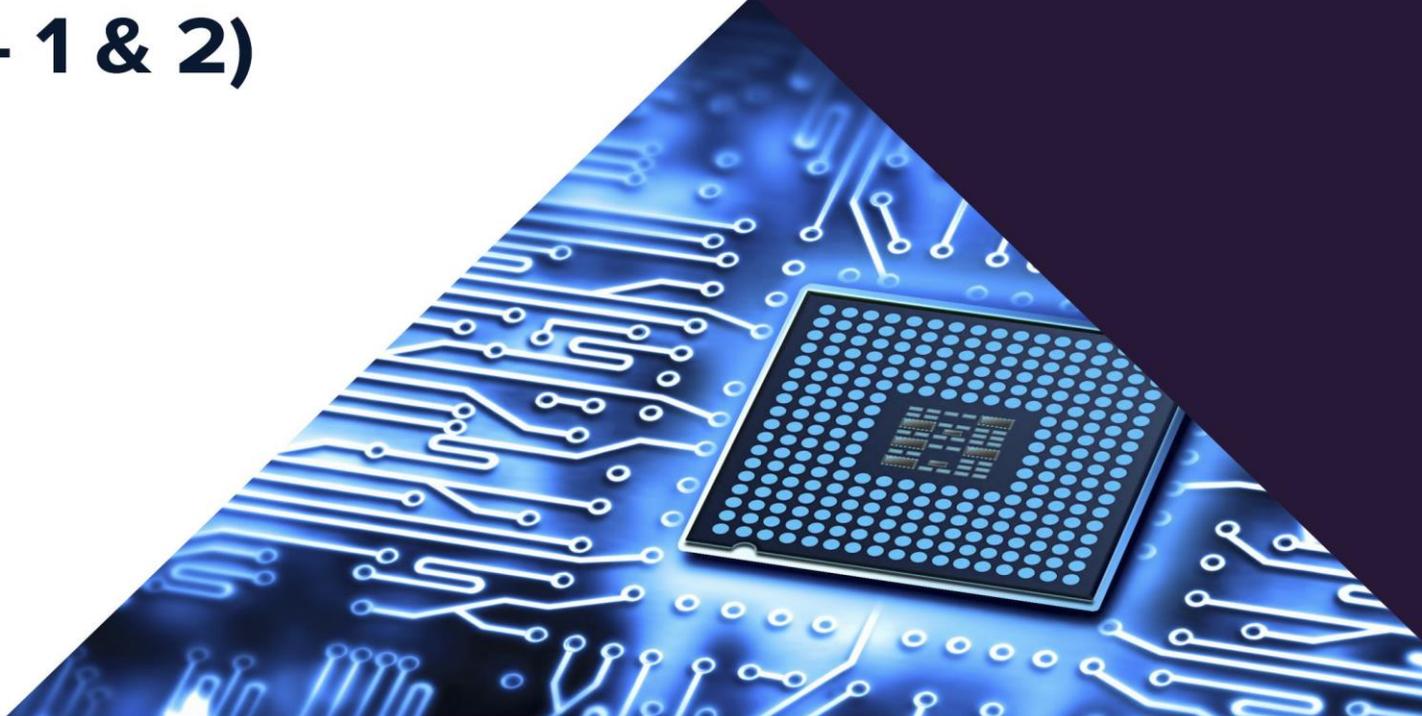


# GATE 2017

Electronics  
& Communication  
Engineering

General Aptitude  
Questions & Solutions  
(Set - 1 & 2)



**Set-1**

1. "If you are looking for a history of India, or for an account of the rise and fall of the British Raj, or for the reason of the cleaving of the subcontinent into two mutually antagonistic parts and the effects this mutilation will have in the respective section, and ultimately on Asia, you will not find it in these pages; for though I have spent a lifetime in the country. I lived too near the seat of events, and was too intimately associated with the actors, to get the perspective needed for the impartial recording of these matters". Here, the word "antagonistic" is closest in meaning to

- A. Impartial
- B. Argumentative
- C. Separated
- D. Hostile

**Ans.** D

**Sol.** Option D is correct according to the passage

2. Some table are shelves. Some shelves are chairs. All chairs are benches. Which of the following conclusion can be deduced from the preceding sentences?

