Sounds of Music

Division B

Holt Invitational

February 25th, 2023

School Name:

_____

Team #:

_____

Team Members:

_____

Rank: _____
Total Points: __ /___

Part 1 – Multiple Choice

(all questions are worth one point unless stated otherwise)

1. What is the Lower limit of audibility?
    a. 0 dB
    b. 20 dB
    c. 2 dB
    d. 10 dB

2. What church mode is used for minor scales?
    a. Aeolian
    b. Ionian
    c. Mixolydian
    d. Lydian

3. What is the circle of fifths?
    a. A representation of the relationship between the notes in the pentatonic scale.
    b. A representation of the relationship between the strings of a guitar.
    c. A representation of the relationship between the tuning of a guitar.
    d. A representation of the relationship between the notes in the chromatic scale

4. A violinist wishes to tune at A4, which is at a frequency of 440 Hz. The cellist needs to tune an octave lower, at A3. What frequency is that?
    a. 220 Hz
    b. 330 Hz
    c. 238 Hz
    d. 110 Hz

5. Playing a C major scale from C to C is an example of the _____ mode.
    a. Aeolian
    b. Ionian
    c. Mixolydian
    d. Lydian

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

De Segno / De Capo

De Segno / Da Capo

Dal Segno / De Capo

Dal Signor / Da Capo

Dal Segno / Da Capo

For each of the instruments shown below, indicate whether it is an idiophone, an electrophone, an chordophone, an membranophone, or an aerophone.

a) aerophone, b) electrophone, c) membranophone d) Chordophone e) idiophone

7. Glass Armonica: E
8. Theremin: B
9. Nyckelharpa: D
10. Piano: D
11. Timpani: C
12. Accordion: A
13. Eigenharp: D

Part 2 – Free Response

14. What note is an augmented sixth above A flat?

F Sharp(Do not accept G Flat)

15. Why are underwater man-made sounds considered a form of dangerous pollution?

Expected Answer: They make it difficult for underwater life to hear natural noises and can have implications for their survival (such as an inability to find a habitat).

16. How would you play the first harmonic on a cello?

Expected Answer: Lightly touch down at the halfway point of the string.

17. How does rosin help a stringed instrument (Ex: A Cello) produce sound?

Expected Answer: Creates more static friction to vibrate the string when the instrument is bowed.

18. What metronome marking typically corresponds to a common time Larghissimo?

Expected Answer: 24 bpm or less

19. What is the definition of Maestoso?

Majestically or Regally

20. Explain the mechanics behind producing and sustaining a note on a grand piano (8 pts)

Typically the dampers rest on the strings of an acoustic piano, muting the strings when a key is released. When a key is pressed, the hammer strikes the strings producing a vibration. For the duration a key is held, the damper is also held up until the key is released, dropping the damper and muting the string. When the sustain pedal is held (far right pedal), all of the dampers on the keys are raised allowing for any notes to be sustained as long as the pedal is held up.

A key is pressed and it makes a hammer strike a string (2 points)

Typically, a damper falls down when a key is released. Can sustain note by holding a key. (2 points)

Sustain pedal raises all the dampers, allowing notes to be sustained as long as it is held down. (2 points)

Sustain pedal is the far-right pedal (2 points)

21. How long should a quarter note be held at 156 bpm?

0.385 Seconds

22. Define Psychoacoustics

The branch of psychology concerned with the perception of sound and its physiological effects

