SECTION I

Time—35 minutes

23 Questions

Directions: Each group of questions in this section is based on a set of conditions. In answering some of the questions, it may be useful to draw a rough diagram. Choose the response that most accurately and completely answers each question and blacken the corresponding space on your answer sheet.

Questions 1–5

Eight files will be ordered from first to eighth. Each file falls into exactly one of three categories: red files (H, M, O), green files (P, V, X), or yellow files (T, Z). The files must be ordered according to the following conditions:

H must be placed into some position before O, but H cannot immediately precede O.
X must be placed into some position before V.
X and V must be separated by the same number of files as separate H and O.
Z must immediately precede M.
The first file cannot be a red file.

1. Which one of the following is an acceptable ordering of the files from first to eighth?

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| (A) | H | X | O | V | Z | M | P | T |
| (B) | P | M | Z | H | X | O | V | T |
| (C) | P | Z | M | H | O | T | X | V |
| (D) | X | Z | M | V | H | T | P | O |
| (E) | Z | M | H | P | O | X | V | T |

2. The largest possible number of files that can separate Z from H is

(A) two
(B) three
(C) four
(D) five
(E) six

3. If each of the three red files is immediately followed by a green file, which one of the following must be a yellow file?

(A) the first
(B) the second
(C) the third
(D) the fourth
(E) the fifth

4. The largest possible number of files that can separate X from V is

(A) three
(B) four
(C) five
(D) six
(E) seven

5. If Z is placed in the fifth position, then which one of the following is a complete and accurate list of the positions, any one of which could be H's position?

(A) first, third, fourth
(B) first, second, third
(C) second, third, fourth
(D) second, third, fourth, sixth
(E) third, fourth, sixth, seventh

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Questions 6–11

Exactly three employees of Capital Enterprises—Maria, Suki, and Tate—attend a three-day conference together. Each day, there are exactly three sessions on the three topics of the conference—one on hiring, one on investing, and one on regulations. The following rules govern the conference:

Each conference participant attends exactly two sessions, which are on different topics and on different days.

Neither Maria nor Suki attends any session on investing.

Tate does not attend any session on the third day.

At most two Capital employees attend any given session together.

6. What is the maximum number of sessions attended by at least one Capital employee?

(A) three
(B) four
(C) five
(D) six
(E) seven

7. Which one of the following must be false?

(A) Maria attends sessions only on the first two days.
(B) Suki attends sessions only on the last two days.
(C) Exactly two Capital employees attend a session together on the second day.
(D) Exactly one session is attended by one or more Capital employees on the second day.
(E) Exactly three sessions are attended by one or more Capital employees on the third day.

8. If exactly two sessions on the third day are attended by one or more Capital employees, then which one of the following must be true?

(A) Exactly two sessions on the first day are attended by one or more Capital employees.
(B) Exactly two sessions on the second day are attended by one or more Capital employees.
(C) Maria and Suki do not attend any session together.
(D) Maria and Tate do not attend any session together.
(E) Tate attends a session on investing.

9. Each of the following is possible EXCEPT:

(A) Every session attended by at least one Capital employee is attended by exactly one Capital employee.
(B) Every session attended by at least one Capital employee is attended by exactly two Capital employees.
(C) Every session attended by Maria is also attended by Suki.
(D) Every session attended by Suki is also attended by Tate.
(E) Every session attended by Tate is also attended by Maria.

10. If all three sessions on the first day are attended by one or more Capital employees, then which one of the following must be false?

(A) Maria and Suki attend a session together on the third day.
(B) Suki and Tate attend a session together on the second day.
(C) Maria attends a session on hiring on the second day.
(D) Suki attends a session on regulations on the third day.
(E) Tate attends a session on investing on the first day.

11. If Maria and Tate are the only Capital employees to attend a session on the first day, then each of the following could be true EXCEPT:

(A) Maria and Suki attend exactly two sessions together.
(B) Maria and Tate attend exactly two sessions together.
(C) Suki and Tate attend exactly one session together.
(D) Maria attends a session on regulations on the second day.
(E) Tate attends a session on hiring on the second day.

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Questions 12–18

Of the five Pohl children—Sara, Theo, Uma, Will, and Zoe—three are left-handed and two are right-handed. Each of the five children was born in a different one of seven calendar years, 1990 through 1996. The following conditions apply:

No two left-handed children were born in consecutive years.
No two right-handed children were born in consecutive years.
Sara, who is left-handed, was born before Uma.
Zoe was born before both Theo and Will.
A left-handed child was born in 1991.
Uma, who is right-handed, was born in 1993.

