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

A panel of five scientists will be formed. The panelists will be selected from among three botanists—F, G, and H—three chemists—K, L, and M—and three zoologists—P, Q, and R. Selection is governed by the following conditions:
The panel must include at least one scientist of each of the three types.
If more than one botanist is selected, then at most one zoologist is selected.
F and K cannot both be selected.
K and M cannot both be selected.
If M is selected, both P and R must be selected.

1. Which one of the following is an acceptable selection of scientists for the panel?

(A) F, G, K, P, Q
(B) G, H, K, L, M
(C) G, H, K, L, R
(D) H, K, M, P, R
(E) H, L, M, P, Q

2. If M is the only chemist selected for the panel, which one of the following must be true?

(A) F and G are both selected.
(B) G and H are both selected.
(C) H and P are both selected.
(D) F, G, and H are all selected.
(E) P, Q, and R are all selected.

3. If four of the scientists selected are F, L, Q, and R, which one of the following must be the fifth scientist selected?

(A) G
(B) H
(C) K
(D) M
(E) P

4. If P is the only zoologist selected, which one of the following must be true?

(A) If K is selected, G cannot be selected.
(B) If L is selected, F cannot be selected.
(C) If exactly one chemist is selected, it must be K.
(D) If exactly two chemists are selected, F cannot be selected.
(E) If exactly two chemists are selected, G cannot be selected.

5. If both G and H are among the scientists selected, then the panel must include either

(A) F or else K
(B) F or else M
(C) K or else M
(D) M or else Q
(E) P or else Q

GO ON TO THE NEXT PAGE.

Questions 6–12

A loading dock consists of exactly six bays numbered 1 through 6 consecutively from one side of the dock to the other. Each bay is holding a different one of exactly six types of cargo—fuel, grain, livestock, machinery, produce, or textiles. The following apply:

The bay holding grain has a higher number than the bay holding livestock.

The bay holding livestock has a higher number than the bay holding textiles.

The bay holding produce has a higher number than the bay holding fuel.

The bay holding textiles is next to the bay holding produce.

6. Which one of the following lists could accurately identify the cargo held in each of the loading dock's first three bays, listed in order from bay 1 to bay 3?

(A) fuel, machinery, textiles
(B) grain, machinery, fuel
(C) machinery, livestock, fuel
(D) machinery, textiles, fuel
(E) machinery, textiles, produce

7. Which one of the following CANNOT be the type of cargo held in bay 4?

(A) grain
(B) livestock
(C) machinery
(D) produce
(E) textiles

8. If there is exactly one bay between the bay holding machinery and the bay holding grain, then for exactly how many of the six bays is the type of cargo that bay is holding completely determined?

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

9. Which one of the following could be the bay holding livestock?

(A) bay 1
(B) bay 2
(C) bay 3
(D) bay 5
(E) bay 6

10. Which one of the following must be false?

(A) The bay holding fuel is next to the bay holding machinery.
(B) The bay holding grain is next to the bay holding machinery.
(C) The bay holding livestock is next to the bay holding fuel.
(D) The bay holding produce is next to the bay holding livestock.
(E) The bay holding textiles is next to the bay holding fuel.

11. If the bay holding produce is next to the bay holding livestock, then each of the following could be true EXCEPT:

(A) Bay 2 is holding fuel.
(B) Bay 4 is holding produce.
(C) Bay 4 is holding textiles.
(D) Bay 5 is holding grain.
(E) Bay 5 is holding machinery.

12. If bay 4 is holding produce, then for exactly how many of the six bays is the type of cargo that bay is holding completely determined?

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

GO ON TO THE NEXT PAGE.

Questions 13–18

A bakery makes exactly three kinds of cookie—oatmeal, peanut butter, and sugar. Exactly three batches of each kind of cookie are made each week (Monday through Friday) and each batch is made, from start to finish, on a single day. The following conditions apply:

No two batches of the same kind of cookie are made on the same day.
At least one batch of cookies is made on Monday.
The second batch of oatmeal cookies is made on the same day as the first batch of peanut butter cookies.
The second batch of sugar cookies is made on Thursday.

13. Which one of the following could be a complete and accurate list of the days on which the batches of each kind of cookie are made?

