

# General Aptitude Study Notes for GATE Exam

## Verbal Reasoning Study Notes for GATE

### Analogy

Analogy means a comparison to draw similarities. In analogy, you have to establish a relationship between two elements using similar features or characteristics. In analogy questions, there are many various types of relations which can be established

In the table, we have discussed some examples based on relationships established among them.

Type	Example
Country & Currency	Japan: Yen UAE: Dinar
Quantity & Unit	Energy: Joule Power: Watt
Instrument & Measurement	Ammeter: Current Anemometer: Velocity of wind
Unit & Group	Fish: Shoal
Animal & Baby	Lion: Cub Cat: Kitten
Male & Female	Tiger: Tigress Peacock: Peahen
Animal & Movement	Snake: Crawl Eagle: Swoop
Animal/thing & Sound	Cats: Meow Bats: Screech Elephants: Trumpet Deer: bellow Chimpanzee: Scream  Duck: Quack Frog: Croak
Unit & Class	Cup: Crockery
Unit & Home	Dog: Kennels Horse: Stables
Game & Venue	Cricket: Pitch Baseball: Baseball field or Diamond
Profession and Tool	Author: Pen Tailor: Needle Doctor: Stethoscope

Product & Raw Material	Oil: Seed Metal: Ore
Unit & Part	Book: Chapter Pen: Nib Fan: Blade
Universal Pair	Chair: Table Door: Window
Study & Topic	Cardiology: Heart Entomology: Insects

## Types of Analogy

- **Analogous pair:** Such questions give the relationship between a pair; the first element of the second pair is given, and we have to find the second pair based on the similar relationship given by the first pair.

### Examples:

**1) Oasis: Sand :: Island:?**

- River
- Sea
- Water
- Waves

**Explanation:** Here, the first pair is ⇒ "Oasis: Sand", and the second pair is "Island:?". And ":" sign means the first and second pair share a similar relationship. So, an 'Oasis' is a mass of water amidst 'Sand'; similarly, 'Island' is a mass of land amidst 'water'. Note: It'd be Island: Sea had the first pair been Oasis: Desert. We're given the name of the thing desert is made of, i.e. Sand. So, we'll use the name of the thing the Sea is made of, i.e. Water.

**2) Annihilation: Fire :: Cataclysm**

- Earthquake
- Flood
- Emergency
- Steam

**Explanation:** Here, 'Annihilation,' i.e. **total destruction,** is the result of 'Fire'. So, 'Cataclysm,' i.e. **the rising of a body of water overflowing onto normally dry land,** is the result of a 'flood'.

**Simple Analogy:** In such questions, a simple statement is given where a relationship is given, and we're asked the second element for the term given in the question, like the example below:

### Examples:

**1) Sweet is to Chocolate as Book is to....?**

- Dictionary
- Library
- Encyclopedia

d) Atlas

Here, Chocolate can be sweet or bitter, but 'Sweet' is the enlarged form of chocolate. Similarly, an 'Encyclopedia' is an enlarged form of a 'book'.

**Choosing the analogous pair:** In such questions, a pair is given in the question, and we've to find a suitable pair from the options given that resembles a similar relationship as in the question like the examples below:

**Examples:**

**1) Borrow: Steal**

- a) Enter: Trespass
- b) Tell: Speak
- c) Ask: Beg
- d) Hit: Kill

Here, we take someone else's thing for both 'borrowing' and 'stealing'. The only difference is that the first thing we take is with the permission of another, while the second thing is taken without the permission of another. Similarly, among all the options, we see this option is seen in 'Enter: Trespass' where we 'enter' after taking a permit while **'trespassing'** is done without any permit whatsoever.

**2) Cool: Frigid**

- a) Livid: Lurid
- b) Pool: Placid
- c) Tepid: Torrid
- d) Lack: Abundant

Here, 'Frigid' means **extremely cold**. So, in Cool: Frigid, the second is the extreme version of another. Let's check the meaning of all options given:

- a) **Livid** ⇒ **Discolored beneath the skin** : Lurid ⇒ **Ghastly pale** ⇒ This doesn't give an extreme version of paleness.
- b) **Pool** ⇒ **A small lake** : Placid ⇒ **a body of water free from disturbance by heavy waves** ⇒ This doesn't give the extreme version of a pool.
- c) **Tepid** ⇒ **Moderately warm** : Torrid ⇒ **Extremely hot** ⇒ Torrid is the extreme version of Tepid.
- d) **Lack**: Abundant ⇒ **Present in great quantity** ⇒ These two are opposite, not extreme versions.

We can see that only option c) fulfils the criteria.

**Multiple-word analogy:** These are the type of questions discussed above. The only difference is that here three elements are given in a pair instead of two, and we have to select the suitable option. Like the example below:

**Examples:**

**1) Music: Guitar: Performer**

- a) Dance: Tune: Instrument
- b) Food: Recipe: Cook
- c) Patient: Medicine: Doctor
- d) Trick: Rope: Acrobat.

