

Crave The Wave Test

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Speed of light - $3 \cdot 10^8$ m/s

Speed of sound - 343 m/s

Plank's Constant - $6.62607 \cdot 10^{-34}$ m² kg/s

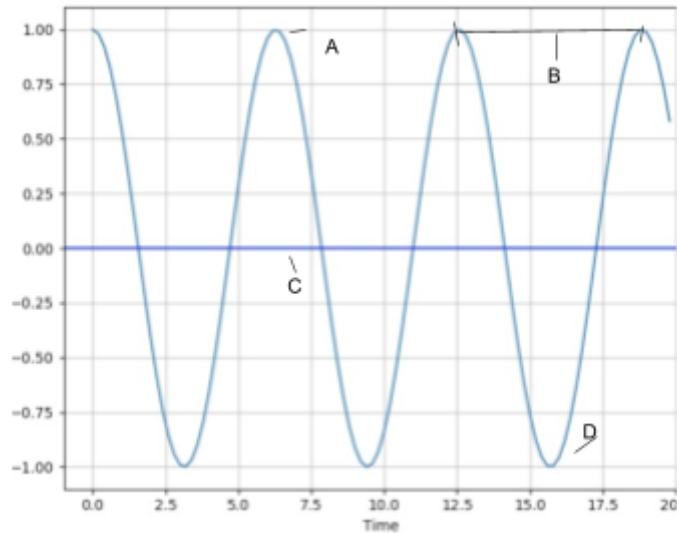
Round answer to nearest 100th unless specified otherwise

Message aeee#2842 to give criticism / corrections !!

SCORE

/120

Refer to the following image for questions 1-7



1. What type of waveform is this? (3 pts)
2. What part of a wave is A? (1pt)
3. What part of a wave is B? (1pt)
4. What part of a wave is C? (1pt)
5. What part of a wave is D? (1pt)
6. How many wavelengths apart are points A and D? (2pts)
7. What is the period of this wave (approximately)? (2pts)
8. What type of medium does a mechanical wave travel slowest in? (2pts)
 - a. solids
 - b. liquids
 - c. gasses
 - d. Vacuum
9. Paganini is playing the piano. What type of wave does the sound produce? (1pt)

- a. longitudinal waves
- b. transverse waves
- c. torsional waves
- d. surface waves

10. I swing a rope up and down while my other friend holds the rope down. What type of wave does the rope produce? (1pt)

- a. longitudinal waves
- b. transverse waves
- c. torsional waves
- d. surface waves

True False (1pt per question)

- 11. A longitudinal wave moves parallel to wave propagation. (T/F)
- 12. Total internal reflection only takes place when $n_1 < n_2$. (T/F)
- 13. Inferior mirages are caused when the ground is hot and the air is cool. (T/F)
- 14. Blue light bends more compared to red light. (T/F)
- 15. The decibel scale is logarithmic. (T/F)
- 16. The higher the frequency, the lower the pitch of a sound wave. (T/F)
- 17. There are approximately 10,000 earthquakes yearly. (T/F)
- 18. Frequency isn't changed when crossing a boundary (T/F)
- 19. A fiber optics cable is about the thickness of a fingernail (T/F)
- 20. Laser stands for Light Amplification by Stimulated Emission Rays (T/F)
- 21. A Love wave arrives first at a seismograph station (T/F)

SECTION 2 - Multiple Choice (2pt per question)

22. Austrian physicist Christian Doppler discovered the Doppler effect in what year?

- a. 1842
- b. 1794
- c. 1921
- d. 1895

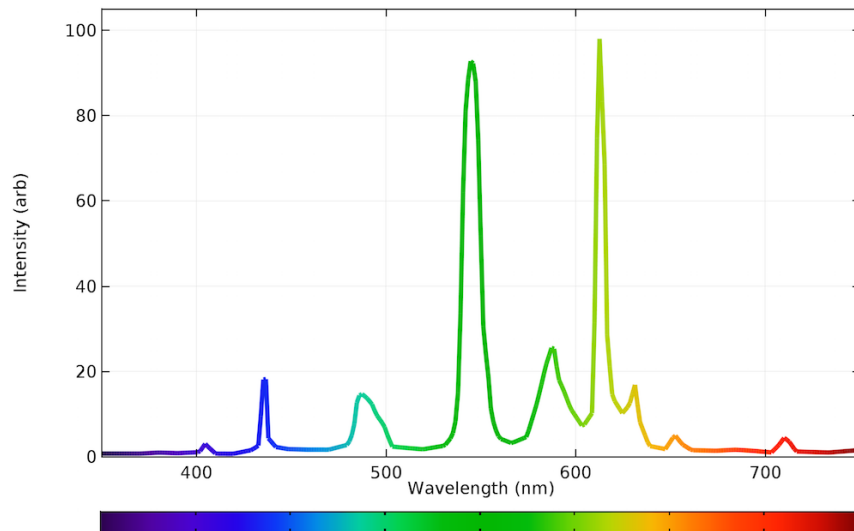
23. What does AM stand for?