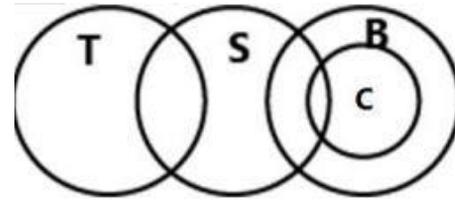
- (i) At least one bench is a table
  - (ii) At least one shelf is a bench
  - (iii) At least one chair is a table
  - (iv) All benches are chairs
- A. only (i)
  - B. only (ii)
  - C. only (ii) and (iii)
  - D. only (iv)

**Ans.** B

**Sol.** Based on the data given, the Venn diagram is shown below

T: Tables B: Benches  
S: shelves C: chairs

Based on diagram we can say that there is intersection between benches & shelves  
So, at least one shelf is a bench

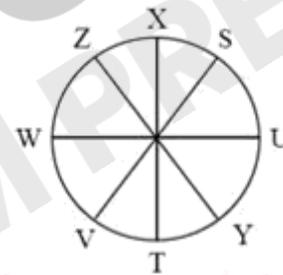


3. S, T, U, V, W, X, Y and Z are seated around a circular table. T's neighbours are Y and V. Z is seated third to the left of T and second to the right of S. U's neighbours are S and Y; and T and W are not seated opposite each other. Who is third to the left of V?

- A. X
- B. W
- C. U
- D. T

**Ans.** A

**Sol.** Following circular seating arrangement can be drawn.



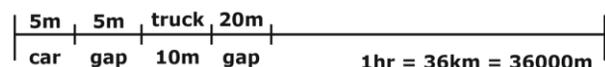
Only one such arrangement can be drawn. The person on third to the left of V is X.

4. Trucks (10m long) and cars (5 m long) go on a single lane bridge. There must be a gap of at least 20 m after each truck and a gap of at least 15m after each car. Trucks and cars travel at a speed of 36 km/h. If cars and trucks go alternatively, what is the maximum number of vehicles that can use the bridge in one hour?

- A. 1440
- B. 1200
- C. 720
- D. 600

**Ans.** A

**Sol.** Given speeds both car & Truck = 36 km/hour  
They travel in 1 hr = 36 km = 36000 m.



Since, 1 car + gap + 1 truck + gap = 50m.  
Maximum no. of cars and trucks than can use  
the bridge in 1 hour =  $\frac{36000\text{m}}{50\text{m}} = 720$

Therefore, Total no. of vehicles = 1440

**Alternate method**

Length of truck + gap required = 10+20 = 30m

Length of car + gap required = 5+15 = 20m

Alternative pairs of Truck and car needs 30+ 20 = 50 m.

Let 'n' be the number of repetition of (Truck + car) in 1 hour (3600 sec).

Given speed 36km /hr 10m /sec

$$\frac{50\text{m} \times n}{3600\text{sec}} = 36\text{ km / hr}$$

$$\Rightarrow \frac{50n}{3600}\text{ m / sec} = 10\text{ m / sec}$$

$$\Rightarrow n = \frac{36000}{50} = 720\text{ (Truck + car)}$$

So, 720 Truck car passes 720\*2= 1440vehicles.

5. She has a sharp tongue and it can occasionally turn \_\_\_\_\_.

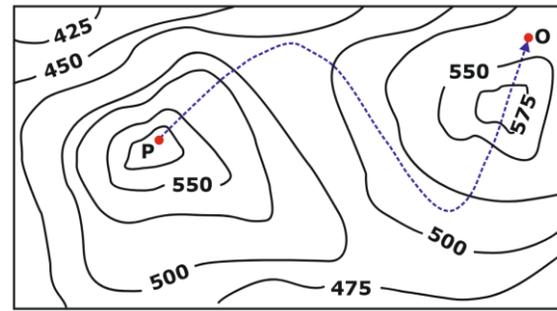
- A. Hurtful
- B. left
- C. Methodical
- D. vital

**Ans.** A

**Sol.** Hurtful: It is a supporting sentence. The word 'sharp tongue' strengthens the latter part of the sentence 'it can occasionally turn hurtful'

6. A contour line joints locations having the same height above the mean sea level. The following is a contour plot of a geographical region. Contour lines are shown at 25 m intervals in this plot.

