

GATE 2022

Electrical Engineering

General Aptitude

▶ Question Paper
& Solutions



1. As you grow older, an injury to your _____ may take longer to _____.
- A. heel/heel B. heal/heal
C. heal/heal D. heel/heal

[MCQ: 1 Mark]

Ans. D

Sol. Heel: the back part of a human foot.

Heal: to recover from an injury.

So, the correct sentence will be:

“As you grow older, an injury your heel may take longer to heal”.

Hence, option D is correct.

2. In a 500 m race, P and Q have speeds in the ratio of 3 : 4. Q starts the race when P has already covered 140 m. What is the distance between P and Q (in m) when P wins the race?
- A. 20 B. 40
C. 60 D. 140

[MCQ: 1 Mark]

Ans. A

Sol. Let distance remaining to be covered by P is $d_1 = 500 - 140 = 360$ m

And the distance remaining to be covered by Q at the same time = d_2

Therefore, the ratio of distances will be same as the ratio of speeds i.e.,

$$\frac{d_1}{d_2} = \frac{s_1}{s_2} = \frac{3}{4}$$

$$\frac{360}{d_2} = \frac{3}{4}$$

So, $d_2 = 480$ m

Therefore, the distance between P and Q will be = $(500 - 480) = 20$ m behind P.

Hence, option A is correct.

3. Three bells P, Q, and R are rung periodically in a school. P is rung every 20 minutes; Q is rung every 30 minutes and R is rung every 50 minutes. If all the three bells are rung at 12:00 PM, when will the three bells ring together again the next time?
- A. 5:00 PM B. 5:30 PM
C. 6:00 PM D. 6:30 PM

[MCQ: 1 Mark]

Ans. A

Sol. It is given that all three bells rang together at 12:00 PM. Now, for the next time when they will ring together will be after 'x' hours.

$$x = \text{LCM}(20, 30, 50) = 300 \text{ minutes}$$

Therefore, $x = 5$ hours

Hence, all three bells will ring together at 5:00 PM.

Hence, option A is correct.

4. Given below are two statements and four conclusions drawn based on the statements.

Statement 1: Some bottles are cups.

Statement 2: All cups are knives.

Conclusion I: Some bottles are knives.

Conclusion II: Some knives are cups.

Conclusion III: All cups are bottles.

Conclusion IV: All knives are cups.

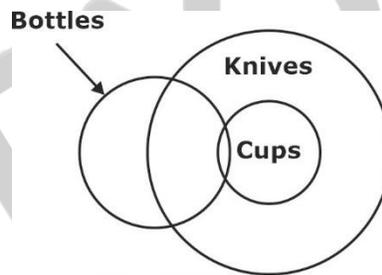
Which one of the following options can be logically inferred?

- A. Only conclusion I and conclusion II are correct.
- B. Only conclusion II and conclusion III are correct.
- C. Only conclusion II and conclusion IV are correct.
- D. Only conclusion III and conclusion IV are correct.

[MCQ: 1 Mark]

Ans. A

Sol. Following Venn diagram is based upon the given statements in the question:



From conclusion 1:

Some bottles are Knives which is true as seen from the diagram.

From conclusion 2:

Some knives are cups as all cups are Knives. Hence, it is also true.

From conclusion 3:

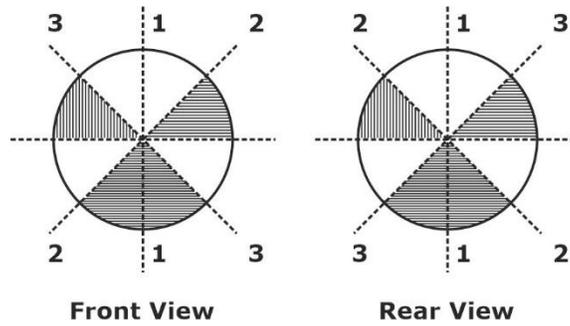
Some bottles are cups so all cups may or may not be the bottles, Thus, it is incorrect.

From conclusion 4:

All knives cannot always be true as seen from the diagram. Thus, it is incorrect.

5. The figure below shows the front and rear view of a disc, which is shaded with identical patterns. The disc is flipped once with respect to any one of the fixed axes 1-1, 2-2 or 3-3 chosen uniformly at random.

What is the probability that the disc **DOES NOT** retain the same front and rear views after the flipping operation?



- A. 0
B. 1/3
C. 2/3
D. 1

[MCQ: 1 Mark]

Ans. C

Sol. By looking at the front view and the rear view, we conclude that the view is symmetrical about 1-1 axis, Thus the disc will retain the same front and rear view after flipping about 1-1 axis out of the three-given axis.

Hence, the probability that the disc does not retain the same front and rear view

= 1 - (probability of retaining same views)

$$= 1 - \frac{1}{3} = \frac{2}{3}$$

Hence, option C is correct.