In, Music: Guitar: Performer, 'Performer' plays 'Music' on 'Guitar'. So, the III element is playing/doing the I element on the II element.

From options, we can see that this pattern is followed only in option d), i.e. Acrobat (**An athlete who performs acts requiring skill**) performs 'Tricks' on a 'Rope'.

**Number-based analogy:** Till now, we have seen the analogy based on words. Now we've questions based on numbers, too like shown below:

**1) Completing analogous pair.**

**25: 37 :: 49:?**

- a) 41
- b) 56
- c) 60
- d) 65

Here, in 25: 37 the pattern can be explained as  $x^2: [(x + 1)^2 + 1]$  where  $x^2$  is the first element as  $25 = 5^2$  and  $[(x + 1)^2 + 1]$  is the second element as  $36 = (5+1)^2 + 1$ .

For 49, we know that  $49 = 7^2$  so second element =  $[(7 + 1)^2 + 1] = 65$  which is option d).

**2) Choosing the analogous pair.**

**7: 24**

- a) 30: 100
- b) 23: 72
- c) 19: 58
- d) 11: 43

In 7: 24,  $24 = 7 \times 3 + 3$  i.e. the relationship can be shown as  $x: [(x \times 3) + 3]$

Similar relationship can only be seen in option b) 23: 72 where  $23 \times 3 + 3 = 69 + 3 = 72$ .

- **Multiple number analogy:** It's just like multiple-word analogy:

**1. (9, 15, 21)**

- a) (10, 14, 21)
- b) (7, 21, 28)
- c) (5, 10, 25)
- d) (4, 8, 12)

In (9, 15, 21) the pattern given is  $\frac{\text{first no.} + \text{third no.}}{2} = \text{Second no.}$  as  $15 = \frac{9+21}{2} = \frac{30}{2} = 15$  where 9 and 21 are 1<sup>st</sup> and 3<sup>rd</sup> numbers respectively.

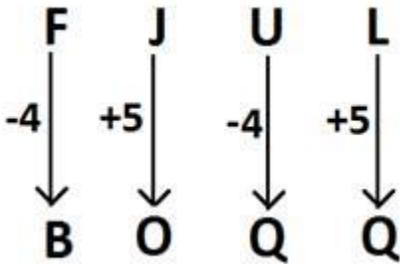
Similar relationship can only be seen in so option d) where  $8$  (second no.) =  $\frac{4+12}{2} = \frac{16}{2} = 8$

- **Alphabet based analogy.** In these types of questions, two words that are group of random letters are related to each other in some way. We're supposed to complete the analogous pair based on that relationship:

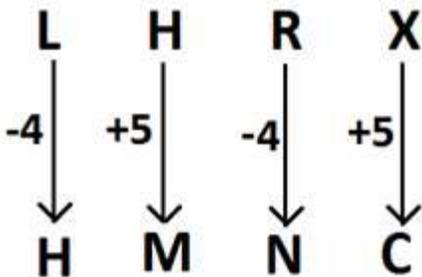
1. FJUL: BOQQ:: LHRX: ?

- a) BKPR
- b) MNCC
- c) HRYY
- d) HMNC

The relationship between FJUL: BOQQ can be illustrated as:



If we do a similar operation on LHRX we can see the following:



Hence, option d) is the answer.

- **Mixed analogy:** These types of questions mixed alphabet and number like shown below:

$$\frac{T}{J} : 2 :: \frac{X}{H} : ?$$

- a) 2
- b) 3
- c) 22/7
- d) 4

Here, in  $\frac{T}{J} : 2$ , T is 20<sup>th</sup> element in the alphabet series while J is 10<sup>th</sup> so  $\frac{T}{J} = \frac{20}{10} = 2$ . Similarly, X is 24<sup>th</sup> element in alphabetical series while H is 8<sup>th</sup> so  $\frac{X}{H} = \frac{24}{8} = 3$ . So,  $\frac{X}{H} : 3$

**Word Formation**

**Word formation by unscrambling letters**

- In such questions, usually jumbled letters are given various types of questions are asked on the unscrambled word thus formed.  
For example:

a) **VARSTE** ⇒ Choose the correct order of letters which are required to form the correct word.

- i) 2, 3, 1, 6, 4, 5
- ii) 3, 2, 4, 5, 6, 1
- iii) 4, 5, 2, 3, 1, 6
- iv) 6, 3, 4, 5, 2, 1

Here, we've to create the correct word and 'V' has been labeled as 1, 'A' as 2, 'R' as 3, 'S' as 4, 'T' as 5 and 'E' as 6.  
On observing we can see the correct word is STARVE. Hence, the correct order is 4(for S) 5(for T) 2316 ⇒ 452316 ⇒ e. option iii) is correct.

b) **Unscramble the words in options and find the odd-one out:**

- i) UPJM
- ii) WKLA
- iii) PEELS
- iv) UNR

**Let's unscramble the options:**

- i) UPJM ⇒ JUMP
- ii) WKLA ⇒ WALK
- iii) PEELS ⇒ SLEEP
- iv) UNR ⇒ RUN.