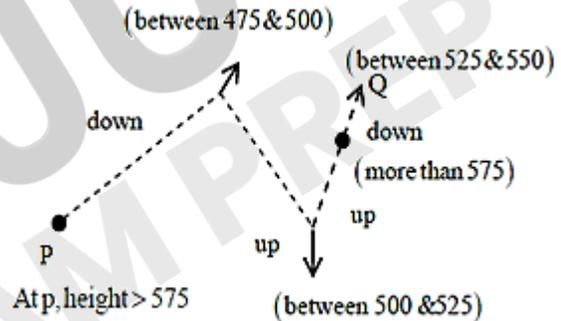
The path from P to Q is best described by



- A. Up-Down-Up-Down
- B. Down-Up-Down-Up
- C. Down-Up-Down
- D. Up-Down-Up

**Ans.** C

**Sol.** Down- up-Down



7. There are 3 Indians and 3 Chinese in a group of 6 people. How many subgroups of this group can we choose so that every subgroup has at least one Indian?

- A. 56
- B. 52
- C. 48
- D. 44

**Ans.** A

**Sol.** No. of sub groups such that every sub group has at least one Indian

$$= \underbrace{3_{C_1} + 3_{C_2} + 3_{C_3}}_{\text{only indians}} + \underbrace{3_{C_1} \times 3_{C_2} + 3_{C_1} + 3_{C_1} \times 3_{C_3}}_{\text{one indian \& remaining chinese}}$$

$$+ \underbrace{3_{C_2} \times 3_{C_1} + 3_{C_3} \times 3_{C_2} + 3_{C_2} \times 3_{C_2}}_{\text{2 indians \& remaining chinese}}$$

$$+ \underbrace{3_{C_3} \times 3_{C_1} + 3_{C_3} \times 3_{C_2} + 3_{C_3} \times 3_{C_3}}_{\text{3 indians \& remaining chinese}}$$

$$= 7+9+9+3+6+9+9+3+3+3+1 = 56.$$

**Alternate method**

Sub groups containing only Indians

$$= {}^3C_1 + {}^3C_2 + {}^3C_3 = 3 + 3 + 1 = 7$$

Subgroups containing one Indian and rest Chinese

$$= {}^3C_1 [{}^3C_1 + {}^3C_2 + {}^3C_3] = 3[3 + 3 + 1] = 21$$

Sub groups containing two Indian and remaining Chinese

$${}^3C_2 [{}^3C_1 + {}^3C_2 + {}^3C_3] = 21$$

Sub groups containing three Indian and remaining Chinese

$${}^3C_3 [{}^3C_1 + {}^3C_2 + {}^3C_3] = 7$$

$$\therefore \text{Total no. of sub group} = 7 + 21 + 21 + 7 = 56$$

8. I \_\_\_\_\_ made arrangements had I \_\_\_\_\_ informed earlier.

- A. could have, been  
B. would have, being  
C. had, have  
D. had been, been

**Ans. A****Sol.** Past Tense is used.

9. 40% of deaths on city roads may be attributed to drunken driving. The number of degree needed to represent this as a slice of a pie chart is

- A. 120                      B. 144  
C. 160                      D. 212

**Ans. B****Sol.** Given 40% of deaths on city roads are drunken driving

In pie chart 100%  $\rightarrow$  360 °

$$1\% \rightarrow \left(\frac{360}{100}\right)$$

$$40\% \rightarrow \left(\frac{360}{100}\right) \times 40$$

Therefore, 40%  $\rightarrow$  144 °

10. In the summer, water consumption is known to decrease overall by 25%. A water Board official states that in the summer household consumption decreases by 20%, while other consumption increases by 70%.

Which of the following statement is correct?

- A. The ratio of household to other consumption is 8/17  
B. The ratio of household to other consumption is 1/17  
C. The ratio of household to other consumption is 17/8  
D. There are errors in the official's statement

**Ans. D****Sol.** Let H is household consumption and P is the other consumption.

Given

Household consumption decreases by 20%

$$= 80/100 H$$

Other consumption increases by 70%

$$= 170/100 H$$

$$H \times 0.8 (\text{or } 80/100) + P \times 1.7 (\text{or } 170/100) = ($$

$$H + P) \times 0.75 (\text{or } 75/100)$$

$$80 H + 170 P = 75 H + 75 P$$

$$5 H = - 95 P$$

The ratio is negative, so there are errors in the official's statement.

