FBQ1: Linear simple harmonic motion (SHM) along a straight line inclined equally to the straight lines of motion of two mutually perpendicular SHM of same____________ amplitude and phase which are superimposed on one another
Answer: *frequency*

FBQ2: The velocity at the equilibrium position in a given SHM is ____________
Answer: *maximum*

FBQ3: When a wave travels through a medium, the resistance to wave motion in a medium is called ____________.
Answer: *Impedance*

FBQ4: In a____________, the magnitude of restoring force is linearly proportional to the displacement
Answer: *spring-mass system*

FBQ5: What is the frequency of oscillation of a particle whose period of oscillation is 0. 08 seconds?
Answer: *12.5Hz*

FBQ6: The restoring force is always directed towards the____________, of an oscillating body.
Answer: *equilibrium position*

FBQ7: ____________, is a type of periodic motion where the restoring force is proportional to the displacement.
Answer: *Harmonic vibration*

FBQ8: In the case of simple harmonic motion (SHM), if the particle is at the mean position, then the particle is in____________,
Answer: *Stable equilibrium*

FBQ9: The number of vibrations per second executed by an oscillator in SHM is called ____________,
Answer: *frequency*

FBQ10: The k/m in the above equation is replaced by Ï‰02Â angular frequency of the oscillatory motion, because they have____________,
Answer: *same unit*

FBQ11: When a system is said to be heavily damped, the motion of the system is said to be ____________,
Answer: *Dead beat*

FBQ12: The time taken for an oscillating particle to complete one vibration is called ____________,
Answer: *Period*

FBQ13: xt=mcos(w0t+Ï†), the amplitude of this equation is ____________, Answer: *m*

FBQ14: ____________, is defined as Maximum displacement of an oscillating body
Answer: *Amplitude *

FBQ15: Calculate the characteristic impedance offered by a thin wire of steel stretched by a force of 80 N weighing 2g per metre.
Answer: *0.4 N/ms*

FBQ16: The shape of the curve of two orthonormal vibrations with exactly the same frequency depends on the _____between component vibrations
Answer: *Phase difference*

FBQ17: What sound does our vocal cord create inside the throat when we talk?
Answer: *Vibration*

FBQ18: When a progressive wave reaches the boundary of a finite medium or an interface between two media, waves undergo_____ or/and _____.
Answer: *Reflection, refraction*

FBQ19: ____________ is the minimum displacement of wave.
Answer: *Trough*

FBQ20: At an instant of time during the oscillations of an LC circuit when the current is at its maximum value. At this instant,   voltage across the ____________ is zero.
Answer: *capacitor*

FBQ21: Waves set up by a single, isolated disturbance are called ____________
Answer: *Pulses*

FBQ22: The simplest type of a periodic wave is a ____________ wave.
Answer: *harmonic*

FBQ23: _____ are waves that occur at the boundary
Answer: *Rayleigh waves*

FBQ24: The displacement of a particle executing simple harmonic motion is given by, x= 0.25cos(4Ï€t+0.078) in meter. The amplitude is____________
Answer: *0.25*

FBQ25: When the two individual rectangular vibrations are of slightly different frequencies, the resulting motion is more complex. True or False
Answer: *True*

FBQ26: The ____________ of electromagnetic waves govern the working of a radar for detection of aircrafts.
Answer: *Reflection*

FBQ27: When a wave moves from a lighter to a denser medium, its velocity

____
Answer: *Decreases*

FBQ28: The ____________ conditions are the conditions which must be satisfied at the interface where the two media meet
Answer: *boundary*

FBQ29: When Z2>Z1, the second string (medium) is denser, R12 is still ____________, implying a phase change of Ï€ on reflection.
Answer: *Negative*

FBQ30: When resistance to motion is very strong, the system is said to be heavily ___
Answer: *damped*

FBQ31: If the source of a wave is so far from away from an aperture that the wave front generating the diffraction pattern is regarded as plane wave front, we have _____ diffraction
Answer: *Fraunhofer*

FBQ32: The waves produced by a motor boat sailing in water are____________
Answer: *Transverse waves*

FBQ33: ____________ is the superposition of many waves of same amplitude and frequency, but differing slightly in phase.
Answer: *Diffraction*

FBQ34: Oscillations become damped due to ___ force
Answer: *Frictional*

FBQ35: The frequency of an LC oscillator is Inversely proportional to the ___ of L or C
Answer: *square root*

Multiple Choice Questions (MCQs):
MCQ1: For a simple harmonic oscillator,
Answer: the total energy is proportional to the square of the amplitude

MCQ2: Which of the following is not a property of a longitudinal wave?
Answer: Polarisation

MCQ3: If the amplitude of a simple harmonic oscillator is tripled, by what factor is the energy changed?
Answer: 3

MCQ4: A pendulum suspended from the roof of a train has a period T (When the train is at rest). When the train is accelerating with a uniform acceleration â€˜aâ€™, the time period of the pendulum will ________.
Answer: Remain unaffected

MCQ5: In simple harmonic motion, velocity at equilibrium position is ________.