We can see that all options except PEELS or SLEEP are active actions while sleep is a passive activity. So, option iii) is odd-one out.

c) **Unscrambled the word in question and find the option most similar in meaning to rearranged word:**

I T G N D L E I

- i) Intelligent
- ii) Difficult
- iii) Laborious
- iv) Quick

On unscrambling the word we can see that the given word is DILIGENT. And, synonym for diligent is Laborious so option iii) is the answer. Similar question on antonym can also be asked.

**2. Word formation using letters of a given word:**

a) **Using certain letters of a word:**

If it's possible to make a meaningful word from 2<sup>nd</sup>, 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> letters of the word GENEROSITY, then which will be the first letter of that word? Mark X if no such word can be formed, M if more than 1 such word can be formed.

- i) R
- ii) S
- iii) O

iv) M

Here, the word = **GENEROSITY**

2<sup>nd</sup>, 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> letters = E, R, O and S

Words starting with E = none, with R = ROSE, with O = ORES, with S = SORE

Clearly, we can see that more than 1 i.e. 3 words can be formed so we'll mark 'M' i.e. option iv) as the answer.

Note: Had the ROSE been the only word getting formed then we'd have marked option i) i.e. R as answer because R is first letter of only word ROSE.

b) **Using certain letters of a series:**

U H O L Y F G W Z B A S R

Above a series is given, how many meaningful word can be formed from 3<sup>rd</sup> letter from left, 4<sup>th</sup> letter from right, 6<sup>th</sup> letter from left and 9<sup>th</sup> letter from right?

i) One

ii) Two

iii) Three

iv) none

Here the series: (left) U H **O L Y F** G W Z **B** A S R (right)

3<sup>rd</sup> letter from left = O, 6<sup>th</sup> letter from left = F,

4<sup>th</sup> letter from right = B, 9<sup>th</sup> letter from right = Y

Given letters = O, F, B, Y

We can see no such meaningful word can be formed using the aforementioned alphabets. Hence, we'll mark 'none' i.e. option iv) as the correct answer.

## Statement and Conclusions

- The **Reasoning section** of every competitive exam includes questions from the topic "**Statement & Conclusion**". This topic is considered to be quite important and every year a good number of questions are asked from this topic. It is considered to be a very scoring topic. We are providing you with all the important tools to solve **Statement & Conclusion** questions easily and accurately.
- A statement is a group of words arranged to form a meaningful sentence. A conclusion is a judgment or decision reached after consideration about the given statement.

Different types of questions covered in this chapter are as follows.

- One statement with Two Conclusion Based
- More than Two Statements and Conclusion Based

A conclusion is an opinion or decision that is formed after a period of thought or research on some facts or sentence stated by someone. A consequent effect has always to be analysed before reaching to the final result or conclusion of a given premise. This requires a very systematic and logical approach.

Example:

- **Statement:** Some people say that good thoughts come in their mind in the morning.
- **Conclusion:** Thoughts come in mind, in the morning only.

Now, consider the statement, the word '**some**' used in the statement does not mean 'all'. It means some people say not all. Hence, according to some people, good thoughts come in their mind in the morning but thoughts can come any time in the mind of other people, so, the conclusion that 'thoughts' come in mind, in the morning only is not valid. Also, the word used 'only' makes the conclusion totally invalid because it restricts that the thought can come only in the morning.

To reach to a conclusion think only about the information given in the statement. There is no need to use, assume anything else or add any further or extra information from outside but the established facts cannot be denied like the Sun always rises in the East, a day consists of 24 h etc.

## Memory Add-ons

- If statement is formed with two or more sentences, then there should be no mutual contradiction in sentence.
- Statements and conclusion should not go against established facts and prevailing notions of truth.
- If definitive words like all, always, atleast, only, exactly and so on are used, then such words make the conclusion invalid or ambiguous.
- Always read very carefully and try to find key words as key words play an important role in analysing valid and invalid conclusions.
- If the conclusion is provided with a stated example, then the conclusion is invalid.

### **Type 1: One Statement with two Conclusions Based.**

- In this types of questions, a statement is given followed by two conclusion . the candidate is required to find out which of conclusion follows the given statement and select the correct option accordingly. Following examples will give a better understanding about the type of questions asked.

**Directions ( 1 – 2):** In each of the following questions, a statement is followed by two Conclusions I and II.

#### **Give answer**

- (a) if only Conclusion I follows
- (b) if only Conclusion II follows
- (c) if either I or II follows
- (d) if neither I nor II follows

**Ex 1: Statement:** Parents are prepared to pay any price for an elite education to their children.

#### **Conclusion**

- I. All parents these days are very well off.
- II. Parents have an obsessive passion for perfect development of their children through good schooling.

#### **Solution: (b)**

It may be conclusion from the statement that since parents want a perfect development of their children through good schooling therefore they are prepared to pay any price for a good education but the statement does not give sense of the parents being very well off. Hence, only Conclusion II follows.

