**Q1/ Fill in the blanks with the correct answer:**

**1-** Types of motion in physics 1---------------. 2----------------. 3--------------.

**2-** Angular frequency is associated with the--------------------object performs in ---------.

**3-** The sound waves travel as a series of ------------ and --------- through the air.

**4--** Describe the production of sound by----------- and sound energy travel on a ------------- wave.

**5-** Elephants can hear range of frequencies sound wave at--------- Hz, while dolphin can hear range of frequencies sound wave at--------- Hz.

**6-** The speed of sound in air is not affected by amplitudes, frequency, ------, --------and--------.

Q2/ Numerate Types of Acoustics.

Q3/ Prove this equation

Q4/ Compare between Noise and Music.

Q5 Prove this equation:

**Q6/** Suppose that a stationary source which emits sound waves of frequency 1600 Hz and an observer approach one another with a relative velocity of ( 80 m/s). if the temperature is (T= 10o.0C). Find the following:

**1-**Speed of sound.

**2-**What is the frequency observer (fo) approach to the source.

**3-** Increase or decrease in the frequency.

**Q7**/A siren emits a sound of power 2 watts at 100 M from you**.** Find the following:

1. Sound Intensity. **2-**Power reaches your ear if area of eardrum is 0.7×10-4m2.

**3-**Sound Intensity Level**.**

**Q8/** Suppose that a stationary siren emits a tone o frequency 440Hz as the train moves away from it at 30 m/s. What is the frequency received on the train if the air temperature is 0oC.

**Q9/** Find the speed of sound in air at the extremes of the audible range, 20 and 20000 Hz, in 30.0oC.

Q10/-Why the speed of sound is faster in some high-density materials (Copper) is faster than some lower density materials (rubber)?

Q11/ A body of mass 2kg moves in simple harmonic motion. The displacement x from the equilibrium position at time t is given by

where x is in meters and time is in seconds. **Determine the following:**

**a.** The amplitude, period and phase angle of the SHM.

**b.** The speed of the object when the time t=5 sec..

**c.** The kinetic and potential energy of the body at time t=5 sec**.**

Q12/ Write about basic laws of radiation.

Q13/ Where the escape velocity of mars is (ve ) = 5 x 103 m/s. Radius of Mars = 33.9733.97 x 105 km, distance between mars and sun is equal 1.5 AU and mass of the sun m2 = 2 x 10^(30) kg. where G = 6.6726 x 10-11N-m2/kg2.

Determine the following:

1-Mars mass.

2-period.

3-Gravitationalp potential energy of the mars with respect to the sun.

Q14/ Write all Kepler’s Laws 2- Write all Ellipse Parameters.

Q15/ complete the following:

1- Astronomy is the science which describes the -------------------------constitutions

and -------.

2-Astrophysics involves the study of ---------------------------------and

concentrates on ----------------------------------- out there.

3- Eccentricity as the ratio --------------- between ----------------------- of the ellipse.  
4-Astronomical unit is -------------------------- between --------------.

5-perihelion is -------------- but aphelion is ----------------.

6-Ancient Greeks such as ------------ with the ----------------.

Q16/ 1-Write four periods of western astronomy.

Q17/ What are the similarities between the two models of solar system.

Q18/ Define Kepler’s Third Law and prove equation of it.

Q19/ Write about the Astronomical units

Q20/ Find the gravitational force of attraction between two elephants, one of mass m1=1.0 x 103 kg and the other of mass m2= 8.0 x 105 kg. When they are separated by 5.0 m. where G = 6.6726 x 10-11N-m2/kg2.

**Q21/** What is the escape velocity from the Earth? If the mass of the Earth M =5.97 x 1024 kg and the radius of the Earth REarth= 6378 km = 6.378 x 106 m. where G = 6.6726 x 10-11N-m2/kg2.