Level Up IAS

GS FOUNDATION
BATCH FOR CSE 2023
Ace CSAT 2023-Booklet - 10
Logical Reasoning Blood Relations

Contents

1) INTRODUCTION

Blood relation simply mean any relation by birth or by marriage. So, father, mother, sister, wife, husband etc. are all types of blood relations.

The most important thing to remember in blood relation problems is that, **YOU MUST NOT ASSUME GENDER UNLESS SPECIFIED IN QUESTION.** If question says that A is son of B then B can be mother or father of A who is a male.

Secondly, you've to choose an option which is correct in all cases and not just in one particular case. We shall see examples where all the options are correct in some specific scenario but only one option is always correct.

2) TYPE OF BLOOD RELATIONS

Blood relations can be from paternal side, maternal side, spouse's side or inter-generational. For sake of completion, let us enlist them.

1. **From paternal side:**

Father's father	Grandfather
Father's mother	Grandmother
Father's sister/uncle's wife	Aunt
Father's brother/aunt's husband	Uncle
Children of uncle/aunt	Cousin

2. **From maternal side:**

Mother's father	Grandfather
Mother's mother	Grandmother
Mother's sister	Aunt
Mother's brother/aunt's husband	Uncle (maternal uncle)
Maternal uncle's wife	maternal aunt
Children of uncle/aunt	Cousin

3. **From spouse's side:**

Spouse's father	Father-in-law
Spouse's mother	Mother-in-law
Spouse's brother	Brother-in-law
Spouse's sister	Sister-in-law

4. **Inter-generational:**
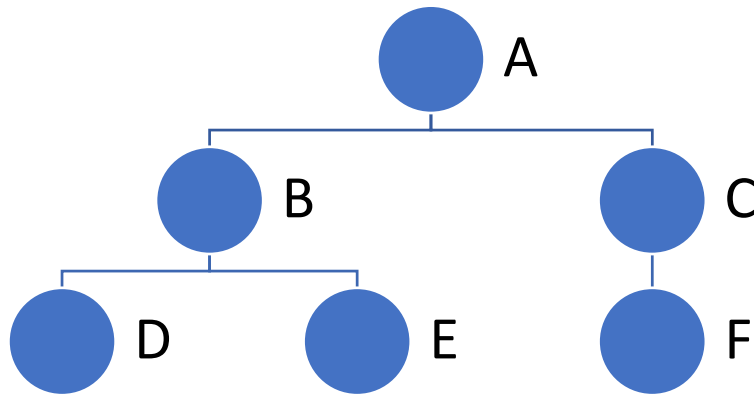
Own children	Son/Daughter
Brother's/sister's children	Niece/Nephew
Children of children	Grandson/granddaughter

3) DRAWING FAMILY TREE

There are various ways you can approach the blood relation questions. You can try to superimpose the question in your family to arrive at answer, you can enlist all relations as per questions, you can look at options given and look for relevant information in passage. But most quick and effective method is to draw family tree.

Family tree is basically a chart showing intergenerational, intra-generational and spousal information in concise manner.

Typically, such tree will look like this:

There are few rules we shall follow for our benefit:

1. Same generation is represented at same level
2. Members of higher generation are represented above in the chart than lower generation
3. Male members are given small '+' sign and female members are given small '-' sign to distinguish them clearly
4. Spousal relationship is shown by bi-directional arrow ←→ and brother-sister, brother-brother, sister-sister relationships is shown by non-directional line connecting them

Practice problems to draw family tree:

1. In a family, there are six members A, B, C, D, E and F. A and B are a married couple, A being the male member. D is the only son of C, who is the brother of A. E is the sister of D. B is the daughter-in-law of F, draw a family tree.
2. A has 3 children. B is the brother of C and C is the sister of D, E who is the wife of A is the mother of D. There is only one daughter of the husband of E.
3. A is one of two sons of B. D is only sister of E. C, who is mother of E is also a grandmother of A and mother-in-law of B. A and E are children of C. Draw a family tree.
4. There are six persons A. B, C, D, E and F. C is the sister of F. B is the brother of E's husband. D is the father of A and grandfather of F. There are two fathers, three brothers and a mother in the group.

4) TYPES OF PROBLEMS

1. Decoding description

In this type, description is given about relations amongst various persons. Sometimes, multiple families might be involved. Here, we start at the top and plot family tree line by line.

Q. There are six persons A. B, C, D, E and F. C is the sister of F. B is the brother of E's husband. D is the father of A and grandfather of F. There are two fathers, three brothers and a mother in the group. Who is the mother?

