

1991 GRE 分析新趨勢 (含邏輯)

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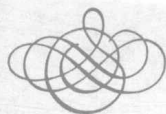
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第一部

GRE分析





第一章

排列問題





University of California-Irvine

第一節 單線排列問題

Question 1 ~ 3

A, B, C, D, F, AND G make up the first seven finishers in a swimming meet. There are no ties. Hence, the individual finishing first will have finished six places ahead of the individual finishing seventh.

- (A) A finished one place behind D.
- (B) D finished two places behind C.
- (C) E finished five places behind B.
- (D) F finished one place behind E.
- (E) F finished three place behind D.

1. Which of the following statements about G must be true?

- (A) G finished between C and D.
- (B) G finished between A and D.
- (C) G finished six places behind C.
- (D) G finished two places ahead of E.
- (E) G finished one place ahead of E.

2. Which of the following statements is/are true?

- I. F finished six places behind C.
- II. Only B and C finished ahead of D.
- III. As many swimmers finished ahead of D as behind D.

- (A) I only
- (B) II only
- (C) III only
- (D) II and III only
- (E) I and III only

3. If B and D are disqualified, what is the order of the first three finishers?

- (A) C, G, and E
- (B) G, C, and A
- (E) E, C, and A
- (D) C, G, and A
- (E) A, G, AND E

[Ans] 1.(A) 2.(C) 3.(D)

[分析] 條件 : (A) A 在 D 之後第一格 $\Rightarrow DA$

(B) D 在 C 之後第二格 $\Rightarrow C_D$

(C) E 在 B 之後第五格 $\Rightarrow B___E$

(D) F 在 E 之後第一格 $\Rightarrow EF$

(E) F 在 D 之後第三格 $\Rightarrow D_F$

共 7 人排成一列

由(A), (B)得 C DA

由(C), (D)(E)得 B D EF

再將上述二者合併得 BC DAEF, 剩下一個空位, 因為共有 7 個人故 G 必填入該空格中, 而成為 BCGDAEF 之順序。

[sol]

1. 由最後之順序圖知 G 必在 CD 之間。

2. I、錯, 因 F 在 C 之後第五格。

II、錯, 在 D 之前的不只 B, C, 有 B, C, G 三個人。

III、對, D 之前有三個人, 而 D 之後亦有三個人故 D 之前之人數與 D 之後的人數一樣多。

只有 III 為真。

3. B, D 資格不符, 無法比賽, 則剩餘之人的順序為 CGAEF, 故前三名為 C, G, A。

NOTE 同學須注意本題中之 "one place behind" 之意, 意思是緊接於其後, 如順序為 AB, 則其意為 B is one place behind A 因此 B is two places behind A, 意即 A B, 中間隔一個人其餘依此類推。

此外, 同學亦可由此題瞭解到, 將條件逐一列出之後, 若能再加以分析, 資料才會變成有系統的, 答起題目來也會相當地快速。然而有時, 題目亦非如此地詳盡, 可能條件不夠須等待各小題去另行指定, 如下例:

Questions 4 ~ 8

Exactly seven persons-P,Q,R,S,T,U, and V-participate in and finish all of a series of swimming races. There are no ties for any position at the finish of any of the races.

V always finishes somewhere ahead of P.

P always finishes somewhere ahead of Q.

Either R finishes first and T finishes last, or S finishes first and U or Q finishes last.

4. If in a race V finishes fifth, which of the following must be true?
- (A) S finishes first. (B) R finishes second.
(C) T finishes third. (D) Q finishes fourth.
(E) U finishes last.

5. If in a race R finishes first, V can finish no lower than
- (A) second (B) third (C) fourth
(D) fifth (E) sixth

6. If in a race S finishes second, which of the following can be true?
- (A) P finishes before R. (B) V finishes before S.
(C) P finishes before V. (D) T finishes before Q.
(E) U finishes before V.

7. If in a race S finishes sixth and Q finishes fifth, which of the following can be true?
- (A) Y finishes first or fourth. (B) R finishes second or third.
(C) P finishes second or fifth. (D) U finishes third or fourth.
(E) T finishes fourth or fifth.