(A) oatmeal: Monday, Wednesday, Thursday
peanut butter: Wednesday, Thursday, Friday
sugar: Monday, Thursday, Friday

(B) oatmeal: Monday, Tuesday, Thursday
peanut butter: Tuesday, Wednesday, Thursday
sugar: Monday, Wednesday, Thursday

(C) oatmeal: Tuesday, Wednesday, Thursday
peanut butter: Wednesday, Thursday, Friday
sugar: Tuesday, Thursday, Friday

(D) oatmeal: Monday, Tuesday, Thursday
peanut butter: Monday, Wednesday, Thursday
sugar: Monday, Thursday, Friday

(E) oatmeal: Monday, Thursday, Friday
peanut butter: Tuesday, Wednesday, Thursday
sugar: Monday, Thursday, Friday

14. How many of the days, Monday through Friday, are such that at most two batches of cookies could be made on that day?

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

15. If the first batch of peanut butter cookies is made on Tuesday, then each of the following could be true EXCEPT:

(A) Two different kinds of cookie have their first batch made on Monday.
(B) Two different kinds of cookie have their first batch made on Tuesday.
(C) Two different kinds of cookie have their second batch made on Wednesday.
(D) Two different kinds of cookie have their second batch made on Thursday.
(E) Two different kinds of cookie have their third batch made on Friday.

16. If no batch of cookies is made on Wednesday, then which one of the following must be true?

(A) Exactly three batches of cookies are made on Tuesday.
(B) Exactly three batches of cookies are made on Friday.
(C) At least two batches of cookies are made on Monday.
(D) At least two batches of cookies are made on Thursday.
(E) Fewer batches of cookies are made on Monday than on Tuesday.

17. If the number of batches made on Friday is exactly one, then which one of the following could be true?

(A) The first batch of sugar cookies is made on Monday.
(B) The first batch of oatmeal cookies is made on Tuesday.
(C) The third batch of oatmeal cookies is made on Friday.
(D) The first batch of peanut butter cookies is made on Wednesday.
(E) The second batch of peanut butter cookies is made on Tuesday.

18. If one kind of cookie's first batch is made on the same day as another kind of cookie's third batch, then which one of the following could be false?

(A) At least one batch of cookies is made on each of the five days.
(B) At least two batches of cookies are made on Wednesday.
(C) Exactly one batch of cookies is made on Monday.
(D) Exactly two batches of cookies are made on Tuesday.
(E) Exactly one batch of cookies is made on Friday.

GO ON TO THE NEXT PAGE.

Questions 19–23

For the school paper, five students—Jiang, Kramer, Lopez, Megregian, and O'Neill—each review one or more of exactly three plays: *Sunset*, *Tamerlane*, and *Undulation*, but do not review any other plays. The following conditions must apply:

Kramer and Lopez each review fewer of the plays than Megregian.

Neither Lopez nor Megregian reviews any play Jiang reviews.

Kramer and O'Neill both review *Tamerlane*.

Exactly two of the students review exactly the same play or plays as each other.

19. Which one of the following could be an accurate and complete list of the students who review only *Sunset*?

(A) Lopez
(B) O'Neill
(C) Jiang, Lopez
(D) Kramer, O'Neill
(E) Lopez, Megregian

20. Which one of the following must be true?

(A) Jiang reviews more of the plays than Lopez does.
(B) Megregian reviews more of the plays than Jiang does.
(C) Megregian reviews more of the plays than O'Neill does.
(D) O'Neill reviews more of the plays than Jiang does.
(E) O'Neill reviews more of the plays than Kramer does.

21. If exactly three of the students review *Undulation*, which one of the following could be true?

(A) Megregian does not review *Undulation*.
(B) O'Neill does not review *Undulation*.
(C) Jiang reviews *Undulation*.
(D) Lopez reviews *Tamerlane*.
(E) O'Neill reviews *Sunset*.

22. Which one of the following could be an accurate and complete list of the students who review *Tamerlane*?

(A) Jiang, Kramer
(B) Kramer, O'Neill
(C) Kramer, Lopez, O'Neill
(D) Kramer, Megregian, O'Neill
(E) Lopez, Megregian, O'Neill

23. If Jiang does not review *Tamerlane*, then which one of the following must be true?

(A) Jiang reviews *Sunset*.
(B) Lopez reviews *Undulation*.
(C) Megregian reviews *Sunset*.
(D) Megregian reviews *Tamerlane*.
(E) O'Neill reviews *Undulation*.

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.