A. A

B. C

C. E

D. B

2. Dialogue based

Here, one person describes some information about some other person or persons and finally the relation between two of them is asked.

We start with the person speaking and work our way through family tree as the person speaks.

Q. Pointing to a person, a man said to a woman, "His mother is the only daughter of your father." How was the woman related to the person?

A. Daughter

B. Mother

C. Wife

D. Aunt

Q. Pointing to a photograph of a boy Mr. Ram said, "He is the son of the only son of my mother." How is Mr Ram related to that boy?

A. Brother

B. Uncle

C. Cousin

D. Father

3. Coding – decoding blood relations

Here various relations are represented in codified form. We have to decode the code and solve the question.

Q. If A + B means A is the mother of B;

A x B means A is the father of B;

A $ B means A is the brother of B and

A @ B means A is the sister of B

Then which of the following means P is the son of Q?

(A) Q + R @ P @ N

(B) Q + R * P @ N

(C) Q x R $ P @ N

(D) Q x R $ P $ N

In all the above types, method to solve remains the same. We just quickly draw family tree and answer whatever the question demands.

5) SAMPLE QUESTIONS

1. P, Q, R, S, T, U are six members of a family. R is a spouse of Q. U is the mother of T and S is the daughter of U. P's daughter is T and R's son is P. There are two couples in the family. Which of the following is correct?
   A. Q is grandfather of T
   B. Q is grandmother of T
   C. R is mother of P
   D. T is granddaughter of Q

2. A has 3 children. B is the brother of C and C is the sister of D, E who is the wife of A is the mother of D. There is only one daughter of the husband of E. what is the relation between D and B?
   A. Brothers
   B. Father-son
   C. Brother-sister
   D. Mother-son

3. A girl introduced a boy as the son of' the daughter of the father of her uncle. The boy is girl's
   A. Uncle
   B. Son
   C. Son-in-law
   D. Brother

4. Looking at a portrait of a man, Harsh said, "His mother is the wife of my father's son. Brothers and sisters, I have none." At whose portrait was Harsh looking?
   A. His son
   B. His father
   C. His grandfather
   D. His nephew

5. Pointing out to a lady, a girl said, "She is the daughter-in-law of the grandmother of my father's only son". How is the lady related to the girl?
   A. Sister-in-law
   B. Mother
   C. Aunt
   D. Can't be determined

6. A's mother is a sister of B and daughter of C. D is daughter of B and sister of E. How is C related to E?
   A. Father
   B. Grandfather
   C. Grandmother
   D. Either grandfather or grandmother

7. Directions: Study the following information carefully and answer the questions given beside:

   The Mishra family went to the photographer for their family photograph. The photographer arranged them in a straight row facing the North. The family members were Anshu, Rama, Krishna, Deva and Sonu.
   - Anshu was sitting third to the right of his daughter
   - Rama was sitting on the immediate right of Krishna, whose husband was the brother of Rama.
   - Anshu and Sonu were immediate neighbours.
   - Deva was not an immediate neighbour of Anshu's son.
   - Deva was sitting at the left end and the mother of Deva is Krishna, who was the wife of Anshu.
   - Rama and Anshu were immediate neighbours.

Q. How is Deva related to the person who sits in the middle of the row?
   A. Daughter
   B. Son
   C. Aunt
   D. None of these

8. If A+B means A is mother of B;
   A-B means A is brother of B
   A%B means A is the father of B
   A*B means A is sister of B
   Which of the following shows that P is maternal uncle of Q?
   A. Q – N + M * P
   B. P + S * N – Q

C. P – M + N * Q

D. Q – S % P

6) PYQS

CSE 2022: Consider the Question and two Statements given below:

Question: Is Z brother of X.

Statement 1: X is a brother of Y and Y is a brother of Z.

Statement 2: X, Y and Z are siblings.

Which one of the following is correct in respect of the Question and the Statements?

(a) Statement 1 alone is sufficient to answer the Question

(b) Statement 2 alone is sufficient to answer the Question

(c) Both Statement 1 and Statement 2 are sufficient to answer the Question

(d) Both Statement 1 and Statement 2 are not sufficient to answer the Question

CSE 2022: P, Q, R, S, T and U are six members of a family. R is the spouse of Q; U is the mother of T and S is the daughter of U. P's daughter is T and R's son is P. There are two couples in the family.

Which one of the following is correct?

(a) Q is the grandfather of T

(b) Q is the grandmother of T

(c) R is the mother of P.

(d) T is the granddaughter of Q

CSE 2020: A family of two generations consisting of six members P, Q, R, S, T and U has three males and three females. There are two married couples and two unmarried siblings. U is P's daughter and Q is R's mother-in-law. T is an unmarried male and S is a male. Which one of the following is correct?

