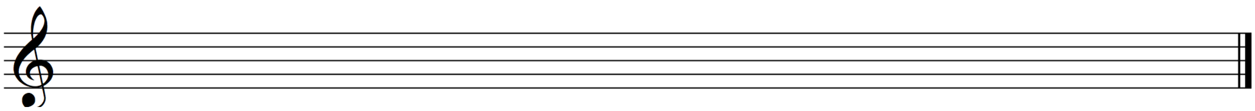
NAME:

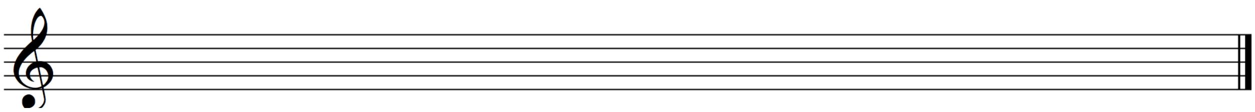
Theory (70%)

I. *Normal Form: The normal form of a pitch-class set is its most compact representation..*

1. Put the collections on p. 71, #1 into normal form on the staff below, written in the form of an ascending scale within the octave:



a. b. c. d.



e. f. g.

2. Put the following collections into normal form using integers. Write your answer within square brackets:

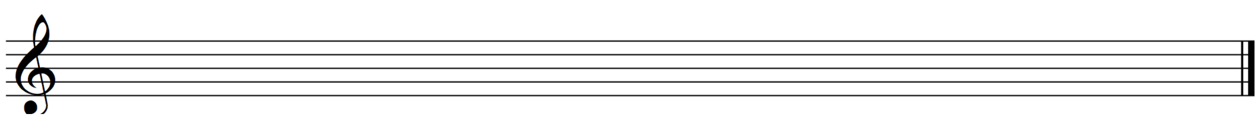
a. 11, 5, 7, 2 b. 0, 10, 5

c. 7, 6, 9, 1 d. 4, 7, 2, 7, 11

e. the C-major scale f. Eb C B, Bb, E, G

II. *Transposition: Transposition (T_n) involves adding some transposition interval (n) to each member of a pitch-class set. Two pitch-class sets are related by T_n if, for each element x in the first set, there is a corresponding element y in the second set n semitones away.*

1. Transpose the pitch-class sets notated at the top of p. 72 (II. 1) as indicated. The sets are given in normal form; write your answer also in normal form on the staff below.



a. T_8 b. T_3 c. T_6 d. T_4

2. Transpose the following pitch-class sets as indicated. Write your answers in normal form using integer notation.

a. T_3 [8, 0, 3] b. T_9 [2, 4, 7, 10]
c. T_6 [5, 7, 9, 11, 2] d. T_7 [9, 11, 1, 2, 4, 6]

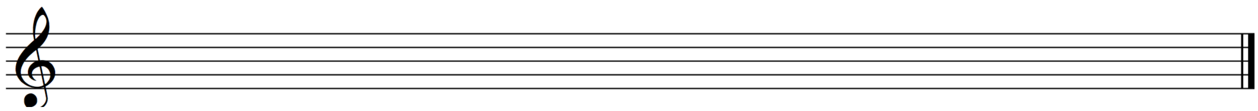
3. Are the following pairs of pitch-class sets related by transposition? If so, what is the interval of transposition? All the sets are given in normal form.

a. [8, 9, 11, 0, 4] [4, 5, 7, 8, 0] b. [7, 9, 1] [1, 5, 7]

c. [7, 8, 10, 1, 4] [1, 2, 4, 7, 10] d. [1, 2, 5, 9] [11, 0, 3, 7]

III. *Inversion: Inversion (I_n) involves subtracting each member of a pitch-class set from the index number n. Two pitch-class sets are related by I_n if, for each element x in the first set, there is a corresponding element y in the second set such that x + y = n. When the sets are in normal form, the first elements of one corresponds to the last element of the other, the second elements of one corresponds to the second-t-last element of the other, and so on.*

1. Invert the pitch-class sets notated at the bottom of p. 72 (III. 1) as indicated. Put your answer in normal form and write it on the staff below.



a. I_5 b. I_{10} c. I_0 d. I_6 e. I_7

2. Invert the following pitch-class sets as indicated. Use integer notation and write your answers in normal form.

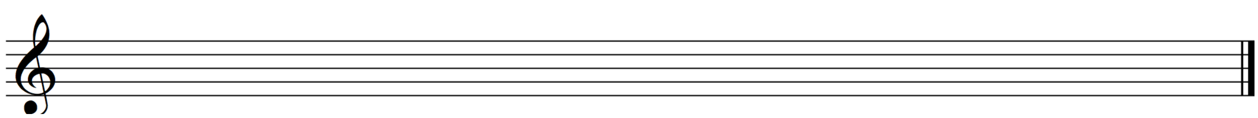
a. I_9 [9, 10, 0, 2] b. I_0 [2, 2, 5] c. I_3 [1, 2, 4, 7, 10]
d. I_{10} [10, 11, 0, 3, 4, 7] e. I_6 [4, 7, 10, 0] f. I_4 (C-major scale)
g. I_3 [1, 3, 5, 8] h. I_9 [10, 1, 3, 6]