12. Which one of the following could be an accurate matching of each Pohl child with the year in which that child was born?

(A) Sara: 1990; Zoe: 1992; Uma: 1993; Will: 1994; and Theo: 1995
(B) Sara: 1991; Uma: 1993; Theo: 1994; Zoe: 1995; and Will: 1996
(C) Zoe: 1990; Sara: 1991; Uma: 1992; Theo: 1994; and Will: 1995
(D) Zoe: 1990; Sara: 1991; Uma: 1993; Theo: 1994; and Will: 1995
(E) Zoe: 1990; Sara: 1991; Uma: 1993; Theo: 1994; and Will: 1996

13. If Sara was born before Zoe was born, then which one of the following statements CANNOT be true?

(A) Will is left-handed.
(B) Zoe is left-handed.
(C) Theo was born after Will was born.
(D) Uma was born after Zoe was born.
(E) No child was born in 1990.

14. Which one of the following must be false?

(A) None of the children was born in 1990, nor was a child born in 1992.
(B) None of the children was born in 1992, nor was a child born in 1995.
(C) None of the children was born in 1994, nor was a child born in 1996.
(D) One of the children was born in 1990, and another in 1993.
(E) One of the children was born in 1993, and another in 1995.

15. If Theo was born after Will was born, then how many sequential orderings of the children, from firstborn to lastborn, are possible?

(A) one
(B) two
(C) three
(D) four
(E) five

16. If none of the children was born in 1995, then which one of the following statements must be true?

(A) Theo was born in 1994.
(B) Will was born in 1994.
(C) Will was born in 1996.
(D) Zoe was born in 1990.
(E) Zoe was born in 1994.

17. If Theo is right-handed, then each of the following statements must be false EXCEPT:

(A) Theo was born in 1996.
(B) Will was born in 1995.
(C) Uma was born exactly three years before Theo was born.
(D) Zoe was born exactly one year before Theo was born.
(E) Will is right-handed.

18. If Zoe was born before Uma was born, then which one of the following statements must be false?

(A) No child was born in 1992.
(B) No child was born in 1995.
(C) Theo is left-handed.
(D) Zoe is left-handed.
(E) Will is left-handed.

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Questions 19–23

Barbara is shopping at a pet store to select fish for her new aquarium from among the following species: J, K, L, M, N, O, and P. For each of the seven species, the store has several fish available. Barbara makes her selection in a manner consistent with the following conditions:

If she selects one or more K, then she does not select any O.
If she selects one or more M, then she does not select any N.
If she selects one or more M, then she selects at least one O.
If she selects one or more N, then she selects at least one O.
If she selects one or more O, then she selects at least one P.
If she selects one or more P, then she selects at least one O.
If she selects any O at all, then she selects at least two O.

19. Which one of the following could be a complete and accurate list of the fish Barbara selects for her aquarium?

(A) three J, one K, two M
(B) one J, one K, one M, three O
(C) one J, one M, two O, one P
(D) one J, one N, one O, two P
(E) one M, one N, two O, one P

20. If Barbara does not select any fish of species P, then it could be true that she selects fish of species

(A) J and of species K
(B) J and of species M
(C) K and of species M
(D) K and of species N
(E) L and of species O

21. If Barbara selects fish of as many species as possible, then she cannot select any fish of which one of the following species?

(A) K
(B) L
(C) M
(D) N
(E) P

22. Which one of the following statements must be false?

(A) Barbara selects exactly four fish, at least one of which is a J.
(B) Barbara selects exactly four fish, at least one of which is an L.
(C) Barbara selects exactly three fish, at least one of which is an M.
(D) Barbara selects exactly three fish, at least one of which is an O.
(E) Barbara selects exactly three fish, at least one of which is a P.

23. If Barbara selects at least one fish for her aquarium, then which one of the following lists the minimum and maximum possible numbers, respectively, of different species of fish that Barbara selects?

(A) 1, 4
(B) 1, 5
(C) 1, 6
(D) 2, 5
(E) 2, 6

# S T O P

IF YOU FINISH BEFORE TIME IS CALLED, YOU MAY CHECK YOUR WORK ON THIS SECTION ONLY.
DO NOT WORK ON ANY OTHER SECTION IN THE TEST.