(a) R is U's husband.

(b) R is S's wife.

(c) S is unmarried

(d) None of the above

CSE 2019: A joint family consists of seven members A. B. C. D, E, F and G with three females G is a widow and sister-in-law at the father F. B and D are siblings and A is daughter of B. Cis cousin of 1. Who is E?

1. Wife of t

2. Grandmother of A

3. Aunt of C

Select the correct answer using the code given below:

(a) 1 and 2 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1.2 and3

CSE 2017: Consider the following relationships among members of a family of six persons A, B, C, D, E and F:

1. The number of males equals that of females.

2. A and E are sons of F.

3. D is the mother of two, one boy and one girl.

4. B is the son of A.

5. There is only one married couple in the family at present.

Which one of the following inferences can be drawn from the above?

(a) A, B and C are all females.

(b) A is the husband of D.

(c) E and F are children of D.

(d) D is the daughter of F.

CSE 2017: Consider the following: A+ B means A is the son of B. A - B means A is the wife of B. What does the expression P + R – Q mean?

(a) Q is the son of P.

(b) Q is the wife of P.

(c) Q is the father of P.

(d) None of the above

CSE 2015: Four persons A, B, C and D consisting of two married couples are in a group. Both the women are shorter than their respective husbands. A is the tallest among the four. C is taller than B. D is B's brother. In this context, which one of the following statements is not correct?

(a) All four have family ties.

(b) B is the shortest among the four.

(c) C is taller than D.

(d) A is B's husband

CSE 2014: Read the passage given below and answer the items that follow.

A, B, C, D, E, F are members of a family. They are engineer, stenographer, doctor, draughtsman, lawyer and judge (not in order). A, the engineer is married to the lady stenographer. The judge is married to the lawyer. F, the draughtsman is the son of B and brother of E. C, the lawyer is the daughter-in-law of D. E is the unmarried doctor. D is the grandmother of F. There are two married couples in the family.

Q. What is the profession of B?

(a) Judge

(b) Lawyer

(c) Draughtsman

(d) Cannot be determined Solution

Q. Which of the following is/are couple/couples?

(a) AD only

(b) BC only

(c) Both AD and BC

(d) Both AC and BD

Q. What is the profession of D?

(a) Judge

(b) Stenographer

(c) Doctor

(d) Cannot be determined

CSE 2014: Given that, 1. A is the brother of B 2. C is the father of A. 3. D is brother of E. 4. E is the daughter of B Then, the uncle of D is?

(a) A

(b) B

(c) C

(d) E

CSE 2011: Read the following paesage and answer (three) items that follow:

A, B, C, D and E are members of the same family. There are two fathers, two sons, two wives, three males and two females. The teacher was the, wife of a lawyer who was the son of a doctor. E is not male, neither also a wife of a professional. C is the youngest person in the family and D is the eldest. B is a male.

Q. How is D related to E?

(a) Husband

(b) Son

(c) Father

(d) Wife

Q. Who are the females in the group?

(a) C and E

(b) C and D

(c) E and A

(d) D and E

Q. Whose wife is the teacher?

(a) C

(b) D

(c) A

(d) B

7) COMPREHENSION

As the 21st century advances, a new danger — the cyber threat — is becoming a hydra-headed monster. It is hardly confined to any one domain though the military is the one most often touted. Rather, it is the civilian sphere where the cyber threat is becoming more all-pervading today and, in turn, a serious menace. It is beginning to have a cascading effect with questions being raised on how this would fit in with our belief in, and need for, a well-regulated world order. What is most unfortunate is that not enough attention is being bestowed on the 'all-encompassing nature' of the cyber threat. In the wake of the Russia-Ukraine conflict, the world seems awash with papers on artificial intelligence (AI)-driven military innovations and 'potential crisis hot zones', along with stray references to new forms of hybrid warfare. But there is very little about the threat posed by cyber-attacks. Ignored also is the new reality of the 'weaponization of everything' which has entered the vocabulary of threats. The latter clearly demands a 'proto-revolutionary' outlook on the part of policymakers, which is evidently lacking. Lost in translation is also the nature of today's weapon of choice, viz., cyber. This lack of awareness is unfortunate at a time when states clearly lack the necessary resilience to face a variety of multi-vector threats

Q. Which of the following opinions would author will disagree with most?

A. Threat of cyber-security has not remained confined to threat to critical infrastructure
B. Discussion about future of wars is incomplete without discussion cyber warfare and weaponization of everything
C. States and policymakers are taking substantial steps however lot more needs to be done
D. Aftermath of Russia-Ukraine crisis has failed to brought into focus cyber security as much as it should have