6. Altruism is the human concern for the wellbeing of others. Altruism has been shown to be motivated more by social bonding, familiarity, and identification of belongingness to a group. The notion that altruism may be attributed to empathy or guilt has now been rejected.

Which one of the following is the CORRECT logical inference based on the information in the above passage?

- A. Humans engage in altruism due to guilt but not empathy.
B. Humans engage in altruism due to empathy but not guilt.
C. Humans engage in altruism due to group identification but not empathy.
D. Humans engage in altruism due to empathy but not familiarity.

[MCQ: 2 Marks]

Ans. C

Sol. As per the last statement of the passage, "The notion that altruism may be attributed to empathy or guilt has now been rejected", we can conclude that humans does not engage in altruism due to empathy and guilt. Thus, the logical inference based on the passage is, "Humans engage in altruism due to group identification but not empathy" whereas all the other options can be eliminated.

7. There are two identical dice with a single letter on each of the faces. The following six letters: Q, R, S, T, U & V one in each of the faces. Any of the six outcomes are equally likely. The two dice are

thrown once independently at random. What is the probably that outcome on the dice were composed only of any combination of the following possible outcomes Q, U & V ?

- A. 1/4
- B. 3/4
- C. 1/6
- D. 5/36

[MCQ: 2 Marks]

Ans. A

Sol. Total number of possible outcome = 36

Favorable outcomes can be composed of any combination of Q, U, & V. i.e., (Q, Q), (U, U), (V, V), (Q, U), (U, Q), (Q, V), (V, Q), (U, V), (V, U).

The favorable outcomes came from 3 outcomes on each dice.

$$\therefore \text{Probability} = \frac{3}{6} \times \frac{3}{6} = \frac{9}{36} = \frac{1}{4}$$

Hence, option A is correct.

- 8.** The price of an item is 10% cheaper in an online store S compared to the price at another online store M. Store S charges ₹ 150 for delivery. There are no delivery charges for orders from the store M. A person bought the item from the store S and saved ₹ 100. What is the price of the item at the online store S (in ₹) if there are no other charges than what is described above?

- A. 2500
- B. 2250
- C. 1750
- D. 1500

[MCQ: 2 Marks]

Ans. B

Sol. Let the price of an item at store S = S

And the price of an item at store M = M

So, according to the question

$$S = (1 - 0.1)M = 0.9M$$

And $M - (S + 150) = 100$

$$\Rightarrow M - (0.9M + 150) = 100$$

$$0.1M = 250$$

$$M = \text{Rs. } 2500$$

Price of item at store S = 0.9M

$$= 0.9 \times 2500 = \text{Rs. } 2250$$

Hence, option B is correct.

- 9.** The letters P, Q, R, S, T and U are to be placed one per vertex on a regular convex hexagon, but not necessarily in the same order.

Consider the following statements:

- The line segment joining R and S is longer than the line segment joining P and Q.
- The line segment joining R and S is perpendicular to the line segment joining P and Q.
- The line segment joining R and U is parallel to the line segment joining T and Q.

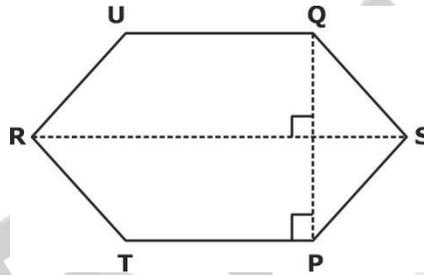
Based on the above statements, which one of the following options is CORRECT?

- A. The line segment joining R and T is parallel to the line segment joining Q and S.
- B. The line segment joining T and Q is parallel to the line joining P and U.
- C. The line segment joining R and P is perpendicular to the line segment joining U and Q.
- D. The line segment joining Q and S is perpendicular to the line segment joining R and P.

[MCQ: 2 Marks]

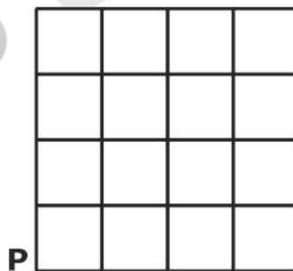
Ans. A

Sol. According to the given statements in the question, the hexagon will look as follows:



So, from the given statements, options A will be correct.

10. An ant is at the bottom-left corner of a grid (point P) as shown above. It aims to move to the top-right corner of the grid. The ant moves only along the lines marked in the grid such that the current distance to the top-right corner strictly decreases.



Which one of the following is a part of a possible trajectory of the ant during the movement?

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

[MCQ: 2 Marks]

Ans. C

Sol. As per the equation, initial point of the ant is at point P, so option A and B gets eliminated. Also, the ant moves only along those lines of grid such that the distance to the top-right corner strictly decreases which eliminates the options D.

Hence, options C, will be correct.