23. For a string instrument, the pitch can be altered by changing the _____,

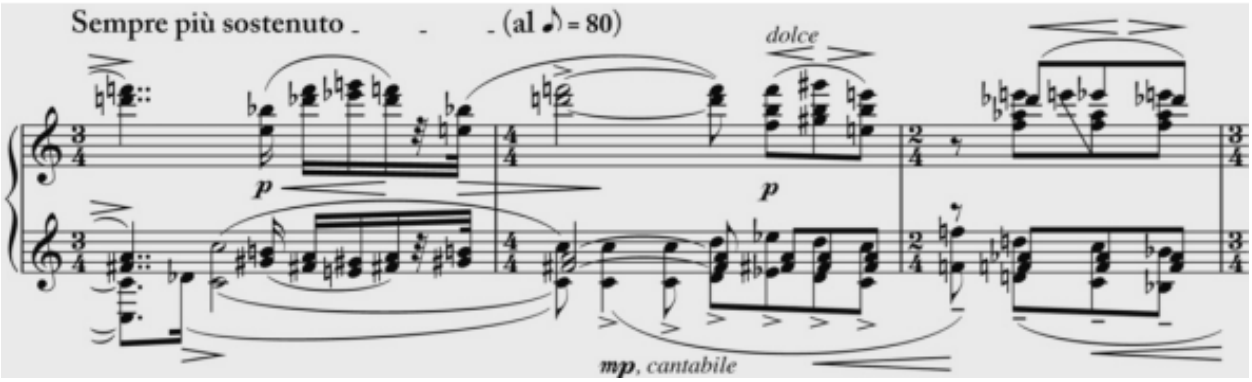
_____, and _____ of the string.

Thickness

Tension

Length

(Also accept mass or density)



24. In the piece above, how many time signature changes are there?

3

25. In the piece above, what does cantabile mean?

To Sing -OR- In a singing manner

26. In the piece above, what does the instruction “dolce” mean?

“Sweetly”

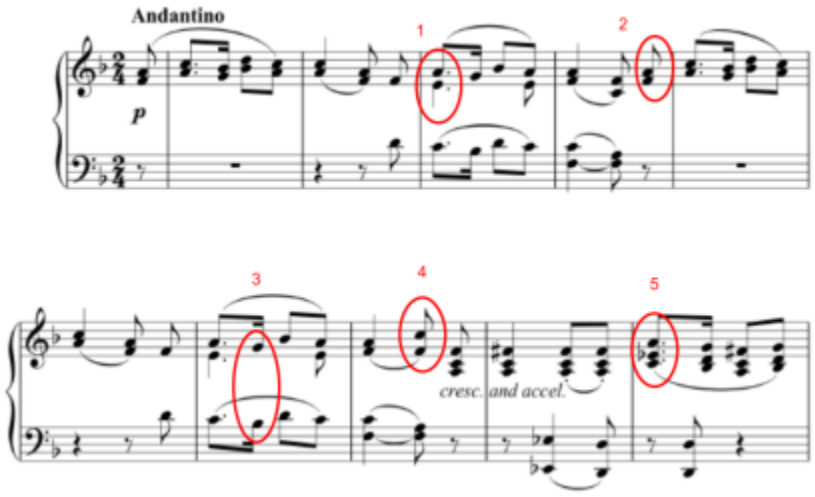
27. What is the definition of Sempre Più Sostenuto?

The Note are Sustained throughout the piece

28. What is the approximate frequency range of human hearing?

20 Hz – 20,000 Hz -OR- 20 Hz – 20 kHz

For Questions 32 – 36 please use the excerpt below for reference



Points On This Page: _____

29. What key is the music in?

F Major (+1 for F, +1 for Major)

30. Describe the dynamics throughout the piece.

Start off piano (soft) and later, crescendo (increase volume). (+1 for mentioning piano, +1 for crescendo)

31. What tempo is the piece at and what does the tempo mean?

Andantino (moderate tempo, slightly faster than andante) (+1 for andantino, +1 for moderate tempo description)

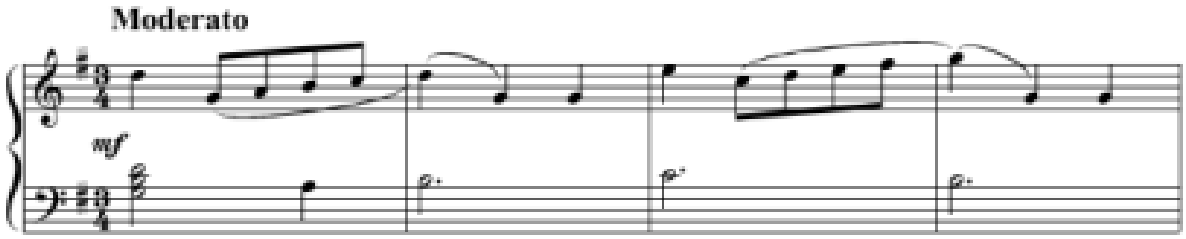
32. The time signature is _____ which means that there are _____ beats per measure and the _____ note is equal to 1 beat.