**Ex 2 : Statement:** Interview panel may select a student who is neither possessing the abilities of desired level nor any value and assumption.

#### **Conclusions**

- I. Inclusion of experts in interview panel does not ensure that the selection will be made properly.
- II. Interview procedure of admission has some limitations.

#### **Solution:**

The statement clearly means that inclusion of experts does not ensure proper selection. It also indicates limitation of interview procedure for admission. Here, both the conclusions follow.

**Type 2: More Than Two Statements and Conclusion Based**

In this type of questions, a statement / statements / are given followed by some conclusion. Choose the conclusion which follows the given statement.

**Directions (1 - 2):** Which of the conclusion can be drawn from the statement?

**Ex 1: Statement:** Many business offices located in buildings having two to eight floors. If a building has more than three floors, it has a lift.

**Conclusions:**

- (a) All floors may be reached by lifts
- (b) Only floors above the third floor have lifts
- (c) Fifth floor has lifts
- (d) Second floors do not have lifts

**Solution: (c)**

It is clear from the given statement.

**Ex 2: Statements**

Karan Johar is a good director.

Directors are intelligent.

**Conclusions:**

- (a) All intelligent are directors
- (b) Karan Johar is intelligent
- (c) Both (a) and (b)
- (d) None of these

**Solution: (b)**

As directors are intelligent and Karan Johar is good director, so Karan Johar is intelligent.

### Blood Relations

- Family or Blood Relationship means persons connected by relations like – **father-mother, son daughter, brother-sister, grandfather-grandmother, uncle-aunty, nephew-niece, brother-in-law sister-in-law** etc.
- The list can go on and on adding members from father's side and mother's side etc.
- Questions in Test of Reasoning on Family /Blood Relationship are about the relationship of a particular person with another person of the family, based on the chain of relationships between other members of that family
- Family/Blood Relation Tests are an exercise to test the candidate's ability to comprehend and come to the crux of an issue from complex, lengthy and unclear data.

**Example 1:**

- 'Ram' is the father of 'Kusha' but 'Kusha' is not his son. 'Mala' is the daughter of 'Kusha'. 'Shalaka' is the spouse of 'Ram'. 'Gopal' is the brother of 'Kusha'. 'Hari' is the son of 'Gopal'. 'Meena' is the spouse of 'Gopal'. 'Ganpat' is the father of 'Meena'. Who is the granddaughter of 'Ram'?

(1) Hari (2) Mala (3) Meena (4) Shalaka

**Solution:**

'Mala' is the daughter of 'Kusha' and 'Ram' is the father of 'Kusha'. So, 'Mala' is the granddaughter of 'Ram'. Hence, answer is (2) Mala.

## Some Common Terms

- **Meaning of some terms often used in questions on family relationship are given below:**

- a) **Parent** – Mother or father
- b) **Child** – Son or daughter (even if an adult)
- c) **Sibling** – Brother or sister (Including half brother and half sister – one parent in common)
- d) **Spouse** – Husband or wife

## Basic Relationships

### Aunt, Uncle, Niece and Nephew

- Most English speakers use "uncle" for any of four relationships: father's brother, mother's brother, father's sister's husband, or mother's sister's husband.
- Again, "aunt" in English could mean father's sister, mother's sister, father's brother's wife, or mother's brother's wife.
- Brother's or sister's son is called nephew. Brother's or sister's daughter is called niece.
- Children of aunt or uncle are called cousins.

### Relationships Involving the Term '-in-law'

#### General

- Any relationship term ending with -in-law indicates that the relationship is by marriage and not by blood. In other words, -in-law will be a blood relative of the spouse.
- In-law relationship terms are always written with hyphens. And the plural is formed on the part before the "-in-law";

**For example,** "brothers-in-law" and not "brother-in-laws". The only exception is the general term "in-laws", which is always plural.

#### Father-in-law, Mother-in-law, Son-in-law and Daughter-in-law

- Father-in-law is the father of spouse; mother-in-law is the mother of spouse. If parents get divorced and remarry, their new spouses are called stepparents, not mother-in-law and father-in-law.
- The husband of daughter is son-in-law; the wife of son is daughter-in-law. If spouse has children from a previous marriage, those are called stepchildren, not sons-in-law or daughters-in-law. The person is their stepfather or stepmother, not their father-in-law or mother-in-law.

#### Brother-in-law and Sister-in-law

- **Brother-in-law" and "Sister-in-law" each have two or three meanings as follows:**

- a) Sister-in-law could be
  - i) The sister of spouse, or

ii) The wife of brother, or

iii) The wife of spouse's brother.

b) Similarly, Brother-in-law could be

i) The brother of spouse, or

ii) The husband of sister, or

iii) The husband of spouse's sister.

