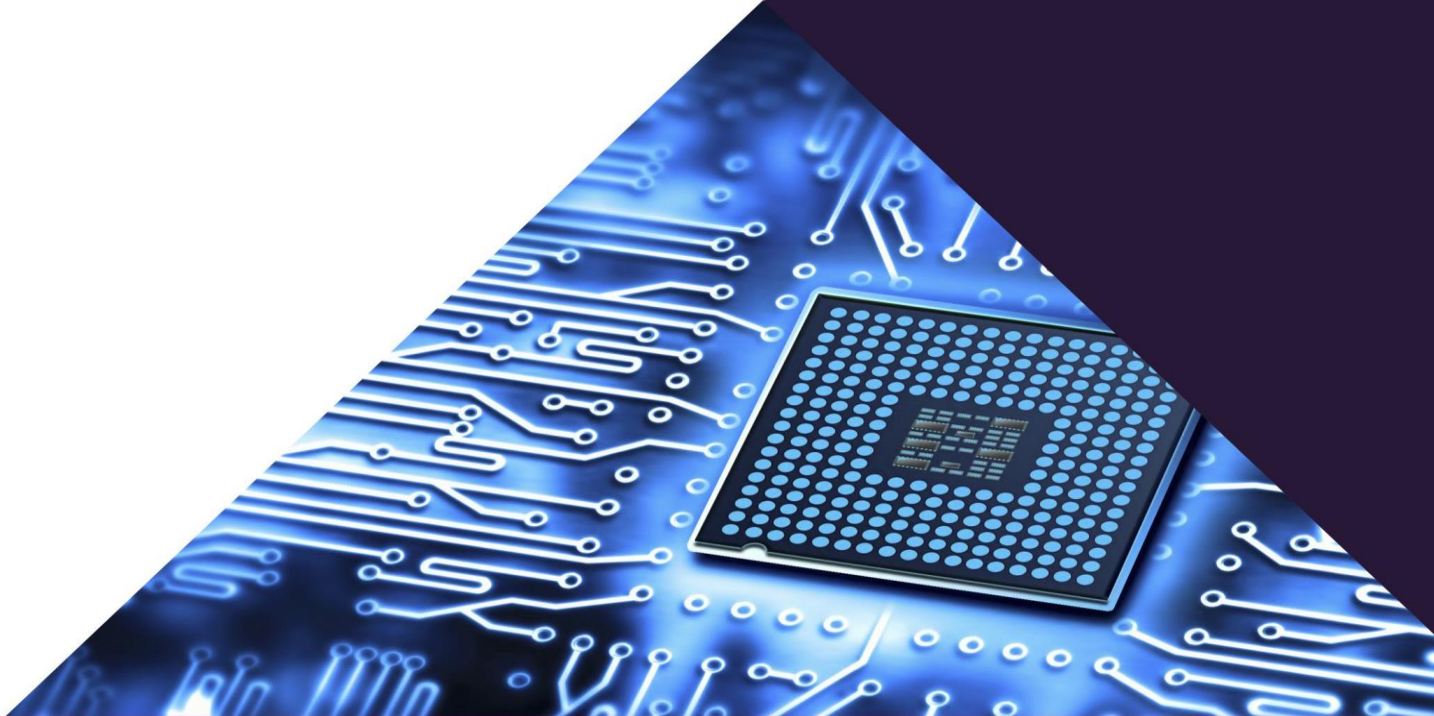


GATE 2018

Electronics
& Communication
Engineering

General Aptitude
Questions & Solutions

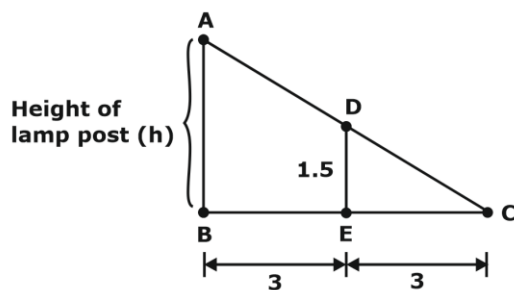


1. A 1.5 m tall person is standing at a distance of 3 m from a lamp post. The light from the lamp at the top of the post casts her shadow. The length of the shadow is twice her height. What is the height of the lamp post in meters?

