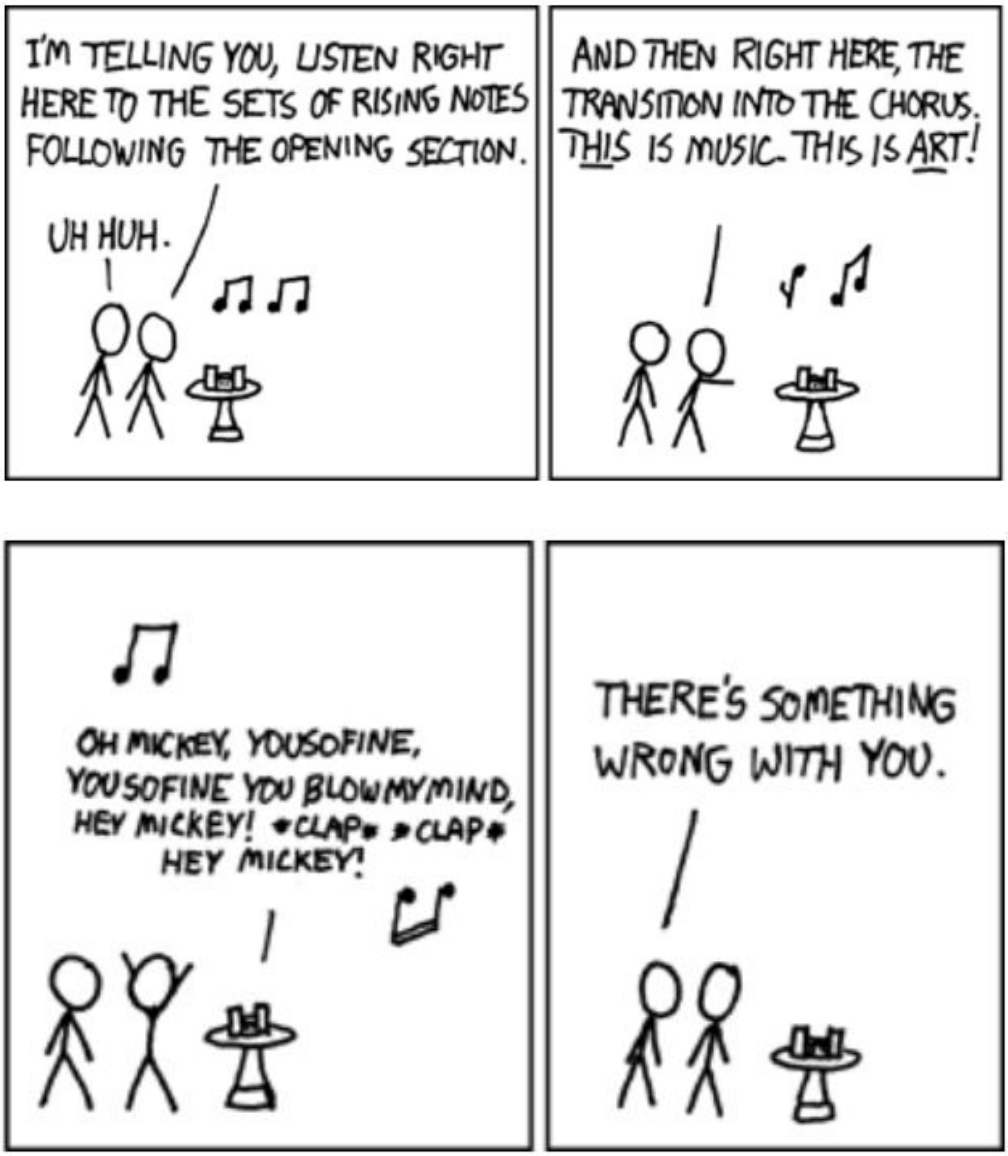
SOUNDS OF MUSIC TEST

Brookwood Captains Tryouts 2020



Team Name: _____

Total Points: ____/110

Section 1: Multiple Choice (30 points)

Each correct answer is worth 2 points

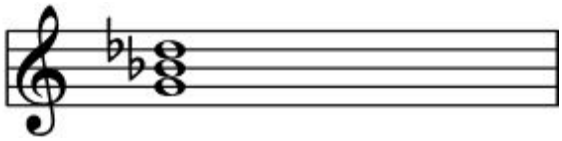
1) A natural minor scale is just which mode of the major key?