### **Relationships Involving the Terms 'Grand' and 'Great'**

- The relationships of the second generation are prefixed with the word **Grand**.
- Similarly, for a person, the first generation above him would be that of his/her parents (Father/ Mother). The next/second generation above him/her would be the parents of the parents who would be called Grand Parents/ Grand Father/ Grand Mother of that person. The next/ third generation parents would be called Great Grand Parents/ Great Grand Father/ Great Grand Mother of that person.
- **This also applies to the collateral relationships.**

**For example** Son of nephew of a person is called Grand Nephew; Brother of Grand Father is called Grand Uncle and so on.

- **The fourth generation** relationships are called Great Great Grand. For example, Son of Great Grand Son is Great Great Grand Son.
- **There are two ways Martha could have a stepsister:**
  1. a) If Martha's mother marries second time, and her new husband (Martha's new stepfather) already has a daughter from a previous marriage, that daughter is Martha's stepsister because one of her parents is married to one of Martha's parents.
  2. b) If Martha's father marries second time, and his new wife already has a daughter, that daughter is again Martha's stepsister.

### **Summary of Some Common Relationships**

- Summary of some common Relationships is given below in tabular forms:



## Logical Arrangement of Words

- Logical Arrangement is the meaningful arrangement of words in accordance with the natural laws and universally accepted concepts.

**Different types of questions are covered in this chapter are as follows.**

- **Sequence of Occurrence of Events or Various Stages in a Process**
- **Sequence of Objects in a Class or Group**
- **Sequence in Ascending or Descending Order**
- **Sequential Order of Words According to Dictionary**

In this type of problems, a sequence is to be formed with the given number of words in such a way that the particular arrangement of the words gives a logical step by step completion of some process or activity. In these questions, four/five/six words are given which are related to each other in some or other way. The candidate is required to find out the proper logical arrangement of these words from the given alternatives.

### **Type 1: Sequence of Occurrence of Events or Various Stages in a Process**

- The given words may be such that they are related to a particular event or represent the various stages of a certain chained process from beginning to end.
- A candidate is required to choose that option from the given alternatives, which represents the correct logical sequence of the process.

**Ex 1: Arrange the following words in a meaningful order**

1. Reading
  2. Composing
  3. Writing
  4. Printing
- (a) 1, 3, 4, 2  
(b) 2, 3, 4, 1  
(c) 3, 1, 2, 4  
(d) 3, 2, 4, 1

**Solution: (d)**

The given words represent the various stages in the process of publishing. Firstly, the matter is written, followed by composition of that written matter. Then, this composed matter is printed followed by reading. So, the correct order is **3241**.

**Ex 2: Arrange the following words in a logical sequence.**

1. Application
2. Selection

3. Exam

4. Interview

5. Advertisement

(a) 1, 2, 3, 5, 4

(b) 5, 1, 3, 4, 2

(c) 5, 3, 1, 4, 2

(d) 4, 5, 1, 2, 3

**Solution: (b)**

For a job,

- Advertisement is the 1<sup>st</sup> stage
- Application is the 2<sup>nd</sup> stage
- Selection is the final stage
- Interview is the 4<sup>th</sup> stage
- Exam is the 3<sup>rd</sup> stage

Correct sequence = 5, 1, 3, 4, 2

## Type 2: Sequence of Objects in a Class or Group (From Part to Whole)

- Sometimes words may be given such that they are related to a particular class or a group. A candidate is required to choose that option from the given alternative which shows the correct logical sequence of the objects in a particular class or group. The examples given below will give you a better idea about such words.

**Ex 3: Arrange the following words in a meaningful order.**

1. Family

2. Community

3. Member

4. Locality

5. Country

(a) 3, 1, 2, 4, 5

(b) 3, 1, 2, 5, 4

(c) 3, 1, 4, 2, 5

(d) 3, 1, 4, 5, 2

**Solution: (a)**

The arrangement takes place according to the following logic:

The smallest unit amongst the five is member -

- A member is a part of family
- A family is a part of a community
- Community is a part of a locality
- Locality lies within a country

Correct arrangement = 3, 1, 2, 4, 5

**Ex 4: Arrange the following words in a meaningful order.**

1. Andhra Pradesh
2. Universe
3. Tirupati
4. World
5. India

(a) 3, 1, 4, 5, 2

(b) 1, 3, 5, 4, 2

(c) 3, 1, 5, 4, 2

(d) 3, 1, 2, 4, 5

Solution: (c)

Tirupati is a city situated in the Andhra Pradesh state of India. India is a part of the world and world in turn, is a part of the universe. So, the correct sequence of part to whole is given as Tirupati Andhra Pradesh India World Universe And the correct option showing the sequence is (c).

## Type 3: Sequence in Ascending or Descending Order

- The items or objects represented by the given words may be related to each other in terms of their properties.
- A candidate is required to arrange the given words on the basis of increasing/ decreasing order of their size, age, need, value, intensity etc.

The examples given below will give you a better idea about such words

**Ex 5: Arrange the following words in a logical sequence.**

1. Gold
2. Iron
3. Sand
4. Platinum
5. Diamond

(a) 2, 4, 3, 5, 1

(b) 3, 2, 1, 5, 4

(c) 4, 5, 1, 3, 2

(d) 5, 4, 3, 2, 1

**Solution: (b)**

All the given words represent substances which can be arranged in the increasing order of their cost. The least costly is sand after which comes the cost of iron, followed by gold, diamond and the costliest among all is platinum. So, they can be arranged in a logical order as 3 2154.

