SECTION II

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.

A concert is given by a six-member band—guitarist, keyboard player, percussionist, saxophonist, trumpeter, violinist. During the concert, each member performs exactly one solo. The following restrictions apply:

The guitarist does not perform the fourth solo.

The percussionist performs a solo at some time before the keyboard player does.

The keyboard player performs a solo at some time after the violinist does and at some time before the guitarist does.

The saxophonist performs a solo at some time after either the percussionist does or the trumpeter does, but not both.

1. Which one of the following is an acceptable ordering of solos from first to last?

(A)   violinist, percussionist, saxophonist, guitarist, trumpeter, keyboard player

(B)   percussionist, violinist, keyboard player, trumpeter, saxophonist, guitarist

(C)   violinist, trumpeter, saxophonist, percussionist, keyboard player, guitarist

(D)   keyboard player, trumpeter, violinist, saxophonist, guitarist, percussionist

(E)   guitarist, violinist, keyboard player, percussionist, saxophonist, trumpeter

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2. If the percussionist performs a solo at some time before the saxophonist does, then which one of the following must be true?

(A)   The percussionist performs the first solo.
(B)   The percussionist performs the second solo.
(C)   The violinist performs a solo at some time before the saxophonist does.
(D)   The percussionist performs a solo at some time before the trumpeter does.
(E)   The saxophonist performs a solo at some time before the keyboard player does.

3. Each of the following must be false EXCEPT:

(A)   The keyboard player performs the first solo.
(B)   The guitarist performs the second solo.
(C)   The guitarist performs a solo at some time before the saxophonist does.
(D)   The guitarist performs a solo at some time before the percussionist does.
(E)   The keyboard player performs a solo at some time before the saxophonist does.

4. Which one of the following CANNOT perform the third solo?

(A)   guitarist
(B)   keyboard player
(C)   saxophonist
(D)   trumpeter
(E)   violinist

5. If the violinist performs the fourth solo, then each of the following must be true EXCEPT:

(A)   The percussionist performs a solo at some time before the violinist does.
(B)   The trumpeter performs a solo at some time before the violinist does.
(C)   The trumpeter performs a solo at some time before the guitarist does.
(D)   The saxophonist performs a solo at some time before the violinist does.
(E)   The trumpeter performs a solo at some time before the saxophonist does.

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Questions 6–10

Four art historians—Farley, Garcia, Holden, and Jiang—will give a series of four public lectures, each lecture on a different topic—lithographs, oil paintings, sculptures, and watercolors. The lectures will be given one at a time, with each art historian giving a lecture on a different one of the topics. The schedule of the lectures is subject to the following constraints:

    The oil paintings lecture and the watercolors lecture must both be earlier than the lithographs lecture.
    Farley's lecture must be earlier than the oil paintings lecture.
    Holden's lecture must be earlier than both Garcia's lecture and Jiang's lecture.

6. Which one of the following is an acceptable ordering of the lectures, from first to fourth?

(A)   Farley: sculptures; Holden: lithographs; Garcia: oil paintings; Jiang: watercolors
(B)   Farley: watercolors; Jiang: oil paintings; Holden: sculptures; Garcia: lithographs
(C)   Garcia: sculptures; Farley: watercolors; Holden: oil paintings; Jiang: lithographs
(D)   Holden: oil paintings; Jiang: watercolors; Farley: lithographs; Garcia: sculptures
(E)   Holden: sculptures; Farley: watercolors; Jiang: oil paintings; Garcia: lithographs

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7. Which one of the following must be true?

(A) Farley's lecture is earlier than the sculptures lecture.
(B) Holden's lecture is earlier than the lithographs lecture.
(C) The sculptures lecture is earlier than Garcia's lecture.
(D) The sculptures lecture is earlier than Jiang's lecture.
(E) The watercolors lecture is earlier than Garcia's lecture.

8. If the watercolors lecture is third, which one of the following could be true?

(A) Farley gives the watercolors lecture.
(B) Garcia gives the oil paintings lecture.
(C) Garcia gives the sculptures lecture.
(D) Holden gives the sculptures lecture.
(E) Jiang gives the lithographs lecture.

9. Which one of the following CANNOT be true?

(A) Farley gives the lithographs lecture.
(B) Garcia gives the sculptures lecture.
(C) Garcia gives the watercolors lecture.
(D) Holden gives the oil paintings lecture.
(E) Jiang gives the watercolors lecture.

10. If Garcia gives the sculptures lecture, which one of the following could be true?

(A) The lithographs lecture is third.
(B) The oil paintings lecture is third.
(C) The sculptures lecture is first.
(D) The sculptures lecture is second.
(E) The watercolors lecture is second.

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Questions 11–16

Three rugs will be woven out of colored thread. Six colors of thread are available—forest, olive, peach, turquoise, white, and yellow—exactly five of which will be used to weave the rugs. Each color that is used will be used in only one of the rugs. The rugs are either solid—woven in a single color—or multicolored. The rugs must be woven according to the following rules:

    In any rug in which white is used, two other colors are also used.

    In any rug in which olive is used, peach is also used.

    Forest and turquoise are not used together in a rug.

    Peach and turquoise are not used together in a rug.

    Peach and yellow are not used together in a rug.