- A. 1.5 B. 3
C. 4.5 D. 6

Ans. B

Sol. If we make a figure using the information provided in the question,



Here, $\angle(ACB) = \angle(DCE)$, thus

$$\tan \angle(ACB) = \tan \angle(DCE)$$

$$\frac{AB}{BC} = \frac{DE}{EC}$$

$$\frac{h}{6} = \frac{1.5}{3}$$

$$h = 3 \text{ meters}$$

2. Leila aspires to buy a car worth Rs. 10,00,000 after 5 years. What is the minimum amount in Rupees that she should deposit now in a bank which offers 10% annual rate of interest, if the interest was compounded annually?

- A. 5,00,000 B. 6,21,000
C. 6,66,667 D. 7,50,000

Ans. B

Sol. We have the formula for compound interest as follows,

$$A = P * \left(1 + \frac{R}{100}\right)^n$$

Where, A is final amount, P is initial amount, R is rate of interest and n is the number of

years the interest is compounded.

We have $A = 1000000$, $R = 10\%$, $n = 5$ years. Then P can be found out,

$$P = 6,21,000.$$

$$1000000 = P * \left(1 + \frac{10}{100}\right)^5$$

$$P = \frac{1000000}{\left(1 + \frac{10}{100}\right)^5} = 620921.32 \approx 621000$$

3. The Cricket Board has long recognized John's potential as a leader of the team. However, his on-field Temper has always been a matter of concern for them since his junior days. While this aggression has filled stadia with die-hard fans, it has taken a toll on his own batting. Until recently, it appeared that he found it difficult to convert his aggression into big scores. Over the past three seasons though, that picture of John has been replaced by a cerebral, calculative and successful batsman-captain. After many years, it appears that the team has finally found a complete captain. Which of the following statements can be logically inferred from the above paragraph?

- Even as a junior cricketer, John was considered a good captain.
- Finding a complete captain is a challenge.
- Fans and the Cricket Board have differing views on what they want in a captain.
- Over the past three seasons John was accumulated big scores.

- A. (i), (ii) and (iii) only
B. (iii) and (iv) only
C. (ii) and (iv) only
D. (i), (ii), (iii) and (iv)

Ans. C

Sol. Statement (i) is not true as nowhere it is mentioned that John being a Captain at Junior level.

Statement (ii) can be concluded from the paragraph as the last line suggests. Statement (iii) cannot be concluded from the given information as qualities sought by selectors can be concluded but similar cannot be said about opinion of fans and viewers. Statement (iv) can be concluded from the part in paragraph mentioning about last 3 seasons of John.

4. "Even though there is a vast scope for its _____, tourism has remained a/an _____ area."

The words that best fill the blanks in the above sentence are

- A. improvement, neglected
- B. rejection, approved
- C. fame, glum
- D. interest, disinterested

Ans. A

Sol. Even though there is a vast scope for its improvement, tourism has remained a neglected area.

Only these set of words give a meaning to the given sentence.

5. "By giving him the last _____ of the cake, you will ensure lasting _____ in our house _____ today."

The words that best fill the blanks in the above sentence are

- A. peas, piece B. piece, peace
- C. peace, piece D. peace, peas

Ans. B

Sol. Piece means 'slice' and Peace means 'silence'.

6. A cab was involved in a hit and run accident at night.

You are given the following data about the cabs in the city and the accident.

- i. 85% of cabs in the city are green and the remaining cabs are blue.
 - ii. A witness identified the cab involved in the accident as blue.
 - iii. It is known that a witness can correctly identify the cab colour only 80% of the time.
- Which of the following options is closest to the probability that the accident was caused by a blue cab?