Natural selection cannot anticipate future environments on the earth. Therefore, the set of existing organisms can never be fully prepared for environmental catastrophes that await life. An outcome of this is the extinction of those species which cannot overcome environmental adversity. This failure to survive, in modern terms, can be attributed to the genomes which are unable to withstand geological vagaries or biological mishaps infections, diseases and so on). In biological evolution on the earth, extinction of species has been a major feature. The earth may presently have up to ten million species, yet more than 90% of species that have ever lived on the earth are now extinct. Once again, the creationist doctrines fail to satisfactorily address why a divine creator will firstly bother to create millions of species and then allow them to perish. The Darwinian explanation for extinct life is once again simple, elegant and at once convincing organisms go extinct as a function of environmental or biological assaults for which their inheritance deems them ill-equipped. Therefore, the so-called Darwinian theory of evolution is not a theory at all. Evolution happens-this is a fact. The mechanism of evolution (Darwin proposed natural selection) is amply supported by scientific data. Indeed, to date no single zoological, botanical, geological, paleontological, genetic or physical evidence has refuted either of the central two main Darwinian ideas. If religion is not taken into consideration, Darwinian laws are acceptable just like the laws proposed by

Copernicus, Galileo, Newton and Einstein-sets of natural laws that explain natural phenomena in the universe.

Q. According to the passage, natural selection cannot anticipate future environments on the earth as

1. species not fully prepared to face the environmental changes that await them will face extinction
2. all the existing species would get extinct as their genomes will not withstand biological mishaps
3. inability of the genome to withstand environmental changes would result in extinction
4. extinction of species is a common feature

Select the correct answer using the code given below.

(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 1, 2 and 4

Q. The passage suggests that Darwinian theory of evolution is not a theory at all because

(a) it does not satisfy the creationist doctrine
(b) extinction is a function of environment and biological assaults
(c) there are no evidences to refute it
(d) existence of organisms is attributed to a creator

Q. With reference to the passage, the following assumptions have been made:

1. Only species that have the ability to overcome environmental catastrophes will survive and perpetuate.
2. More than 90% of the species on the earth are in the danger of getting extinct due to drastic changes in the environment.
3. Darwin's theory explains all the natural phenomena,

Which of the above assumptions is/are valid?

(a) 1 only
(b) 1 and 2 only
(c) 3 only
(d) 1, 2 and 3

Q. People will invest in education whenever they are granted the economic freedom to fully enjoy its benefits. Again, this is for the obvious reason that the return on education increases as the level of economic freedom rises. When people, thanks to lower tax rates, are allowed to retain most of the higher income that they gain from each incremental level of education, it makes eminent sense to invest in education. On the other hand, when the government decides to tax the higher income of educated individuals at even higher rates, it makes very little sense to invest in educating oneself further. The same incentives apply to parents who decide on whether to invest in their children's education.

Which references to the above passage, the following assumptions have been made:

1. Lower tax rates in a country invariably translate into greater investments in higher education.
2. Investment in the education of children ensures their economic freedom.
3. Economic freedom has a positive impact on building up human capital.

Which of the above assumptions is/are valid?

(a) 1 only
(b) 2 only
(c) 3 only.
(d) 1, 2 and

To tackle the problem of pollution in cities, policy makers think that drastic actions like temporary use of odd-even number scheme for vehicles, closing schools, factories, construction activities, and banning the use of certain type of vehicles are a way forward. Even then the air is not clean. Vehicles more than 15 years old comprise one percent of the total; and taking them off the road will not make any difference. Banning certain fuels and car types arbitrarily is not proper. Diesel engines produce more PM 2.5 and less CO_2 than petrol or CNG engines. On the other hand, both diesel and CNG engines produce more NO_x than petrol engines. No one has measured the amount of NO_x that CNG engines are emitting. Arbitrary bans on vehicles that have passed mandated fitness tests and periodic pollution tests are unfair. What is needed is the scientific and reliable information about the source of pollutants on a continuing basis and the technologies that will work to reduce pollution from them.

Q. Which one of the following statements best reflects the most logical and rational implication conveyed by the passage?

(a) Arbitrary curbs on vehicles to reduce pollution are difficult to implement.

(b) Knee-jerk reactions cannot but an evidence-based approach will be more effective.

(c) A heavy penalty should be enforced on those driving without periodic pollution tests.

(d) In the absence of laws to deal with the problem of pollution, the administration tends to make arbitrary decisions.