**Set-2**

11. 500 students are taking one or more courses out of Chemistry, Physics, and Mathematics. Registration records indicate course enrolment as follows: Chemistry (329). Physics (186). Mathematics (295). Chemistry and Physics

(83), Chemistry and Mathematics (217), and Physics and Mathematics (63). How many students are taking all 3 subjects?

- A. 37                                      B. 43  
C. 47                                      D. 53

**Ans. D**

**Sol.** Chemistry=C, Physics=P and Mathematics=M

$$n(C \cup P \cup M) = 500, n(C) = 329, n(P) = 186, n(M) = 295, n(C \cap P) = 83, n(C \cap M) = 217$$

$$\text{and } n(P \cap M) = 63$$

$$n(C \cup P \cup M) = n(C) + n(P) + n(M) - n(C \cap P) - n(C \cap M) - n(P \cap M) + n(P \cap C \cap M)$$

$$500 = 329 + 186 + 295 - 83 - 217 - 63$$

$$+ n(P \cap C \cap M)$$

$$n(P \cap C \cap M) = 53$$

- 12.** "If you are looking for a history of India, or for an account of the rise and fall of the British Raj, or for the reason of the cleaving of the subcontinent into two mutually antagonistic parts and the effects this mutilation will have in the respective section, and ultimately on Asia, you will not find it in these pages; for though I have spent a lifetime in the country, I lived too near the seat of events, and was too intimately associated with the actors, to get the perspective needed for the impartial recording of these matters." Which of the following statements best reflects the author's opinion?

- A. An intimate association does not allow for the necessary perspective.  
B. Matters are recorded with an impartial perspective.  
C. An intimate association offers an impartial perspective.  
D. Actors are typically associated with the impartial recording of matters.

**Ans. A**

**Sol.** Correct answer would be A

- 13.** The ninth and the tenth of this month are Monday and Tuesday \_\_\_\_\_.

- A. Aiguratively                      B. retrospectively  
C. respectively                      D. rightfully

**Ans. C**

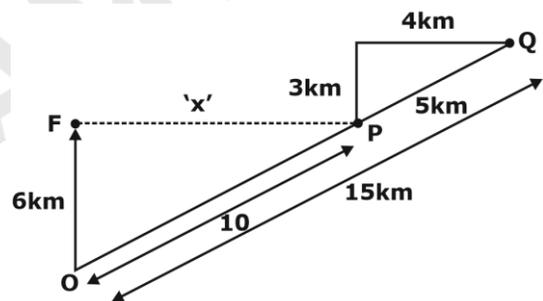
**Sol.** The ninth and the tenth of this month are Monday and Tuesday respectively.

- 14.** Fatima starts from point P, goes North for 3 km, and then East for 4km to reach point Q. She then turns to face point P and goes 15km in that direction. She then goes North for 6km. How far is she from point P, and in which direction should she go to reach point P?

- A. 8km, East                      B. 12 km, North  
C. 6km, East                      D. 10km, North

**Ans. A**

**Sol.**



The required distance

$$FP = x = \sqrt{100 - 36} = \sqrt{64}$$

$$x = 8, \text{ East}$$

- 15.** 1200 men and 500 women can build a bridge in 2weeks. 900men and 250 women will take 3 weeks to build the same bridge. How many men will be needed to build the bridge in one week?

- A. 3000                                      B. 3300  
C. 3600                                      D. 3900

**Ans. C**

**Sol.** Given 1200 Men + 500 Women can build a bridge in 2 weeks. And  
900 Men + 250 Women will take 3 weeks to build the same bridge  
∴ To complete in a week; there are 2400 Men + 1000W required in the first equation and 2700 Men + 750 Women required in the second equation.

$$\therefore 2400 M + 1000W = 2700M + 750W$$

$$\Rightarrow 1W = \frac{6M}{5}$$

∴ The no. of men required to build the bridge in one week

$$= 2400 M + 1000\left(\frac{6M}{5}\right) = 3600 \text{ Men}$$

**Alternate method**

Let a man can build the bridge in x weeks and a woman can build the bridge in y weeks.

$$\text{So, } \frac{1200}{x} + \frac{500}{y} = \frac{1}{2}$$

$$\frac{900}{x} + \frac{250}{y} = \frac{1}{3}$$

By equations i and ii ;we get

$$x = 3600; y=3000$$

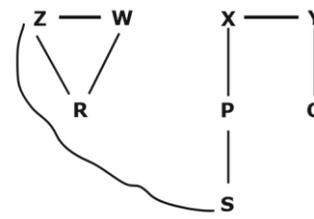
⇒ A man builds the bridge in 3600 weeks

⇒ Required men 3600 to build in a week.

