = 360^\circ$

The angles do add to a full circle, so the chart is complete and no head is missing.

Step 3 – read the angle of the sector asked for: The Electrical sector has a central angle of 75° .

Step 4 – set up the conversion: Electrical amount = $\frac{75}{360} \times 7.2$ crore

Step 5 – simplify the fraction: $\frac{75}{360} = \frac{5}{24}$

Step 6 – multiply: Amount = $\frac{5}{24} \times 7.2$

$$= \frac{36}{24}$$

$$= 1.5$$

So the Electrical head gets Rs. **1.5 crore**.

Step 7 – cross-check by the value of one degree: One degree = $\frac{7.2}{360} = 0.02$ crore

Electrical = $75 \times 0.02 = 1.5$ crore. The two routes agree.

Step 8 – sanity check the size: 75° is a little over one-fifth of the circle, and one-fifth of 7.2 is 1.44. So the answer must be just above 1.44, and 1.5 is exactly that.

Why the other options are wrong:



- A, Rs. 1.44 crore: divides the total **equally** among the five heads, $7.2 \div 5 = 1.44$. It ignores the angles entirely and assumes all five sectors are the same size, which the chart plainly denies.
- C, Rs. 1.8 crore: uses the **wrong sector**. It converts 90° , which belongs to Civil: $\frac{90}{360} \times 7.2 = 1.8$.
- D, Rs. 5.4 crore: treats the angle as a **percentage** and computes 75% of 7.2. An angle out of 360 is not a percentage out of 100. This distractor is more than a third of the whole budget for a sector that is only about a fifth of the circle, so the sanity check of Step 8 kills it immediately.

Final Answer: Rs. 1.5 crore $\Rightarrow$ **B**

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

Q7.

Solution

Concept – decode a coded relation ONE symbol at a time, then draw the family tree: Translate each symbol into a plain sentence before you try to answer anything. The symbols mean nothing arithmetic here.

Step 1 – split the expression into its links: $P + Q \times R \div S$ contains three links, read left to right:

$$P + Q$$

$$Q \times R$$

$$R \div S$$

Step 2 – decode the first link: $P + Q$ means **P is the father of Q**. So P is one generation above Q, and P is male.

Step 3 – decode the second link: $Q \times R$ means **Q is the brother of R**. So Q and R are siblings in the same generation, and Q is male.

Step 4 – decode the third link: $R \div S$ means **R is the daughter of S**. So S is one generation above R, and R is female.

Step 5 – place R against P: From Step 3, Q and R are siblings, so they share the same parents. From Step 2, P is the father of Q. Therefore **P is also the father of R**.

Step 6 – place S against R: From Step 4, S is a parent of R. R has exactly two parents: a father and a mother.

Step 7 – eliminate: The father of R is already P, from Step 5. S is a parent of R and S is not P. So S must be the **mother** of R.



Step 8 – convert that into the relation asked for: P is the father of R and S is the mother of R, so P and S are the two parents of the same child. Hence S is the wife of P.

Step 9 – read the tree once more as a check: Generation 1: P (father) and S (mother). Generation 2: Q (son) and R (daughter). Every one of the three given links holds in this tree, and no other tree fits.

Why the other options are wrong:

- A, daughter of P: comes from reading $R \div S$ **backwards**, as if S were the daughter of R rather than R the daughter of S. It also puts S a generation below P, when the links place S a generation above R and so level with P.
- C, mother of P: is a **generation error**. S is one generation above R, and P is also one generation above R, so S and P are in the *same* generation. S cannot be P's mother.
- D, sister of P: would put S and P in the same generation, which is right, but nothing in the expression links S to P as a sibling. The only link between them runs through their shared child R, which makes them spouses, not siblings.

Final Answer: Wife of P $\Rightarrow$ B

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

Q8.

Solution

Concept – apply the stated rule mechanically, writing out EVERY step: Do not jump to the sorted list. The question asks for a particular intermediate step, so the intermediate steps are the whole answer.

Step 0 – restate the rule precisely: In each step, find the largest number that has not yet been parked, and move it to the rightmost slot that is still free. Everything else keeps its relative order and simply shuts up to fill the gap.

Step 1 – write the input and locate the largest number: Input: 34, 17, 46, 25, 8

The largest is **46**. The rightmost free slot is slot 5.

Move 46 to slot 5. The others, 34, 17, 25, 8, keep their order and close up.

Step 1 output: 34, 17, 25, 8, **46**

Step 2 – ignore 46, which is now parked: The unparked numbers are 34, 17,



25, 8.

The largest of these is **34**. The rightmost free slot is now slot 4.

Move 34 to slot 4. The rest, 17, 25, 8, keep their order.

Step 2 output: 17, 25, 8, **34**, 46

Step 3 – ignore 34 and 46: The unsorted numbers are 17, 25, 8.

The largest of these is **25**. The rightmost free slot is now slot 3.

Move 25 to slot 3. The rest, 17 and 8, keep their order.

Step 3 output: 17, 8, **25**, 34, 46

Step 4 – carry on only as a check: The unsorted numbers are 17 and 8. The largest is 17, which goes to slot 2.