- a. Angular modulation
- b. Acoustic modulation
- c. Amplitude modulation

d. Absorption modulation

24. Select the ionizing radiations (can choose multiple answers)

- a. gamma rays
- b. near infrared
- c. visible
- d. Soft x-rays
- e. far infrared



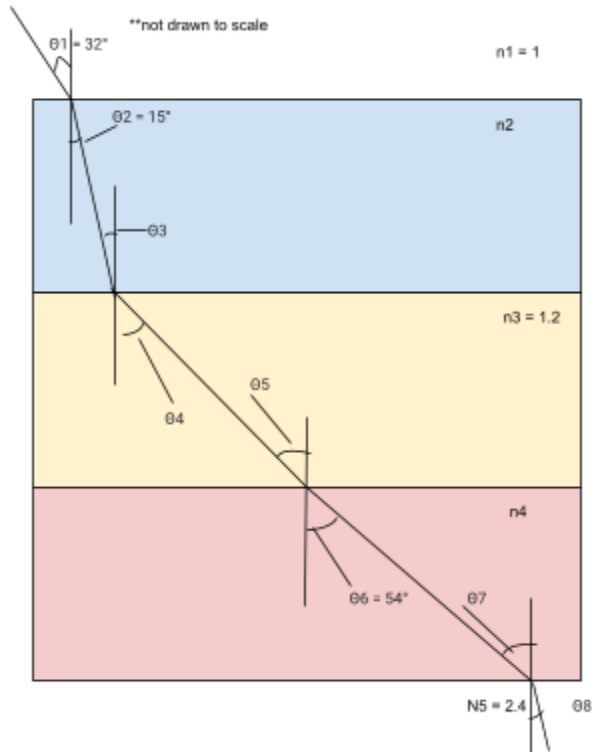
25. What type of spectra is shown above?

- a. emission spectra
- b. absorption spectra
- c. molecular spectra
- d. continuous spectra

SECTION 3 - Open Ended

26. What is the difference between echo and reverberation? (4pt)

A wave with the wavelength of 3.42nm travels and refracts through 3 mediums. For questions 27-30 reference to the image below



27. What is the index of refraction of n_2 ? (4pt)

28. What is the angle of θ_4 ? (4pt)

29. What is the speed of light in n_4 ? (5pt)

30. What is the angle of θ_8 ? (4pt)

31. What is the speed of light rounded to the nearest whole number? (not approximated) (3pt)

32. What is the shadow zone? (4pt)

33. Referencing to the shadow zone, beyond angle are S waves not recorded? (4pt)

34. A star has a peak wavelength of 528 nm. What is its absolute temperature? (in Kelvins) (6pt)

35. What is ionizing radiation? (4pt)

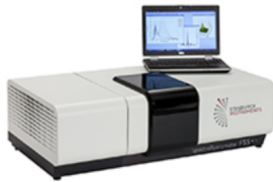
36. What is the complement of red light? (2pt)

37. What color does (200, 50, 100) make? (4pt)

38. What color does (40, 85, 50) make? (4pt)

39. What color does (250, 125, 50) make? (4pt)

40. What color(s) does a cyan object absorb and what color(s) does it reflect? (3pt)



41. What spectroscopy instrument is shown above? (4pt)

42. What is the name of the bridge that famously twisted around in 1940 and what type of wave did the bridge motion replicate? (3pt)

43. What is Thermal Doppler Broadening? (4pt)

44. A bat is flying towards a wall at the constant speed of 100 m/s. The bat emits a sound of 200Hz, which is then reflected back at the bat. Assuming the speed of sound is 343 m/s, what frequency does the bat hear? (8pt)

45. How much energy and what type of wave is a wave with a frequency of 75THz (6pt)