**Ex 6: Arrange the following words in a logical sequence.**

1. Trillion
2. Thousand
3. Billion
4. Hundred
5. Million

(a) 1, 2, 4, 3, 5

(b) 1, 5, 3, 2, 4

(c) 4, 2, 3, 5, 1

(d) 4, 2, 5, 3, 1

**Solution: (d)**

All the words represent the counting numbers and their increasing order is given as below

Hundred Thousand Million Billion Trillion. This order is given in Option (d).

## Type 4: Sequence Order of Words According to Dictionary

- In such type of question, the candidate is required to choose that option from the given alternatives, which is having the correct sequential order of words according to the English dictionary.
- To check the order of words in English dictionary, first of all check the first letter of each word to find which among these comes first English alphabet followed by second letter and so on.
- The word whose letter comes first in English alphabet comes, the word whose letter comes second in English alphabet comes second and so on.

**Ex 7: Arrange the following words according to English dictionary.**

1. Hepatitis
2. Cholera
3. Peptidoglycan
4. Chitin

(a) 2, 3, 1, 4

(b) 4, 2, 1, 3

(c) 4, 1, 3, 2

(d) 3, 1, 4, 2

**Solution: (b)**

According to the English dictionary, Chitin comes first, followed by Cholera which in turn is followed by Hepatitis and the last will be peptidoglycan. So, the correct sequential order of words is 4213.

- The **Reasoning section** of every competitive exam includes questions from the topic "**Alphabet Test**". This topic is considered to be quiet important and every year a good number of questions are asked from this topic. We are providing you with **Basic Concepts & Tricks to Alphabet Test** related Questions in Reasoning which will surely help you in the upcoming **SSC and other competitive Exams**.

### Basic Concepts & Tricks to Alphabet Test

- In this type, the question asked are based on finding the place of an English letter to the left or right of another English letter in the alphabetical order.
- Sometimes the Question is based on finding the number of English letter(s) between two different English letters. This type of question varies on the arrangement of alphabetical order.
- It can be **Backward, first half backward, second half backward**, multiple letter segments in changed order etc.
- Some of the questions asked are based on finding the middle letter of two specified letters and in some questions it is asked that which letters do not change their place after alphabet arrangement.

So, the detailed explanation with examples is as follow:

### Place of the letter in forward order

- In this type of questions the exact letter has to be found out with the help of direction of place given in the question. The example discussed as below will give you a better idea about this type of questions.

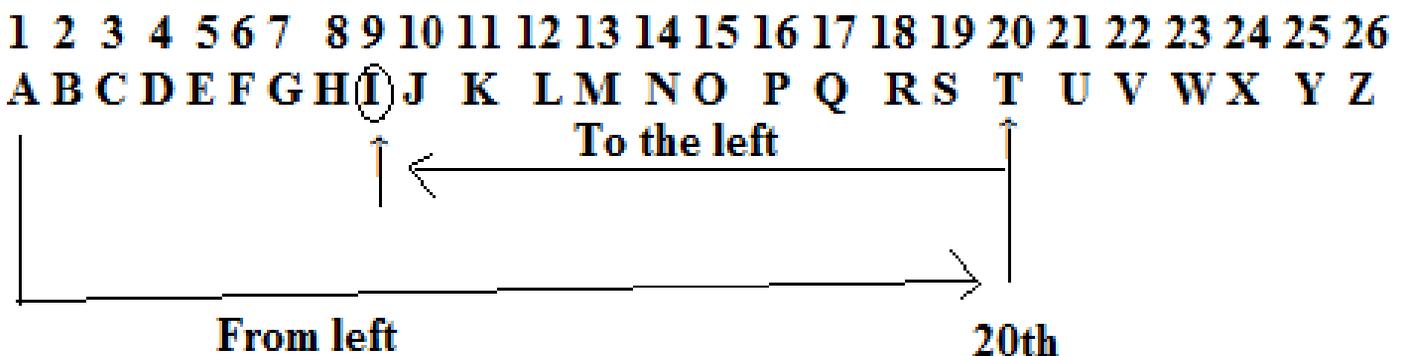
**Ex 1: Find the 11<sup>th</sup> letter to the left of 20<sup>th</sup> letter from left in the English alphabet.**

(a) D (b) J

(c) K (d) I

**Solution: (d)**

- Let us see



- Hence, 11<sup>th</sup> letter to the left of 20<sup>th</sup> letter from left is I.