a) Dorian
b) Phrygian
c) Lydian
d) Mixolydian
e) Aeolian

2) Which of the following is the correct ratio of a Syntonic Comma?

a) 2:1
b) 3:2
c) 13:12
d) 81:80
e) 441:440

3) What is the name of this chord?



a) Gm
b) G dim
c) G(b5)
d) G+
e) GΔ

4) What is the name of this clef?

a) Neutral Clef
b) Simple Clef
c) Bar Clef
d) Double Stop Clef
e) Double Bar Clef

5) What do “D.S.” and “D.C.” stand for, as in D.S. Al Coda and D.C. Al Fine?

a) De Segno / De Capo
b) De Segno / Da Capo
c) Dal Segno / De Capo
d) Dal Signor / Da Capo
e) Dal Segno / Da Capo

6) What does “alla breve” mean?

a) Cut Time
b) Quickly
c) Briefly
d) In a hurried manner
e) With breath

7) In solfege, which of the following is “a note to follow So?”

a) Do
b) Mi
c) Fa
d) La
e) Ti

8) Which of the following analogies to electrical power is most representative of the sources of sound for reed instruments and the flute? (*fifth tiebreaker*)

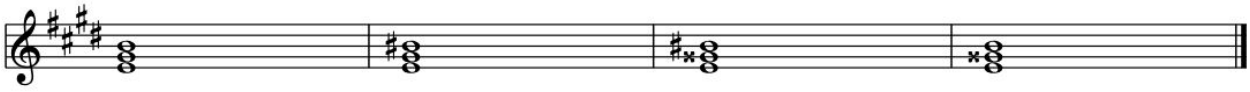
a) Reed: DC power, Flute: AC power
b) Reed: AC power, Flute: DC power
c) Both DC power
d) Both AC power

9) What ratio(s) do you need to use to be able to generate all the relative frequencies of the notes in the standard harmonic series? (*fourth tiebreaker*)

I 1:2
II 2:3
III 3:4

a) I only
b) II only
c) I and II
d) I II and III
e) None of the Above

10) Which represents an augmented chord?



a) b) c) d)

e) None of the above

11) What is this chord?

a) C major 7
b) C dominant 7
c) C diminished
d) C minor 7
e) C diminished 7

12) How does the shape of the right hand of a french horn player affect the horn?

a) An open hand position flattens the horn and a closed hand position sharpens the horn.
b) An open hand position sharpens the horn and a closed hand position flattens the horn.
c) An open hand position makes the tone brighter and a closed hand position makes the tone darker.
d) An open hand position makes the tone darker and a closed hand position makes the brighter.
e) Hand position does not affect the horn.

13) Which is not a Bb-tuned instrument?

a) Euphonium
b) Tenor Saxophone
c) Alto Saxophone
d) Trumpet
e) Bass Clarinet

14) Which instrument does not have a conical bore?

a) Clarinet
b) Oboe
c) French Horn
d) Mellophone
e) Euphonium

15) What is the term for the change in direction and speed of a sound wave as it passes from one medium to another?

a) Reflection
b) Diffraction
c) Reverberation
d) Resonance
e) Refraction

Section 2: Matching (20 Points)

1 point per correct match

1. Resonance	_____	A. How the tempo, melodic, and harmonic materials are combined in a composition
2. Reflection	_____	B. The bouncing of a sound wave off an object
3. Diffraction	_____	C. The superposition of multiple echoes of one sound
4. Reverberation	_____	D. Simultaneous vibrations of two objects at the same frequency
5. Attenuation	_____	E. Some energy is lost to the medium through which a wave is traveling
6. Rarefaction	_____	F. The region of lessening density of a sound wave
7. Texture	_____	G. The bending of a wave as it moves around an obstacle
8. Timbre	_____	H. Characteristic of the medium that indicates how loud a sound will be depending on the frequency and sound source
9. Tone	_____	J. The quality of sound of an instrument as compared to itself
10. Impedance	_____	K. The quality of sound of an instrument as compared to other instruments