Answer: Maximum

MCQ6: Over-damping results to ________.
Answer: arrhythmic return to equilibrium

MCQ7: In simple harmonic motion (SHM), the particle is:
Answer: Alternately accelerated and retarded

MCQ8: A damped system is characterised by all of the following except ________.
Answer: relaxation time

MCQ9: The total energy of a particle executing SHM is proportional to ________.
Answer: displacement from equilibrium positionfrequency of oscillation

MCQ10: A 2.00 kg block attached to a spring is pulled a distance of 5.00 cm from the equilibrium position and released at t = 0. If the block execute SHM with angular frequency of 9.90 rad/s, find the force constant of the spring and the frequency of oscillation of the block.
Answer: 49 N/m; 2.0 Hz

MCQ11: Which of the following represent stokes law?
Answer: 6Ï€rv

MCQ12: A cart of mass 0.500 kg connected to a light spring for which the force constant is 20.0 N/m oscillates on a frictionless, horizontal air track. Calculate the maximum speed of the cart if the amplitude of the motion is 3.00 cm.
Answer: 3.0 m/s

MCQ13: A vibration of a pendulum in a viscous medium such as thick oil is an example of ________.
Answer: Damped system

MCQ14: For a simple harmonic oscillator, the number of vibrations executed per second is called _______________
Answer: Period

MCQ15: The intensity of a wave is the measure of its ________.
Answer: power across a unit area perpendicular to the direction of motion

MCQ16: A student tunes a guitar by comparing the sound of the string with that of a standard tuning fork. He notices a beat frequency of 5 Hz when both sounds are superposed. He tightens the guitar string and finds the beat frequency rises to 8 Hz. What should he do to match the frequency of the string to that of the tuning fork?
Answer: He must tighten the guitar string

MCQ17: A note of frequency 1200 vibrations/s has an intensity of 2.0Âµ W/m2. What is the amplitude of the air vibrations caused by this sound?
Answer: 2.28Ã—10-4 m

MCQ18: When the motion of particles of the medium is along the direction in which wave propagates, it is called a ____.
Answer: Barrier Wave

MCQ19: Oscillations become damped due to ________.
Answer: Frictional force

MCQ20: The time period of a pendulum on Earth is 1.0 s. What would be the period of a pendulum of the same length on a planet with half the density but twice the radius of Earth?
Answer: 1.0s

MCQ21: Two sound waves have intensities 0.4 and 10W/m2, respectively. How many decibels is one louder than the other?
Answer: 14 Db

MCQ22: A simple pendulum has a period of 2 s and an amplitude of 50. After 20 complete oscillations, its amplitude is reduced to 40. Find the damping constant and the time constant.
Answer: 175.5 s-1

MCQ23: The quality factor of a sonometer wire is 4,000. The wire vibrates at a frequency of 300 Hz. Find the time in which the amplitude decreases to half of its original value.
Answer: 2.94s

MCQ24: What is the ratio of the wavelength to the period of a wave?
Answer: displacement

MCQ25: A block of mass m is first allowed to hang from a spring in static equilibrium. It stretches the spring a distance L beyond the springâ€™s unstressed length. If the block and spring system is set into oscillation, how will its period compare with the period of a simple pendulum of length L and mass m?
Answer: Less than that of simple pendulum

MCQ26: A box of mass 0.2 kg is attached to one end of a spring whose other end is fixed to a rigid support. When a mass of 0.8 kg is placed inside the box, the system performs 4 oscillations per second and the amplitude falls from 2 cm to 1 cm in 30 sec. Calculate the quality factor.
Answer: 100

MCQ27: The quality factor of a tuning fork of frequency 512Hz is 6*10^4. Calculate the time in which its energy is reduced to e-1 of its energy in the absence of damping.
Answer: 17.5s

MCQ28: The quality factor of a tuning fork of frequency 512Hz is 6*10^4. How many oscillations will the tuning fork make in this time?
Answer: 92.5*102

MCQ29: As amplitude of resonant vibrations decreases, degree of damping ______.
Answer: Decreases

MCQ30: An electric bell has a frequency 100Hz. If its time constant is 2s, determine the Q factor for the bell.
Answer: 2256

MCQ31: The dot or scalar product of a force and a displacement vectors defines ______.
Answer: Work

MCQ32: In cars, springs are damped by ______.
Answer: Engines

MCQ33: The distance between successive particles vibrating in phase is known as ____.
Answer: Frequency

MCQ34: What is the ratio of the lengths of two pendulums if the ratio of their frequencies is 2:3?
Answer: 9/4

MCQ35: The total work done by the string of a simple pendulum during one complete oscillation __
Answer: Equals the total energy of the pendulum