1) A **(2)**
2) D **(2)**
3) C **(2)**
4) C **(2)**
5) A **(2)**
6) 28.8 K **(3)**
7) 110 m **(3)**
8) a. 432 m/s (2), b. 322 m/s (2)
9) Human perception of sound. **(2)**
10)
    a. F# C# G# D# A# (0.5 each, -0.5 for each incorrect) (0.3 each if in flats) **(2.5)**
    b. B♭ E♭ A♭ D♭ G♭ (0.5 each, -0.5 for each incorrect) (0.3 each if in flats) **(2.5)**
    c. B♭ E♭ A♭ D♭ G♭ C♭ F♭ (0.5 each, -0.5 for each incorrect) (0.3 each if in flats) **(3.5)**
    d. F# C# G# D# A# E# (0.5 each, -0.5 for each incorrect) (0.3 each if in flats) **(3)**
11) 6.7×10^{-4} s
12) A single reed instrument needs a mouthpiece to create a tone (1.5). A double reed instrument can stand alone in creating its own tone (1.5). A single reed vibrates against the mouthpiece to create the tone (1), while the double reed vibrates against each other (1). **(5)**
13) (4)
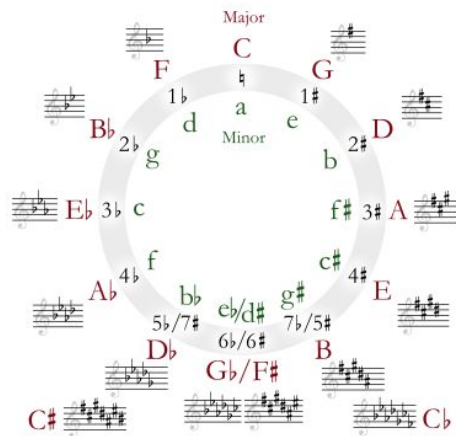
14) decrease, decrease, decrease **(3)**
15) I= 300 W/ 4π x $(1m)^2$ = 23.9 W/m²
    dB= 120 + 4.34 x ln(23.9) = 134 dB.
    No, standing away 1 meter from the speaker will Not burst eardrums. **(4)**

E B C G E A D D B C G

G D E B G C F F D E B

F C D A F B E E C D A
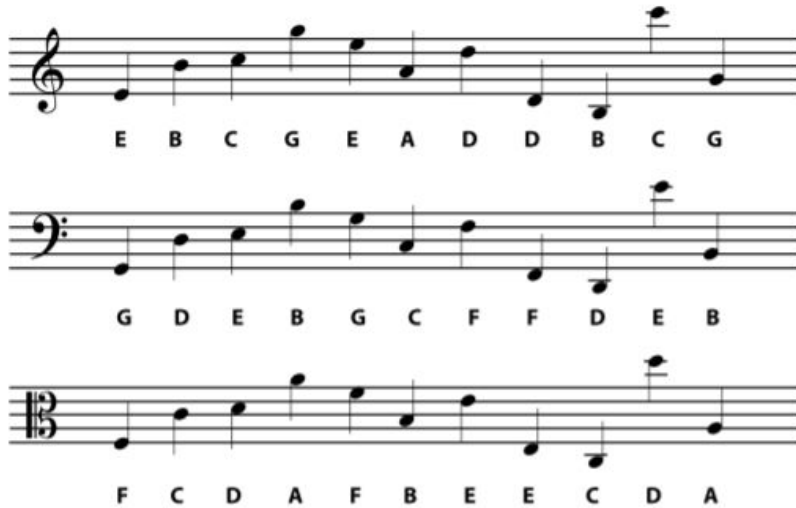
16)   (⅓ pt each) **(11)**

17)
    a. The part of the string that can vibrate is shorter. The nger becomes the new "end" of the string.
    b. The new sound wave is shorter, so its frequency is higher.
    c. It sounds higher; it has a higher pitch. **(3)**

18)   5 half steps higher 1 whole step lower 2 whole steps lower 9 half steps lower **(4)**

19) Diminished sixth, Perfect fourth, Augmented fourth, Minor second **(4)**
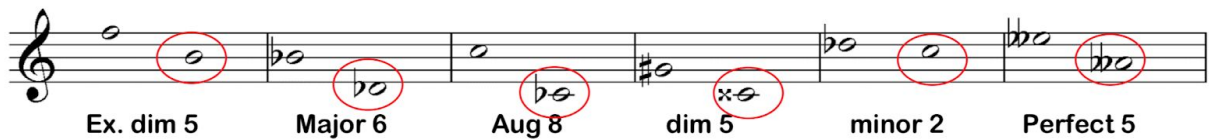
20) 8.0×10^2 s **(3)**

21) auditory, tympanum, hammer, anvil, stirrup, oval window, cochlea, nerve impulses, cochlear (0.5 each) **(4.5)**

22) 650 m **(3)**

23) x^2 **(2)**

24) a. first in metal, second in water, third in air **(3)**, b. second sound arrives 0.059 s later, and third sound arrives 0.339 s later **(3)**

25) (5)

Ex. dim 5   Major 6   Aug 8   dim 5   minor 2   Perfect 5

26) (5)

3/4   4/4   6/8

12/8   9/8