

GATE EE - Previous Year Questions

Logical Reasoning | Chronologically & Section-wise Organized

1-Mark Questions

GATE EE 2026

Question 1: The figure below is supposed to show three non-overlapping shapes - one oval and two triangles. Which one of the following figures P, Q, R, or S fits the missing portion indicated by '?' and completes the oval and the two triangles?

- **A:** Figure P
- **B:** Figure Q
- **C:** Figure R
- **D:** Figure S

Answer: Option A

Question 2: Which one of the following figures P, Q, R, or S, correctly shows the 45° clockwise-rotated version of figure (I)?

- **A:** Figure P
- **B:** Figure Q
- **C:** Figure R
- **D:** Figure S

Answer: Option B

Explanation:

- When a square figure is rotated by 45° clockwise, it appears like a diamond shape (its corners move to the positions of the midpoints of the sides).
- Checking the details:
 - P → The arms are not aligned as expected after rotation.
 - Q → The arms and the overall shape match perfectly with the 45° rotated version.
 - R and S → Some parts look flipped or mismatched in direction.
- So, the figure that correctly shows the 45° clockwise rotation is Q.

GATE EE 2025

Question 3: Each row of Column-I has three items and each item is represented by a circle in Column-II. The arrangement of circles in Column-II represents the relationship among the items in Column-I. Identify the option that has the most appropriate match between Column-I and Column-II.

- **A:** (1) - (Q); (2) - (P); (3) - (S); (4) - (R)
- **B:** (1) - (Q); (2) - (R); (3) - (S); (4) - (P)
- **C:** (1) - (S); (2) - (P); (3) - (R); (4) - (Q)
- **D:** (1) - (R); (2) - (S); (3) - (Q); (4) - (P)

Answer: Option B

Explanation: The correct matching relationship is (1) - (Q); (2) - (R); (3) - (S); (4) - (P).

GATE EE 2024

Question 4: P and Q have been allotted a hostel room with two beds, a study table, and an almirah. P is an avid bird-watcher and wants to sit at the table and watch birds outside the window. Q does not mind that as long as his bed is close to the ceiling fan. Which one of the following arrangements suits them the most?

- **A:** Arrangement A
- **B:** Arrangement B
- **C:** Arrangement C
- **D:** Arrangement D

Answer: Option A

GATE EE 2023

Question 5: Students of all the departments of a college who have successfully completed the registration process are eligible to vote in the upcoming college elections. However, by the time the due date for registration was over, it was found that surprisingly none of the students from the Department of Human Sciences had completed the registration process.

Based only on the information provided above, which one of the following sets of statements can be logically inferred with certainty?

- (i) All those students who would not be eligible to vote in the college elections would certainly belong to the Department of Human Sciences.
- (ii) None of the students from departments other than Human Sciences failed to complete the registration process within the due time.

(iii) All the eligible voters would certainly be students who are not from the Department of Human Sciences.

- **A:** (i) and (ii)
- **B:** (i) and (iii)
- **C:** only (i)
- **D:** only (iii)

Answer: Option D

Explanation: Based on the information provided, only statement (iii) can be logically inferred with certainty. Since no student from the Department of Human Sciences completed the registration process, none of them are eligible voters. Therefore, all eligible voters must be from departments other than Human Sciences. Statements (i) and (ii) cannot be inferred because there could be students from other departments who also failed to register.

GATE EE 2021

Question 6: A transparent square sheet shown below is folded along the dotted line. The folded sheet will look like:

- **A:** Figure A
- **B:** Figure B
- **C:** Figure C
- **D:** Figure D

Answer: Option C

2-Mark Questions

GATE EE 2026

Question 1: Based on the relationship between each polygon and the number inside it, the value of 'X' is _____:

- **A:** 720
- **B:** 596
- **C:** 24
- **D:** 240

Answer: Option A

Explanation:

The pattern uses the factorial of the number of sides ($n!$):

- Triangle ($n = 3$) $\rightarrow 3! = 6$
- Quadrilateral ($n = 4$) $\rightarrow 4! = 24$
- Pentagon ($n = 5$) $\rightarrow 5! = 120$
- Hexagon ($n = 6$) $\rightarrow 6! = 720$

Question 2: Consider a linear arrangement of seven bulbs, each of which can be in the ON or OFF states. The initial configuration of the bulbs is given. In every Step, the states of the bulbs are changed based on the following rules:

1. Any OFF bulb with exactly one ON neighbor at the end of the previous Step is turned ON.
2. Any ON bulb with both neighbors ON at the end of the previous Step is turned OFF.
3. The state of any bulb not meeting the conditions above is left unchanged.

The number of bulbs which are ON at the end of Step 8 is _____:

- A: 5
- B: 4
- C: 3
- D: 0

Answer: Option B

Explanation:

Step-by-step simulation (using 1 for ON and 0 for OFF across B1 to B7):

- Initial: 0 0 0 1 0 0 0 (Total ON = 1)
- Step 1: 0 0 1 1 1 0 0 (Total ON = 3)
- Step 2: 0 1 1 0 1 1 0 (Total ON = 4)
- Step 3: 1 1 0 0 0 1 1 (Total ON = 4)
- Step 4: 1 0 1 0 1 0 1 (Total ON = 4)
- Step 5: 1 0 1 0 1 0 1 (Total ON = 4)

From Step 5 onwards, no rules trigger as every OFF bulb has either 0 or 2 ON neighbors, and no ON bulb has 2 ON neighbors. The state locks at 1 0 1 0 1 0 1, meaning 4 bulbs are ON at the end of Step 8.

GATE EE 2025

Question 3: In the given figure, EF and HJ are coded as 30 and 80, respectively. Which one among the given options is most appropriate for the entries marked (i) and (ii)?

- **A:** (i) EH ; (ii) 40
- **B:** (i) JK ; (ii) 36
- **C:** (i) EG ; (ii) 42
- **D:** (i) PS ; (ii) 14

Answer: Option C

Explanation:

Alphabetical positional values are multiplied:

- $E(5) \times F(6) = 30$
- $H(8) \times J(10) = 80$
- For (i) EG: $E(5) \times G(7) = 35$
- For (ii) FG: $F(6) \times G(7) = 42$

GATE EE 2024

Question 4: The assembly shown below has three teathed circular objects (Pinions) and two teathed flat objects (Racks), which are perfectly mating with each other. Pinions can only rotate clockwise or anti-clockwise staying at its own center. Racks can translate towards the left ($\leftarrow$) or the right ($\rightarrow$) direction. If the object A (Rack) is translating towards the right ($\rightarrow$) direction, the correct statement among the following is:

- **A:** Object B translates towards the right direction.
- **B:** Object B translates towards the left direction.
- **C:** Object R rotates in the anticlockwise direction.
- **D:** Object Q rotates in the clockwise direction.

Answer: Option B

GATE EE 2021

Question 5: Seven Cars P, Q, R, S, T, U, and V are parked in a row not necessarily in that order. The cars T and U should be parked next to each other. The cars S and V also should be parked next to each other, whereas P and Q cannot be parked next to each other. Q and S must be parked next to each other. R is parked to the immediate right of V. T is parked to the left of U.

Based on the above statements, the only incorrect option given below is:

- **A:** There are two cars parked in between Q and V.
- **B:** Q and R are not parked together.
- **C:** V is the only car parked in between S and R.
- **D:** Car P is parked at extreme end.

Answer: Option A

Explanation: Combining the given conditions gives the arrangement segment Q - S - V - R. Thus, there is only ONE car (S) parked between Q and V. Therefore, Statement A is incorrect, making it the correct answer choice.