SAINT JOSEPH'S PREPARATORY SCHOOL
PHYSICS TEST QUESTIONS.....T P FITZPATRICK
SOUND WAVES

1. Sound consists of what kind of mechanical waves? (transverse or longitudinal or …)
2. What is considered the lowest frequency that human ears can detect?
3. What is considered the highest frequency that human ears can detect?
4. What remains constant in the inner ear as it varies outside the ear drum when sound enters the ear?
5. What characteristic of sound waves is interpreted as pitch?
6. What characteristic of sound waves is interpreted as loudness?
7. Why is the decibel scale used to measure sound intensity?
8. Because of interference, when two almost identical sound waves are present at the same time, varying loud and soft sound is heard. What is the phenomenon called?
9. What name is given to the lowest frequency with which a sound producing object vibrates?
10. What name is given to the whole number multiples of the lowest frequency of a vibrating string?
11. When a string that is fixed at both ends vibrates at its lowest frequency, how is the wavelength of the sound related to the length of the string?
12. When a tube (like an organ pipe or other hollow tube) that is closed at one end and open at the other vibrates at its lowest frequency, how is the length of the tube related to the wavelength of the sound?
13. When a tube (like an organ pipe or other hollow tube) that is open at both ends vibrates at its lowest frequency, how is the length of the tube related to the wavelength of the sound?
14. Identify each term in this equation: $$d\mathrm{B} = 10\log\left(\frac{I}{I_0}\right)$$
15. What does I/I_0 represent in this equation: $$d\mathrm{B} = 10\log\left(\frac{I}{I_0}\right)$$
16. What does dB represent in this equation? $$d\mathrm{B} = 10\log\left(\frac{I}{I_0}\right)$$
17. What does I_0 represent in this equation? $$d\mathrm{B} = 10\log\left(\frac{I}{I_0}\right)$$
18. What are the units for I_0?
19. What is the Doppler Effect?
20. What is the significance of the ± and ∓ symbols in this equation? $$f' = f\left(\frac{v \pm v_{\mathrm{O}}}{v \mp v_{\mathrm{S}}}\right)$$
21. What is f' in this equation? $$f' = f\left(\frac{v \pm v_{\mathrm{O}}}{v \mp v_{\mathrm{S}}}\right)$$
22. What is f in this equation? $$f' = f\left(\frac{v \pm v_{\mathrm{O}}}{v \mp v_{\mathrm{S}}}\right)$$
23. What is v in this equation? $$f' = f\left(\frac{v \pm v_{\mathrm{O}}}{v \mp v_{\mathrm{S}}}\right)$$
24. What is v_o in this equation? $$f' = f\left(\frac{v \pm v_{\mathrm{O}}}{v \mp v_{\mathrm{S}}}\right)$$

25. What is v_s in this equation? $$f' = f\left(\frac{v \pm v_O}{v \mp v_S}\right)$$
26. Why is the sound from the music box mechanism louder when held against the desk or the door than it is when just held in the air?
27. What two things determine the speed of a wave through a medium?
28. The speed of sound in air at 0.0 °C is 331 m/s. What is the formula used to correct this value for temperature?
29. The energy content of a wave is directly proportional to the square of the wave's amplitude and to what else?
30. What kind of wave is present when the motion of the particles in the medium is parallel to the motion of the wave?
31. What term or phrase is used to describe the fact that a vibrating tuning fork mounted in a wooden box causes the box to vibrate at the tuning fork's frequency?
32. When a standing wave exists in a medium, certain points in the medium move more than any of the others. What are these points called?
33. How is the wavelength of a string's fundamental frequency related to the length of the string?
34. What is the name of the phenomenon that occurs when the observed frequency of a sound is changed by the motion of either the source or the observer?
35. When two things vibrate at nearly the same frequency, beats occur. How is the beat frequency calculated?
36. What kind of wave is present when the motion of the particles in the medium is perpendicular to the motion of the wave?
37. What formula is used to calculate the speed of a transverse wave along a string from the tension in the string and its mass density?
38. What two characteristics of a stretched string determine the speed of transverse waves along it?
39. What effect does increasing the tension in a string have on the speed of transverse waves along it?
40. What term or phrase is used to describe the fact that a vibrating tuning fork mounted in a wooden box causes another identical tuning fork also mounted in a wooden box to vibrate even when the two are not touching?
41. When a standing wave exists in a medium, certain points in the medium move very little. Under ideal conditions they do not move at all. What are these points called?
42. The energy content of a wave is directly proportional to the square of the wave's frequency and to the square of what else?