11. What is the period of the hand on a clock that measures the seconds? What is its frequency?

31. If shapes a and b in the figure correspond to idealized wave pulses on a rope, what shape is produced when they completely overlap?
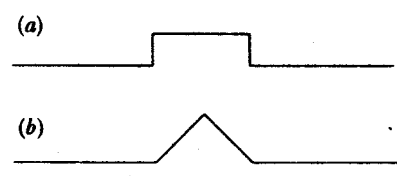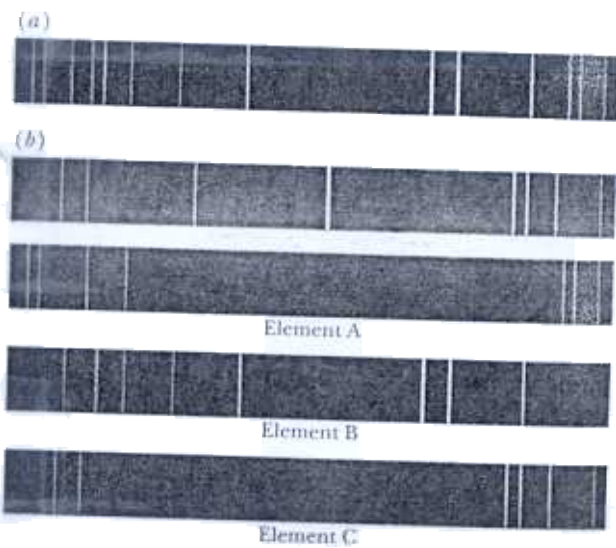

(a)

(b)

Fig 31

53. Two point sources produce waves of the same wavelength and are in phase. At a point midway between the sources, would you expect to find a node or an antinode? Explain.

11. A pendulum has a length of 5 m. What is its period?

17. A periodic wave on a string has a wavelength of 25 cm and a frequency of 3 Hz. What is the speed of the wave?

*23. A rope is tied between two posts separated by 3 m. What possible wavelengths will produce standing waves on the rope?

4. What elements would you expect to have chemical properties similar to chlorine (Cl)?

9. The emission spectra shown in the figure were all obtained with the same apparatus. What element(s) can you identify in sample (a)? Are there any that you cannot identify?

10. What element(s) can you identify in sample (b) of the figure? Are there any that you cannot identify?

1. What is the charge-to-mass ratio for a cathode ray?

2. What is the charge-to-mass ratio for a hydrogen ion (an isolated proton)?

6. A student decides to build a physical model of an atom. If the nucleus is a rubber ball with a diameter of 1 cm, how far away would the outer electrons be?

(a)

(b)

Element A

Element B

Element C

Questions 9 and 10   Fig 9 & 10

EXTRA QUESTION: NOT ASSIGNED