2/4; 2; quarter (+1, all or nothing)

33. Determine the interval between the circles notes for 1-4. For 5, determine the major triad.

1. Perfect Fourth (+ 0.5 if mentioned fourth, +0.5 for perfect)
2. Major Third (+ 0.5 if mentioned fourth, +0.5 for perfect)
3. Major Sixth (+ 0.5 if mentioned fourth, +0.5 for perfect)
4. Perfect Fifth (+ 0.5 if mentioned fifth, +0.5 for perfect)
5. Diminished A Triad (+ 0.5 if mentioned A, +0.5 for Diminished)

For Questions 37 – 38 please use the excerpt below for reference



34. Identify the notes on the treble clef in terms of solfege AND the note names (separate your answer's measures with a vertical bar). (4 Pts)

So Do Re Mi Fa | So Do Do | La Fa So

La Ti | Do Do Do

D G A B C | D G G | E C D

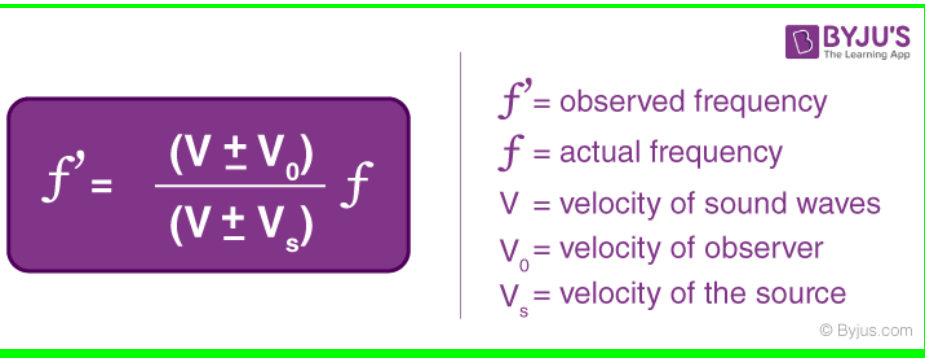
E F# | G G G

(+ 0.5 for each correct measure of notes, +0.5 for each correct measure of solfege)

35. What key is the following piece in?

G Major

36. Give the general equation for the "Doppler Effect" of two moving bodies and explain how it relates to sound. Give an example of an everyday occurance of this phenomenon. (8 points)



(2 Pts)

The Doppler effect (or the Doppler shift) is the change in frequency or wavelength of a wave in relation to an observer who is moving relative to the wave source. (1 point)

Example: (1 point) - Ambulance (siren) - Car horn

If the source is moving towards the observer: (2 point) - Each wave takes slightly less time to reach the observer than the previous wave. Hence, the time between the arrival of successive wave crests at the observer is reduced, causing an increase in the frequency. While they are traveling, the distance between successive wave fronts is reduced, so the waves "bunch together". -

If source is moving away from the observer: (2 point) - Each wave is emitted from a position farther from the observer than the previous wave, so the arrival time between successive waves is increased, reducing the frequency. The distance between successive wave fronts is then increased, so the waves "spread out".

37. A spherical boombox has power 100 W and a radius of 0.25 m.

    a. What is the intensity at the surface of the boombox?

    127.324 W/m^2

    (+1 for answer, accept close to 120 W/m^2)

    b. An observer standing 5 m away measures what intensity?

    5.093 W/m^2 (+1 for answer, accept close to 5 W/m^2)

Feedback: (Not Graded but Appreciated!)

Rate this test on difficulty from 1-10:

Did you hope to see something on the test that wasn't there? Did you notice anything you thought was a mistake? Any other comments?

Points On This Page: _____