- A. 12%
- B. 15%
- C. 41%
- D. 80%

Ans. C

Sol. Probability that accident was caused by blue cab,

$$P(\text{Blue Cab}) = (P(\text{Blue}) * P(\text{Correct})) + (P(\text{Green}) * P(\text{Not Correct}))$$

This gives total number of accidents being identified caused by a Blue cab.

$$P(\text{correct}) = 0.8$$

$$P(\text{not correct}) = 1 - 0.8 = 0.2$$

Actual probability that accident is caused by blue cab,

$$P(\text{Actually Blue}) = (P(\text{Blue})) * P(\text{Correct}) / P(\text{Blue cab})$$

$$P(\text{Actually Blue}) = (0.15 * 0.8) / (0.15 * 0.8 + 0.85 * 0.2)$$

$$P(\text{Actually Blue}) = 0.4137$$

Thus, 41.37% is the probability.

7. If the number 715?423 is divisible by 3 (? denotes the missing digit in the thousandths place), then the smallest whole number in the place of ? is _____.

- A. 0 B. 2
C. 5 D. 6

Ans. B

Sol. A number is divisible by 3 if the sum of all digits is be divisible by 3.

$$7 + 1 + 5 + ? + 4 + 2 + 3 = 22 + ?$$

Next numbers after 22 which are divisible by 3 are 24, 27, 30 etc.

Minimum value of ? that would make the given number divisible by 3 is 2 as 24 is divisible by 3.

8. What is the value of

$$1 + \frac{1}{4} + \frac{1}{16} + \frac{1}{64} + \frac{1}{256} + \dots?$$

- A. 2 B. $\frac{7}{4}$
C. $\frac{3}{2}$ D. $\frac{4}{3}$

Ans. D

Sol. This is an infinite GP.

Sum of infinite G.P is given by,

$$S = \frac{a}{1-r}, \text{ where first term (a) = 1 and}$$

$$\text{common ratio (r) = } \frac{1}{4}$$

$$\frac{1}{1 - \frac{1}{4}} = \frac{1}{\frac{3}{4}} = \frac{4}{3}$$

9. A coastal region with unparalleled beauty is home to many species of animals. It is dotted with coral reefs and unspoilt white sandy beaches. It has remained inaccessible to tourists due to poor connectivity and lack of accommodation. A company has spotted the opportunity and is planning to develop a luxury resort with helicopter service to the nearest major city airport. Environmentalists are upset that this would lead to the region becoming

crowded and polluted like any other major beach resorts.

Which one of the following statements can be logically inferred from the information given in the above paragraph?

- A. The culture and tradition of the local people will be influenced by the tourists.
B. The region will become crowded and polluted due to tourism.
C. The coral reefs are on the decline and could soon vanish.
D. Helicopter connectivity would lead to an increase in tourists coming to the region.

Ans. D

Sol. (A) No such information given that supports this option.

Option (B) suggests only one part of the paragraph.

Similarly (C) can also be discarded because of no such information is given in paragraph.

While (D) option suggests helicopter as the connectivity means which is the crux of the paragraph.

10. Two alloys A and B contain gold and copper in the ratios of 2 : 3 and 3 : 7 by mass, respectively. Equal masses of alloys A and B are melted to make an alloy C. The ratio of gold to copper in alloy C is _____.

- A. 5 : 10 B. 7 : 13
C. 6 : 11 D. 9 : 13

Ans. B

Sol. Alloy A contains Gold and Copper in ratio 2 : 3.

Let there be 10x mass of alloy A, so that we have Gold and Copper as 4x : 6x.

Alloy B contains Gold and Copper in ratio 3 : 7.

Let there be $10x$ mass of Alloy B, so that we have Gold and Copper as $3x : 7x$.

As masses of Alloy A is equal to Alloy of mass B,

Resultant ratio of Gold to Copper when equal masses of Alloy A and Alloy B are mixed would be

$$4x + 3x : 6x + 7x$$

$$7x : 13x$$

$$7 : 13.$$