8. If in a race R finishes second and Q finishes fifth, which of the following must be true?
- (A) S finishes third (B) P finishes third.
(C) V finishes fourth. (D) T finishes sixth.
(E) U finishes sixth.

[Ans] 4. (A) 5. (C) 6. (E) 7. (D) 8. (D)

〔分析〕條件：7人排成一列且

(A) V 在 P 之前 (不一定緊接者) $\Rightarrow V \dots\dots P$

(B) P 在 Q 之前 $\Rightarrow P \dots\dots Q$

(C) R 排第一, T 在最後, 或 S 排第一, U 或 Q 排最後, 二種情形必有一種成立 $\Rightarrow R \quad T$ 或 $S \quad U(Q)$

由(A)(B)知 $V \dots\dots P \dots\dots Q$

再合併(C)之條件得 $R \dots V \dots P \dots Q \dots T$ 或 $S \dots V \dots P \dots U(Q)$ 。

4. 若 V 排第 5, 何者必成立?

因 V 排第 5, 故 VPQ 必排 5, 6, 7, 因此屬於 $S \dots V \dots P \dots$

$U(Q)$ 之情形, 且爲 $S \dots\dots VPQ$ 之順序, 故 $S = 1$, 選(A)

5. R 在第一 \Rightarrow 屬於 $R \dots\dots V \dots\dots P \dots\dots Q \dots\dots T$ 之情形, 在這種情形下, V 之後至少有 P, Q, T 三人分別排 5, 6, 7 名, 因此 V 之排名不得在第 4 以後, 選(C), 同學須注意: no lower than, 意即不可低於, 但可等於。

6. S 排第二, 由前述分析知必爲 $RS \dots V \dots P \dots Q \dots T$ 之情形。

只有 U 不在這種排列中, 因此, U 可能排在第 3 (S 之後) 或第 4。

注意: "Could be" 與 "must be" 之不同處在於前者之意爲 "可能" 而非後者之 "絕對", 因此, 有時回答題目時, 可用消去法將十分武斷的答案消去, 剩餘的則爲 "could be" 之答案了。

7. S 排第 6, Q 排第 5, 故必爲 $R \dots V \dots QST$ 之次序, 其中 $R = 1$, 且 $QST = 5, 6, 7$, 故 U 可在第 3 或第 4, 同學須注意, 不可選(C), 因 Y 絕對不可能排在第五位, 第五位已有 Q 啦!

8. $R = 2, Q = 5 \Rightarrow$ 必爲 $SR \dots V \dots P \dots Q \dots U$ 之次序, 其中 $S = 1, R = 2, U = 7, Q = 5$ 能夠確定的是 Q 與 U 中間空了一個位子, 正好略圖中只列 36 人因此, 這個空格必是留給 T 的, 故 T 排第 6, 只有唯一的一種情形。

底下這一題各位同學可先練習一下，再對照書後之解答，建議同學本題習作之時間是 4min，不妨假設自己是身在考場中，稍微壓迫自己一下，才能激發出潛力，不是嗎？

Questions 9 ~ 11

- (1) There are five people standing on a flight of six steps, with no more than one person to a step.
- (2) R is two steps lower than J.
- (3) L is one step lower than M.
- (4) J is as far above R as L is below.
- (5) P is one step above R.
9. The order of the people from top to bottom is
- (A) PRJLM (B) JPRML (C) LMJPR
- (D) MPRJL (E) MJRPL
10. Where is the empty step?
- (A) It could only be the top step.
- (B) It is between P and J.
- (C) It is between R and J.
- (D) It could be either the top or the bottom step.
- (E) It could be anywhere on the flight of steps.
11. Which condition by itself repeats all the information given by one of the other statements?
- (A) (2) (B) (5) (C) (4)
- (D) (5) (E) None of the above

作完了上題的練習，同學可嘗試下面較複雜的單線排列問題：

Questions 12 ~ 15

A building has six floors, referred to as floors 1-6, from lowest to highest. Six companies, L, M, N, O, P, and Q, occupy the six floors, not necessarily in

that order, with only one company to a floor.