**Alternate Method**

- In English alphabet 11<sup>th</sup> letter to the left of 20<sup>th</sup> letter of your left = (20-11) th letter from the left = 9<sup>th</sup> letter from the left = I

## Place Of Letter in Completely Backward Order

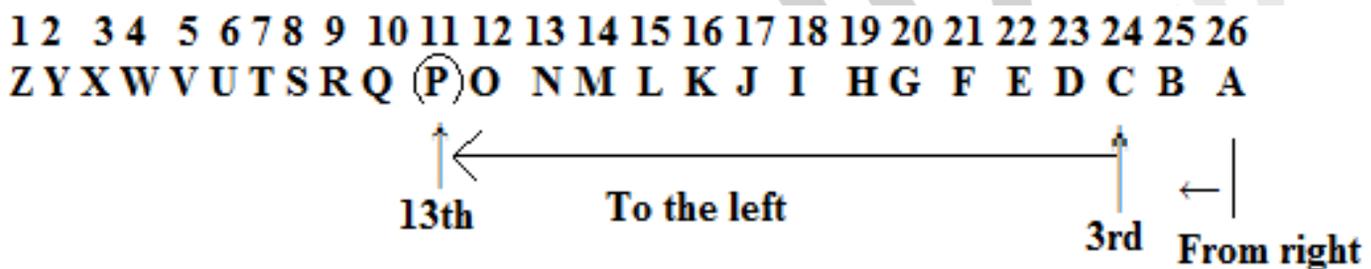
- In such questions the order of letters is completely reversed or they are counted from Z to A and then the place of letter is asked with the help of direction.

**Ex 2:** If English alphabet is written in backward order, then what will be 13<sup>th</sup> letter to the left of the 3<sup>rd</sup> letter from right?

- (a) P  
(b) N  
(c) R  
(d) Q

**Solution: (a)**

- The backward order is written as



Now, the 13<sup>th</sup> letter to left of the 3<sup>rd</sup> letter from right is P.

### Alternate Method

In backward order of alphabet, 13<sup>th</sup> letter to the left of the 3<sup>rd</sup> letter of your right = (3+13)th letter from right = 16<sup>th</sup> letter from right P.

## Place of a Letter When First Half is in Backward Order

- In such type of question, only the 1<sup>st</sup> half of the order of alphabetical series is reversed and remaining are left unaltered i.e., order of A to M is reversed and then questions related to position of latter are asked.

**Ex 3:** If 1<sup>st</sup> half of the English alphabet is written in backward order, then what will be the 7<sup>th</sup> letter to the left the 10<sup>th</sup> letter from your right?

- (a) C  
(b) E  
(c) D  
(d) J

**Solution: (c)**

Let us see



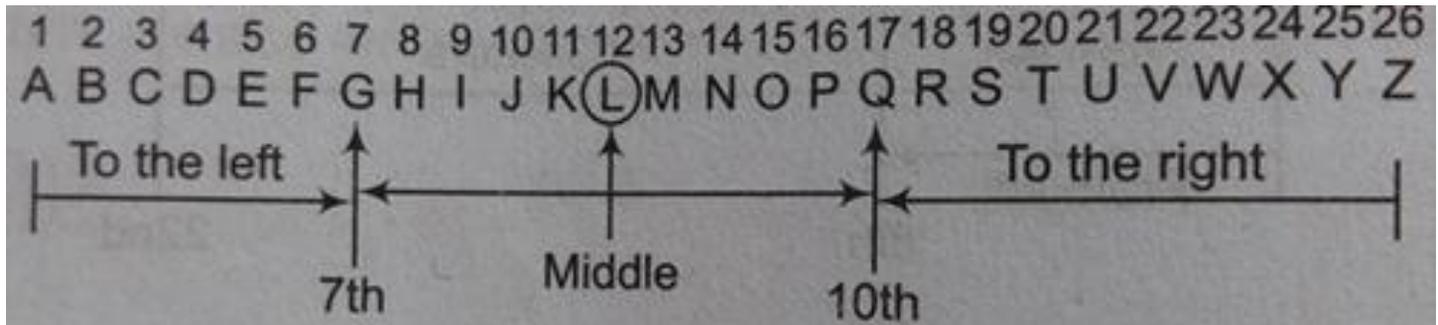
(b) P

(c) M

(d) Q

**Solution: (a)**

Let us see



Letters between G and Q is L.

**Alternate Method**

- 10<sup>th</sup> letter from right = 27 - 10 = 17<sup>th</sup> letter from left.
- Required middle letter =  $7 + (17 - 7) / 2 = 24 / 2 = 12^{\text{th}}$  letter from left = L

## Same Position of Alphabet after Arranging Alphabetically

- In this type of questions, a word is given and then asked how many letters remain same in their position, if they are arranged in alphabetical order.

**Ex 8:** How many such letters are there in the word 'CADMP' which remain same in their position, if they are arranged in alphabetical order?