11. Which one of the following could be the colors of the three rugs?

(A)   forest only;
    turquoise only;
    olive, peach, and white

(B)   forest only;
    turquoise only;
    olive, peach, and yellow

(C)   peach only;
    turquoise only;
    forest, olive, and white

(D)   yellow only;
    forest and turquoise;
    olive and peach

(E)   yellow only;
    olive and peach;
    turquoise and white

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12. Which one of the following must be true?

    (A) There are no multicolored rugs in which forest is used.
    (B) There are no multicolored rugs in which turquoise is used.
    (C) Peach is used in one of the rugs.
    (D) Turquoise is used in one of the rugs.
    (E) Yellow is used in one of the rugs.

13. If one of the rugs is solid peach, which one of the following must be true?

    (A) One of the rugs is solid forest.
    (B) One of the rugs is solid turquoise.
    (C) One of the rugs is solid yellow.
    (D) Forest and white are used together in a rug.
    (E) White and yellow are used together in a rug.

14. If there are exactly two solid rugs, then the colors of those two rugs CANNOT be

    (A) forest and peach
    (B) forest and yellow
    (C) peach and turquoise
    (D) peach and yellow
    (E) turquoise and yellow

15. If forest and peach are used together in a rug, which one of the following could be true?

    (A) There is exactly one solid rug.
    (B) White is not used in any of the rugs.
    (C) Yellow is not used in any of the rugs.
    (D) Turquoise and white are used together in a rug.
    (E) Turquoise and yellow are used together in a rug.

16. If one of the rugs is solid yellow, then any of the following could be true EXCEPT:

    (A) There is exactly one solid color rug.
    (B) One of the rugs is solid forest.
    (C) Turquoise is not used in any of the rugs.
    (D) Forest and olive are used together in a rug.
    (E) Peach and white are used together in a rug.

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Questions 17–23

The manager of a photography business must assign at least two photographers to each of two graduation ceremonies— one at Silva University and the other at Thorne University. Exactly six photographers are available—Frost, Gonzalez, Heideck, Knutson, Lai, and Mays—but not all have to be assigned. No photographer can be assigned to both ceremonies. The following constraints apply:

Frost must be assigned together with Heideck to one of the graduation ceremonies.

If Lai and Mays are both assigned, it must be to different ceremonies.

If Gonzalez is assigned to the Silva University ceremony, then Lai must be assigned to the Thorne University ceremony.

If Knutson is not assigned to the Thorne University ceremony, then both Heideck and Mays must be assigned to it.

17. Which one of the following is an acceptable assignment of photographers to the two graduation ceremonies?

(A)   Silva University: Gonzalez, Lai
        Thorne University: Frost, Heideck, Mays
(B)   Silva University: Gonzalez, Mays
        Thorne University: Knutson, Lai
(C)   Silva University: Frost, Gonzalez, Heideck
        Thorne University: Knutson, Lai, Mays
(D)   Silva University: Frost, Heideck, Mays
        Thorne University: Gonzalez, Lai
(E)   Silva University: Frost, Heideck, Mays
        Thorne University: Gonzalez, Knutson, Lai

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18. If Heideck is assigned to the same graduation ceremony as Lai, then which one of the following must be true?

   (A) Frost is assigned to the Thorne University ceremony.
   (B) Gonzalez is assigned to the Silva University ceremony.
   (C) Gonzalez is assigned to neither graduation ceremony.
   (D) Knutson is assigned to the Thorne University ceremony.
   (E) Lai is assigned to the Thorne University ceremony.

19. Which one of the following could be the complete assignment of photographers to the Silva University ceremony?

   (A) Frost, Gonzalez, Heideck, Knutson
   (B) Frost, Gonzalez, Heideck
   (C) Gonzalez, Knutson
   (D) Heideck, Lai
   (E) Knutson, Mays

20. Which one of the following is a complete and accurate list of all of the photographers who must be assigned?

   (A) Frost, Heideck
   (B) Frost, Heideck, Knutson
   (C) Frost, Heideck, Knutson, Lai
   (D) Frost, Gonzalez, Heideck
   (E) Frost, Gonzalez, Heideck, Mays

21. If exactly four of the photographers are assigned to the graduation ceremonies, then which one of the following must be assigned to the Silva University ceremony?

   (A) Frost
   (B) Gonzalez
   (C) Knutson
   (D) Lai
   (E) Mays

22. Which one of the following CANNOT be the complete assignment of photographers to the Thorne University ceremony?

   (A) Frost, Gonzalez, Heideck, Mays
   (B) Frost, Heideck, Knutson, Mays
   (C) Gonzalez, Knutson, Lai
   (D) Gonzalez, Knutson, Mays
   (E) Knutson, Mays

23. Which one of the following, if substituted for the constraint that if Knutson is not assigned to the Thorne University ceremony, then both Heideck and Mays must be assigned to it, would have the same effect in determining the assignment of photographers to the graduation ceremonies?

   (A) If Knutson is assigned to the Silva University ceremony, then Heideck and Mays cannot both be assigned to that ceremony.
   (B) If Knutson is assigned to the Silva University ceremony, then Lai must also be assigned to that ceremony.
   (C) Unless Knutson is assigned to the Thorne University ceremony, both Frost and Mays must be assigned to that ceremony.
   (D) Unless Knutson is assigned to the Thorne University ceremony, Heideck cannot be assigned to the same ceremony as Lai.
   (E) Unless either Heideck or Mays is assigned to the Thorne University ceremony, Knutson must be assigned to that ceremony.

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.