Physics Semester 2 Review

1. What is the source of electromagnetic waves?

2. List the electromagnetic waves in order from longest wavelength to shortest.

3. How do the frequencies of infrared, visible, and ultraviolet compare?

4. An infrared wave has a wavelength of $7.1 \times 10^{-7}$ m. What is its frequency?

5. What is the wavelength of a 512 Hz sound wave traveling at 345 m/s in air?

6. Why is light able to travel through space?

7. Why is light characterized as a wave?

8. Label the following on the wave below: wavelength, crest, trough, amplitude, node.

9. As the frequency of sound increases, what happens to the wavelength?
10. Calculate the speed of waves in a puddle that are 0.15m apart and made by tapping the water surface twice each second.

11. Suppose you wish to produce a sound wave that has a wavelength of 1 m in room temperature air. What would its frequency be?

12. What is meant by tangential velocity?

13. What happens to tangential velocity when the radius is increased?

14. When you whirl a can at the end of a string in a circular path, what direction of the force that acts on the can?

15. If you lose your grip on a rapidly spinning merry-go-round and fall off, in which direction will you fly?

16. If the moon falls, why doesn’t it get closer to Earth?

17. Since the planets are pulled to the sun by gravitational attraction, why don’t they simple crash to the sun?

18. In what way is gravity reduced with distance from Earth?

19. If the gravitational force of the sun on the planets suddenly disappeared, in what kind of paths would the planets move?

20. What happens to the force of gravity if the mass of a planet is reduced and the radius increases?

21. Two bowling balls each have a mass of 6.8 kg. They are located next to each other with their centers 0.218 m apart. What gravitational force do they exert on each other?
22. Upon what quantities does the acceleration of gravity on the surfaces of various planets depend?

23. How does the gravitational field surrounding Earth vary with increasing distance?

24. Where in an elliptical orbit is the speed of the satellite maximum? Where is it minimum?

25. Which force - gravitational or electrical - repels as well as attracts?

26. Gravitational forces depend on the property of mass. What comparable property underlines electrical forces?

27. How do like charges behave?

28. How do unlike charges behave?

29. How is Coulomb’s law similar to Newton’s law of gravitation?

30. Why are metals good conductors?

31. Why are materials such as rubber and glass good insulators?

32. What is a magnetic domain?

33. Why do some pieces of iron behave as magnets, while other pieces of iron do not?

34. Why will dropping or heating a magnet weaken it?

35. What is the right hand rule used for?

36. Know how to use the right hand rule.

37. What are two things needed to induce an electrical current?
38. A magnet moved into a coil of wire will induce voltage in the coil. What is the effect of moving a magnet into a coil with more loops?

39. What is a generator?

40. What is a motor?

41. How can a change in voltage in a coil of wire (the primary) be transferred to a neighboring coil of wire (the secondary) without physical contact?

42. How does the relative number of turns on the primary and the secondary coil in a transformer affect the step-up or step-down voltage factor?

43. If the number of secondary turns is 10 times the number of primary turns, and the input voltage to the primary is 6 volts, how many volts will be induced in the secondary coil?

44. What is nuclear fusion?

45. What is the mass created during nuclear fusion turned into?

46. Where does nuclear fusion occur in a star?

47. Where do stars come from?

48. What is the most common element found in stars? Second most common?

49. What does the red shift tell us about the universe?

50. What is the Big Bang Theory?

51. What causes movement within the mantle?

52. How does the Earth generate internal thermal energy?

53. Put the layers of the Earth in the correct order: mantle, inner core, crust, outer core.