- (1) N is the same number of floors from M as M is from L.
- (2) P and O are not on adjacent floors.
- (3) Q is on a higher floor than O.
- (4) L is on floor 5.

12..Which of the following (are) true?

I. M must be on either floor 3 or floor 4.

II. O must be on either floor 1 or floor 2.

III. Q must be on either floor 4 or floor 5.

- (A) I only (B) II only (C) III only
- (D) I and III only (E) II and III only

13. Which of the following must be true if N is on floor 1?

- (A) L and P are on adjacent floors.
- (B) M and P are on adjacent floors.
- (C) O is on a floor higher than floor 2.
- (D) P is on a floor higher than floor 2.
- (E) Q is on a floor higher than floor 3.

14. If O and Q are not on adjacent floors, which of the following is true?

- (A) M must be on floor 3. (B) N must be on floor 3.
- (C) O must be on floor 2. (D) P must be on floor 6.
- (E) Q must be on floor 4.

15. Which of the following is true if N is on floor 3?

- (A) M must be two floors lower than L
- (B) N must be on a floor between L and M.
- (C) O must be one floor lower than Q.
- (D) Q must be on a higher floor than N.
- (E) Q must be two floors higher than P.

[Ans] 12. (A) 13. (E) 14. (A) 15. (C)

[分析] 條件：6 個人占了 6 樓。

(1) N 與 M 之關係，就如同 M 與 L 之關係 \Rightarrow $\begin{matrix} N-M-L \\ L-M-N \end{matrix}$

(2) P 與 O 不相鄰 \Rightarrow P O

(3) Q 比 O 高 $\Rightarrow O \dots Q$

(4) L 排第 5 $\Rightarrow \begin{array}{cccccc} \underline{1} & \underline{2} & \underline{3} & \underline{4} & \underline{L} & \underline{6} \end{array}$

由(1)與(3)知 L, M, N 之關係為 N-M-L, 因為 L 之無法

容納 2 人以上。故知可能的情形有 $\begin{array}{cccccc} \underline{N} & \underline{M} & \underline{L} & & & \\ \underline{1} & \underline{2} & \underline{3} & \underline{4} & \underline{5} & \underline{6} \end{array}$ 或 $\begin{array}{cccc} \underline{N} & \underline{M} & & \\ \underline{1} & \underline{2} & \underline{3} & \underline{4} \end{array}$
 $\begin{array}{cc} \underline{L} & \\ \underline{5} & \underline{6} \end{array}$ 。

但, 合併了條件(3), 則知若為 $\begin{array}{cccccc} \underline{N} & \underline{M} & \underline{L} & & & \\ \underline{1} & \underline{2} & \underline{3} & \underline{4} & \underline{5} & \underline{6} \end{array}$, 則情形為

OQNMLP 若為 $\begin{array}{cccccc} \underline{N} & \underline{M} & \underline{L} & & & \\ \underline{1} & \underline{2} & \underline{3} & \underline{4} & \underline{5} & \underline{6} \end{array}$, 則情形為 NPMLQ 或 NOMPLQ。

綜合言之, 6 人可能之次序為 OQNMLP 或 NPMOLQ 或 NOMPLQ。

12. I、為真, M 可在 3 或 4

II、假, O 也可排第 4

III、假 Q 也可排第 2

故選(A)

13. N 在第一, 則唯一可確定的是 M=3, L=5, Q=6, 即 Q 必必高於 3。

14. 由分析出來之結果知, 若 O 與 Q 不相鄰, 則有 NPMOLQ 與 NOMPLQ 兩種情形, 這兩種情形之共同特徵是 M=3, N=1, L=5, Q=6, 故選(A)

15. N=3 \Rightarrow 必為 OQNMLP 之情形, 選項中只有(C), O 必 Q 低一層樓為真。

接下來的這個問題是最新的題組, 同學可利用 5min 的時間來完成它。

Questions 16 ~ 19

Six historians-K, L, M, N, O, and P-are each to present a paper at a one-day conference. Three papers will be presented in the morning session before

the lunch break: the other three will be presented in the afternoon session, which follows the lunch break. The scheduling of presentations is subject to the following conditions:

L's presentation must immediately precede M's presentation; their presentations cannot be separated by the lunch break.