3. Are the following pairs of pitch-class sets related by inversion? If so, what is the value of n in I_n? All the sets are given in normal form.

a. [2, 4, 5, 7] [8, 10, 11, 1] b. [4, 6, 9] [4, 7, 9]
c. [1, 2, 6, 8] [9, 11, 2, 3] d. [4, 5, 6, 8, 10, 1] [3, 6, 8, 10, 11, 0]
e. [8, 9, 0, 4] [4, 8, 11, 0] f. [5, 9, 11] [7, 9, 1] g. [4, 5, 8, 11] [10, 1, 4, 5]

IV. *Inversion: Inversion (I^x_y) involves mapping each note in a pitch-class set onto a corresponding note by performing whatever inversion maps x onto y.*

1. Invert the pitch-class sets notated in the middle of p. 73 (IV. 1) as indicated. Put your answer in normal form and write it on the staff below.



a. I^{G}_{B} b. $I^{F\#}_{G}$ c. I^{F}_{F} d. I^{B}_{C} e. $I^{E}_{G\#}$

2. Invert the following pitch-class sets as indicated. Put your answer in normal form.

a. I^{Ab}_{Bb} [G, Ab, Bb, B] b. I^{Ab}_{A} [B, C, D, F, F#] c. I^{D}_{D} [B, C, D, E, F, G]
d. $I^{C\#}_{C\#}$ [F#, G#, B, C#] e. I^{D}_{Ab} [C#, D#, G, A]

3. Using the I^x_y notation, give at least two labels for the operation that connects the following pairs of inversionally related sets.

a. [G, G#, B] [G, Bb, B]
b. [C#, D, F, G] [G, A, C, C#]
c. [Ab, A, Db, Eb] [A, B, D#, E]
d. [D, E, F] [F, A, C]
e. [G#, A, A#, B, C, D] [C#, D#, E, F, F#, G]

V. *Prime Form: The prime form is the way of writing a set that is most compact and most packed to the left, and begins on 0.*

1. Put each of the following pitch-class sets in prime form. All the sets are given in normal form.

a. [10, 3, 4]
b. [7, 8, 11, 0, 1, 3]
c. [G, B, D]
d. [2, 5, 8, 10]
e. [1, 4, 6, 9, 10]
f. [C#, D, G, Ab]

2. Are the following pitch-class sets in prime form? If not, put them in prime form.

a. (0, 1, 7) b. (0, 2, 8) c. (0, 2, 6, 9) d. (0, 1, 4, 5, 8, 9)

VI. *The List of Set Classes.*

1. Name all the tetrachords that contain two tritones.

2. What is t largest number of interval class 4s contained by a tetrachord? Which tetrachords contain that many?

3. Which trichord(s) contain both a semitone and a tritone?

4. Which tetrachords contain one occurrence of each interval class? (Notice that they have different prime forms).

5. How many trichords are there? How many nonachords (nine-note sets)? Why are these numbers the same?

6. Which hexachords have no ocurrences of some interval? Of more than one interval?

Analysis (30%)

Igor Stravinsky, *Three Pieces for String Quartet*, no. 2, mm. 1–21.

This is the complete A-section of a movement in ABA form. It consists of four distinct bits of musical material, labled A, B, C, and D. Even for a composer famous for the fragmentation of his musical forms, this music pursues an idea of maximum contrast, with little apparent effort to create trasnitions or connections.

1. Analyze the A-material first. It consists of the repeated alternation of two chords. Put the chords in normal form and relate them to each other. They can be related via T_n or I_n. Focus on the inversional relationship, and described it as $I^x{}_y$, where X and Y are a pair of notes related by that particular inversion.

2. Relate the B-material to the A-material– is the same I_n still operative?

3. Study the two iterations of the C-material. If the same I_n is still operative, does every pitch class have its inversional partner nearby, or do some of them have to wait a bit?

4. The D-material might be thought of as a strange and brusque sorts of cadence in Bb, with the perfect fifth, Bb–F, as a focal point. If this cadence seems to point to Bb, what might you propose as a pitch-class center or a structural perfect fifth for the previous music? Can you find any hint of the Bb–F fifth back in the A-material?

5. Stravinsky said he composed this movement as a sort of musical portrait of a British musical hall performer named little Tich, famous for (among other things) his inpersonations and quick changes of costume. With that in mind, what sorts of personalities are evoked by these four kinds of musical material? What sort of personality is evoked by the passage as a whole?