- 16.** Each of P, Q, R, S, W, X, Y and Z has been married at most once. X and Y are married and have two children P and Q. Z is the grandfather of the daughter S of P. Z and W are married and are parents of R. Which one of the following must necessarily be FALSE?
- A. X is the mother-in-law of R
  - B. P and R are not married to each other
  - C. P is a son of X and Y
  - D. Q cannot be married to R

**Ans. B**

**Sol.**



———— Married Relation  
———— Child Relation

1. X is mother in law of R ( as Gender is not given so X can be mother in law of R) ----- Maybe True
2. As given, Z is the grandfather of the daughter S of P. so there are all possibilities that P can marry R...so the given condition is false.
3. P is Son of X and Y ( as P gender is not given, P can be son) ----- Maybe True
4. Since S is a daughter of P, R is children of Z & W so there is a possibility that P and R are married. so the last option is true that Q and R cannot be married.

Since we have ambiguity in option 2 and option 3, but as given in the question which statement is necessarily false so option B would be correct in that case.

- 17.** It is \_\_\_\_\_ to read this year's textbook \_\_\_\_\_ the last year's.
- A. easier, than
  - B. most easy, than
  - C. easier, from
  - D. easiest, from

**Ans. A**

**Sol.** It is easier to read this year's textbook than the last year's.

- 18.** The number of 3-digit numbers such that the digit 1 is never to the immediate right of 2 is
- A. 781
  - B. 791
  - C. 881
  - D. 891

**Ans. C**

**Sol.** We have total 900 three digit numbers from 100-999.

We have numbers in which 1 is immediate right to 2 are 210-219, 121, 221, 321, 421, 521, 621, 721, 821, 921.

So we have numbers in which 1 is never immediate right of 2 =  $900 - 19 = 881$  numbers

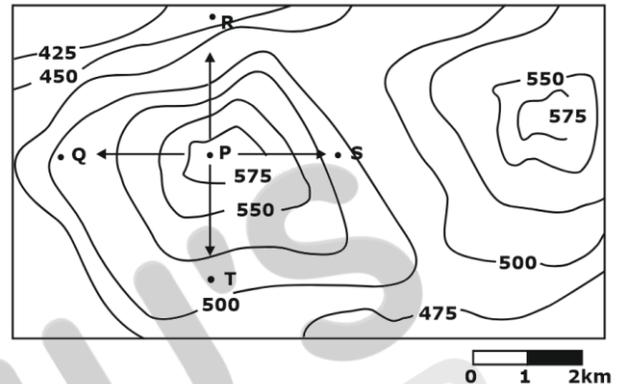
**19.** A rule states that in order to drink beer one must be over 18 years old. In a bar, there are 4 people. P is 16 years old, Q is 25 years old, R is drinking milkshake and S is drinking beer. What must be checked to ensure that the rule is being followed?

- A. Only P's drink
- B. Only P's drink and S's age
- C. Only S's age
- D. Only P's drink, Q's drink and S's age

**Ans. B**

**Sol.** Since we don't know what P is drinking and he is below 18 years old, so we need to check P's drink and S is drinking beer so we must check his age that he is above 18 years or not. Therefore, for rules to be followed, we need to check P's drink and S's age.

**20.** A contour line joins locations having the same height above the mean sea level. The following is a contour plot of a geographical region. Contour lines are shown at 25m intervals in this plot.



Which of the following is the steepest path leaving from P?

- A. P to Q
- B. P to R
- C. P to S
- D. P to T

**Ans. B**

**Sol.** Closer lines represents steepest path

**Alternate method**

The steepest path will be the path which is deepest from sea level. So, P to R is the steepest path.

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