N must be either the first or the last in the order of presenters.

16. If M is to be fifth in the order of presenters, then L must be
(A) first (B) second (C) third
(D) fourth (E) sixth
17. L could be scheduled for any of the following places in the order of presenters EXCEPT
(A) first (B) second (C) third
(D) fourth (E) fifth
18. If P's presentation must immediately follow N's presentation, M could be scheduled for which of the following places in the order of presenters?
(A) First (B) Second (C) Third
(D) Fourth (E) Fifth
19. If P and O are fifth and sixth, respectively, in the order of presenters, which of the following must be true?
(A) K is first in the order of presenters.
(B) K is third in the order of presenters.
(C) K is fourth in the order of presenters.
(D) L is first in the order of presenters.
(E) M is fourth in the order of presenters.

類似這種“關係不可由條件確定唯一”的題目，在GRE的分析考試中屢見不鮮，如下例。

Questions 20 ~ 23

Seven bottles of chemicals are arranged on a shelf in seven spaces numbered 1. through 7 consecutively from left to right. Each bottle occupies one space. Three bottles are filled with sulfate, two are filled with hydroxide, and two are filled with chloride.

No bottle of sulfate is next to another bottle of sulfate.

None of the bottle of sulfate is in space 3.

Neither bottle of chloride is in space 5.

20. Which of the following is an acceptable arrangement of the bottles from left to right?

- (A) Chloride, sulfate, hydroxide, sulfate, chloride, hydroxide, sulfate.
- (B) Chloride, chloride, sulfate, hydroxide, sulfate, hydroxide, sulfate.
- (C) Hydroxide, chloride, sulfate, chloride, sulfate, hydroxide, sulfate.
- (D) Sulfate, chloride, hydroxide, chloride, hydroxide, sulfate, sulfate.
- (E) Sulfate, chloride, hydroxide, chloride, sulfate, hydroxide, sulfate.

21. If the two bottles of chloride are next to each other and the two bottles of hydroxide are next to each other, which of the following is a complete and accurate list of the chemicals that could possibly occupy space 2?

- (A) Chloride
- (B) Hydroxide
- (C) Chloride, hydroxide
- (D) Chloride, sulfate
- (E) Hydroxide, sulfate

22. If the bottles of hydroxide are in spaces 2 and 3, which of the following could be true?

- I. A bottle of chloride is in space 7.
- II. A bottle of sulfate is in space 1.
- III. A bottle of sulfate is in space 6.

- (A) I only
- (B) II only
- (C) I and III only
- (D) II and III only
- (E) I, II, and III.

23. Which of the following CANNOT be true?

- (A) There are bottles of chloride in spaces 1 and 7.
- (B) There are bottles of sulfate in spaces 1 and 7.
- (C) There are bottles of hydroxide in spaces 1 and 7.
- (D) There is a bottle of sulfate in space 1 and a bottle of chloride

in space 7.

(E) There is a bottle of hydroxide in space 1 and a bottle of chloride in space 7.

20.(E) 21.(A) 22.(B) 23.(C)

[分析] (1) 7 個瓶子盛裝不同的化學藥品，3S, 2H, 2C，由左排到右

(2) S 不與 S 相鄰 \Rightarrow S * S

(3) S 不排在 3 $\Rightarrow S \neq 3$

(4) C 不排在 5 $\Rightarrow C \neq 5$

由(3)，(4)知第 3 個瓶子可為 C 或 H，第 5 個瓶子可為 S 或 H

	(C)	(S)
\Rightarrow	(H)	(H)