Step 4 output: 8, 17, 25, 34, 46

The list is now fully sorted, so the routine stops after 4 steps.

Step 5 – answer what was asked: The question asks for the end of **Step 3**, which is 17, 8, 25, 34, 46.

Step 6 – note the structure: This is selection sort working from the right. After step k , the last k slots hold the k largest numbers in order. After Step 3 the last three slots hold 25, 34, 46, which is exactly what the answer shows.

Why the other options are wrong:

- A, 34 17 25 8 46: is the output of **Step 1**, not Step 3. Only one number, 46, has been parked.
- B, 17 25 8 34 46: is the output of **Step 2**. It is one step short, with only 34 and 46 parked.
- D, 8 17 25 34 46: is the **final** sorted list, reached at the end of Step 4. This is the trap for anyone who sorts the list in their head and forgets that the question fixed a step number.

Final Answer: 17, 8, 25, 34, 46 $\Rightarrow$

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



Q9.

Solution

Concept – one punch makes one hole per LAYER it passes through: So the question reduces to counting the layers under the punch, and folding is what builds those layers.

Step 1 – start with the unfolded sheet: An unfolded sheet is **1 layer** thick.

Step 2 – apply fold 1, the left half onto the right half: Folding in half places every point of the left half directly on top of a point of the right half.

$$\text{Layers} = 1 \times 2 = 2$$

Step 3 – apply fold 2, the bottom half onto the top half: The 2-layer packet is now folded in half again, so every layer is doubled once more.

$$\text{Layers} = 2 \times 2 = 4$$

Step 4 – apply fold 3, the left half onto the right half again: The 4-layer packet is folded in half a third time.

$$\text{Layers} = 4 \times 2 = 8$$

Step 5 – state the general rule: Each fold in half doubles the thickness, so n folds give 2^n layers.

$$\text{Here } n = 3, \text{ so layers} = 2^3 = 8.$$

Step 6 – confirm the punch reaches every layer: The question states the punch passes straight through every layer of the packet, so all 8 layers are pierced.

Step 7 – unfold and count: Each pierced layer is a distinct piece of the original sheet, and unfolding lays all 8 of them back out flat, side by side. Each one carries its own hole.

$$\text{Number of holes} = 8$$

Step 8 – note where the holes sit: They are arranged symmetrically, mirrored about each of the three fold lines in turn. Fold 3 mirrors the single punch into 2 holes, fold 2 mirrors those into 4, and fold 1 mirrors those into 8.

Why the other options are wrong:

- B, 4: is the answer for **two** folds, since $2^2 = 4$. It stops counting one fold too early. The question specifies three folds.
- C, 6: comes from **adding** instead of doubling, treating each fold as if it added 2 layers to give $2 + 2 + 2$. Layers multiply, they do not add.
- D, 16: is 2^4 , the answer for **four** folds. It counts one fold too many.

Final Answer: $8 \Rightarrow \boxed{A}$



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

Q10.

Solution

Concept – convert any large rotation into the smaller equivalent turn first: A 270° clockwise turn and a 90° anticlockwise turn land in exactly the same place, because a full turn of 360° changes nothing.

Step 1 – fix the starting direction: The arrow points towards the **top** of the page, that is, north.

Step 2 – confirm the equivalence the question mentions: 270° clockwise = $360^\circ - 90^\circ$ clockwise.

Turning 360° clockwise brings the tile back exactly where it started. So 270° clockwise leaves the tile 90° short of a full turn, which is the same as having turned 90° **anticlockwise**. The two descriptions are one and the same rotation.

Step 3 – track the arrow the long way, in three clockwise quarter turns: Start: arrow points **top**.

After 90° clockwise: top goes to the right, so the arrow points **right**.

After 180° clockwise: right goes to the bottom, so the arrow points **bottom**.

After 270° clockwise: bottom goes to the left, so the arrow points **left**.

Step 4 – track it the short way, as one anticlockwise quarter turn: Anticlockwise means top goes to the left. The arrow starts at the top, so in one anticlockwise quarter turn it points **left**.

Step 5 – compare the two routes: Step 3 and Step 4 both give **left**, which confirms the equivalence claimed in Step 2 and the answer itself.

Step 6 – check with a physical intuition: Hold the page and turn it three quarter turns clockwise. The edge that began at the top ends up along the left edge. The arrow, being fixed to the tile, goes with it and finishes pointing towards the left edge of the page.

Step 7 – note the trap: 270° is close enough to 360° that many candidates read it as "almost no change" and answer *top*. It is a genuine three-quarter turn, so the change is as large as a quarter turn, just in the opposite sense.

Why the other options are wrong:

- A, towards the right edge: is where the arrow lands after only 90° **clockwise**, that is, one quarter turn instead of three. It is the trap for anyone who reads the direction correctly but the angle carelessly.



- B, towards the bottom: is the result of a 180° rotation, two quarter turns instead of three.
- C, towards the top: is the starting position. It corresponds to no rotation at all, or to a full 360° turn, and is the trap described in Step 7.

Final Answer: Towards the left edge of the page $\Rightarrow$

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



Answer Key

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