Classify each instrument based on the acoustic family to which it belongs

11. Piano	_____	A. Idiophones
12. Timpani	_____	B. Membranophones
13. Accordion	_____	C. Chordophones
14. Glockenspiel	_____	D. Aerophones
15. Eigenharp	_____	E. Electrophones
16. Claves	_____	
17. Boobam	_____	
18. Sitar	_____	
19. Countertenor	_____	
20. Theremin	_____	

Section 3: Free Response (40 Points)

Point values will be assigned to questions

1) On a perfectly tuned equal tempered piano, determine whether each of the following intervals will be slightly sharp, slightly flat, or perfectly in tune, as compared to the “harmonic” whole-number-ratios of frequencies achievable through just intonation: (10 points) (*second tiebreaker*)

_____ Octave

_____ Fifth

_____ Fourth

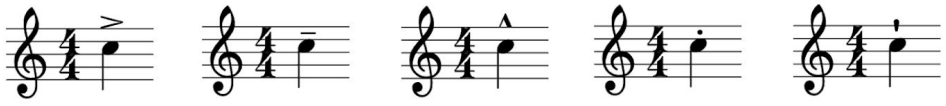
_____ Major Third

_____ Minor Third

2) Write the notes of a descending one octave C Bebop scale. (2 points)

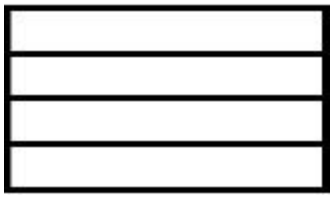
3) What is the difference between polyrhythm and polymeter? (4 points)

4) Name each symbol. (5 points)

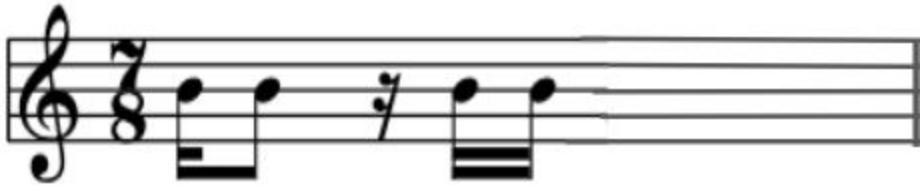


_____ _____ _____ _____ _____

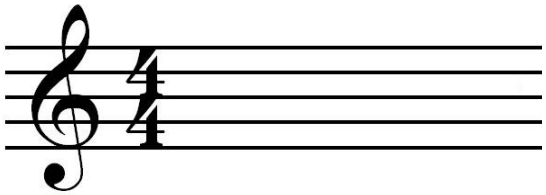
5) Draw in a whole rest. (2 points)



6) Write in one G note to make the measure rhythmically accurate. (4 points)



7) Draw in the notes of a C13 chord. (2 points)



8) For a string instrument, the pitch can be altered by changing the _____, _____, and _____ of the string. (3 points)

9) Write the frequency ratios of the following intervals in Pythagorean tuning: (8 points)
(*third tiebreaker*)
Major Second: _____
Perfect Fourth: _____
Major Seventh: _____
Tritone: _____

Section 4: Math (20 Points)

Show all work for full credit

1) A lion is capable of producing a roar of 114 decibels, as measured from 10 meters away. Imagine you are out on a safari, and you hear a pack of lions roar from a kilometer away. The collective roar clocks in at 83.03 decibels. Assuming all lions roared at the same volume and they are close enough together to be considered a point source, how many lions were in the pack? (10 points) (*first tiebreaker*)

2) A police car is chasing a speeding driver, with a siren that sounds at 1500 hertz. The police car is slowly gaining on the driver, driving at 55 m/s while the other car drives at 50 m/s. While speeding, the other driver performs the following mental calculations: If I am driving at 50 m/s, and the cop is driving at 55 m/s, then our relative velocity is 5 m/s. Plugging this into the doppler equation, and assuming the speed of sound in the air at the time to be 343 m/s, he deducts that the frequency he should be hearing from the police car is 1522 hertz. However, this is not the actual frequency that the speeding driver perceives.

a) Set up and solve the erroneous equation the speeding driver initially solved (3 points)

b) Calculate the actual frequency perceived by the speeding driver (3 points)

c) Explain the error in the speeding driver's logic concerning the Doppler Effect. Specifically, where was the fault in his logic and why is that line of reasoning incorrect? (4 points)