(a) One

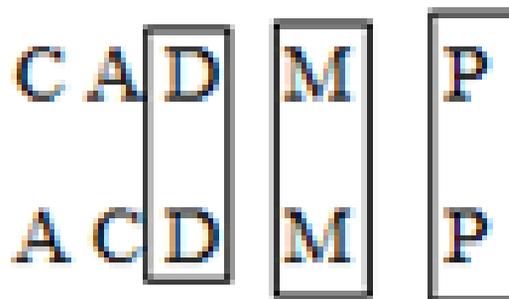
(b) Two

(c) Three

(d) Four

**Solution: (c)**

Original word



Rearrangement

- So, such type of letters are D, M and P.
- Generally in Ranking Arrangement questions, position/rank of a person from left-right/top-bottom is given and total number of persons is asked.
- There are several types of Ranking Arrangement and we are providing the methods to crack them.

## Type 1

### Case 1

- Total number of persons = (Sum of the number of same person from both sides) - 1

**Example:** In a row of persons, Position of Rahul from left side of the row is 34<sup>th</sup> and position of Rahul from right side is 37<sup>th</sup>. Find the total number of persons in the row ?

**Sol:** Total no. of person = (Position of Rahul from left + Position of Rahul from right) - 1 = (34 + 37) - 1 = 71 - 1 = 70

### Case 2

- Position of a person from other side = (Total number of persons - Position of the same person given side) + 1

**Example:** In a row of 22 persons, Position of Rahul from right side of the row is 13<sup>th</sup>. Find the position of Rahul from left side of the row?

**Sol:** Position of Rahul from left = (Total number of persons - Position of Rahul from right side) + 1 = (22 - 13) + 1 = 9 + 1 = 10

## Type 2

- When the positions of two persons are given from both ends and the total number of persons are also given and we have to find the number of persons between them-
- There are two cases:-

### Case 1

- When there is no overlapping and we have to find the number of persons between them.
- No. of Persons between two different persons = Total no. of Persons - (Sum of positions of two different persons from both sides)

**Example:** In a row of 62 persons. Rahul is 24<sup>th</sup> from left side of the row and Nitesh is 20<sup>th</sup> from the right side of the row. Find out the number of persons sitting between them?

**Sol:** No. of Persons between Rahul and Nitesh = 62 - (24 + 20) = 62 - 44 = 18

### Case 2

- When there is overlapping and we have to find the number of persons between them.
- of Persons between two different persons = (Sum of positions of two different persons from both sides) - Total no. of Persons - 2

**Example:** In a row of 62 persons. Rahul is 36<sup>th</sup> from left side of the row and Nitesh is 29<sup>th</sup> from the right side of the row. Find out the number of persons sitting between them?

**Sol:** No. of Persons between Rahul and Nitesh =  $(36+29)-62-2=65-62-2=1$

### Type 3

- If total no. of Persons is to be asked and positions of different persons from any side are given then it is always a case of 'cannot be determined'. Because we do not know if there will be overlapping or not.

**Example:** In a row Position of Rahul from left side of the row is 22<sup>nd</sup> and position of Nitesh from right side of the row is 35<sup>th</sup>. Find the total no. of students in the row?

**Solution:** Cannot be determined

### Type 4

- If positions are interchanged.

**Example:** Rahul and Nitesh are standing in a row of persons. Rahul is 12<sup>th</sup> from left side and Nitesh is 18<sup>th</sup> from the right side of the row. If they interchanged their positions Rahul becomes 25<sup>th</sup> from left. Find these-

- New position of Nitesh from right side
- Total number of person
- Number of person between them

**Sol: A)** Rahul Position changes from 12<sup>th</sup> to 25<sup>th</sup> from left end. So there is an increase of 13 ranks. Since Rahul and Nitesh both are interchanged their positions so there must be same increase in ranks. So new position of Nitesh from right side =  $18 + 13 = 31$

**B)** In this questions Rahul position changes from 12 to 25 from left. That means 24 persons are standing from his left side. Now Rahul is at Nitesh's position which is 18<sup>th</sup> from the right side. That means 17 persons are standing from his right. Add all these left and right =  $24 + 17 + 1(\text{Rahul's own}) = 42$  total persons

**C)** of persons between Rahul & Nitesh = (Position of rahul from left after interchanging - Position of Rahul from left before interchanging) - 1  $\Rightarrow$  No. of persons between Rahul & Nitesh =  $(25 - 12) - 1 = 13 - 1 = 12$

### Type 5

If positions of two persons are given and third person are sitting exactly between them.

**Example:** In a row of persons, position of Rahul from left side of the row is 10<sup>th</sup> and position of Nitesh from right side of the row is 9<sup>th</sup>. If Gaurav is sitting just in middle of Rahul and Nitesh and position of Gaurav from left of the row is 16<sup>th</sup>. Find the total number of persons in the row?

**Sol:** Position of Gaurav from left is 16<sup>th</sup> and Rahul from left is 10<sup>th</sup> so there are  $(16-10-1)=5$  persons are sitting between Rahul and Nitesh . As Gaurav is sitting exactly middle between them so 5 persons sitting between Gaurav and Nitesh. Position of Gaurav from right = Position of Nitesh from right  $9 + 5 + 1 = 9 + 6 = 15$ <sup>th</sup>

Total number of persons = Sum of Gaurav's positions from both sides - 1 =  $(16+15)-1=31-1=30$

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