	3	5

20.何者為可能之排法？ \Rightarrow 用消去法，去掉不合理之答案。

首先，利用(4)， $C \neq 5$ 之條件，便去掉了(A)，利用(2)，S * S之條件，去掉了(D)，剩下的(E)即為正確答案。

21.這題給的條為 H 與 H 相鄰，且 C 與 C 相鄰，即 HH, CC，要注意的是，C 不可被排在第五位，且 S 與 S 必須分開。

我們必須利用 CC 與 HH 將三個 S 隔開

\Rightarrow 可為 $\frac{CC}{1\ 2\ 3\ 4}\ \frac{HH}{5\ 6}$ 或 $\frac{HH}{1\ 2\ 3\ 4}\ \frac{CC}{5\ 6}$

但由條件(4)知，後者不合，故必為前者，因此第二位必排 C

22. HH 在 2, 3 $\Rightarrow \frac{HH}{1\ 2\ 3\ 4}\ \frac{CC}{5\ 6\ 7}$ ，因 H 已排完由條件(4)知，C 不可排 5，故 S = 5，又因 S * S，故 S 之左右必為 C 故，唯一之排列次序為 眞，故選(B)

23.何者必不可能為眞？

(A) $C = 1, 7 \Rightarrow \frac{C}{1}\ \frac{S}{2}\ \frac{H}{3}\ \frac{S}{4}\ \frac{H}{5}\ \frac{S}{6}\ \frac{C}{7}$ 為合於條件之情形。

(B) $S = 1, 7 \Rightarrow \frac{S}{1}\ \frac{C}{2}\ \frac{C}{3}\ \frac{S}{4}\ \frac{H}{5}\ \frac{H}{6}\ \frac{S}{7}$ ，為合於條件之情形之一。

(C) $h = 1, 7 \Rightarrow \frac{h}{1}\ \frac{C}{2}\ \frac{C}{3}\ \frac{C}{4}\ \frac{C}{5}\ \frac{C}{6}\ \frac{C}{7}$ ，兩瓶 C 若要將 S 隔開，則 C 必定得在 3, 5，但由條件(4)知 $C \neq 5$ ，故必定違反 S 不與 S 相鄰之原則。

(D) $S = 1, C = 7 \Rightarrow \begin{array}{cccccc} S & C & H & S & H & S & C \\ 1 & 2 & 3 & 4 & 5 & 6 & 7 \end{array}$ 爲合於條件之情形。

(E) $H = 1, C = 7 \Rightarrow \begin{array}{cccccc} H & S & C & S & H & S & C \\ 1 & 2 & 3 & 4 & 5 & 6 & 7 \end{array}$ 亦爲合於條件之情形。

同學對下列這道習題應較熟識了！標準限制時間爲 4min

Questions 24 ~ 27

Five people have their offices on five different floors of a six-floor building, the floors of which are numbered one through six, from bottom to top.

Each of the five people have exactly one office.

Johanna's office is on a floor lower than fourth floor.

Larry's office is the same number of floors from Johanna's is from Karl's office.

Nancy's office is on a floor somewhere between Michaela's floor and Johanna's Johanna's floor.

Karl's floor is immediately above or immediately below Nancy's

24. Which of the following is a possible arrangement of the five offices from lowest to highest floor?

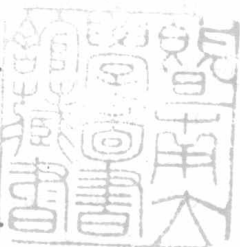
(A) Johanna's, Karl's, Nancy's Larry's, Michaela's.

(B) Johanna's, Larry's, Karl's, Nancy's Michaela's.

(C) Larry's, Johanna's, Karl's, Nancy's Michaela's.

(D) Larry's, Karl's, Johanna's, Michaela's.

(E) Larry's, Karl's, Johanna's, Michaela's, Nancy's.



25. If Nancy's office is on the fifth floor, none of the five people has an office on the

(A) first floor

(B) second floor

(C) third floor

(D) fourth floor

(E) sixth floor

26. If Michaela's office is on the fifth floor, none of the five people has an office on the

(A) first floor

(B) second floor

(C) third floor

(D) fourth floor

(E) sixth floor