FBQ1:
When a wave travels through a medium, the resistance to wave motion in a medium is called
_____
Answer: impedance

FBQ2: What is the distance between two successive adjacent displacements of particles vibrating in a phase?
Answer: wavelength

FBQ3: A particle executing a vibratory motion while passing through the mean position has maximum _____ energy and minimum _____ energy
Answer: Kinetic, potential

FBQ4: In a_____ , the magnitude of restoring force is linearly proportional to the displacement. Hint (Hookes law, Simple Harmonic Motion)
Answer: spring-mass system

FBQ5: What is the phase angle of this equation
Answer: (W0t + φ)

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 quantity k/m of the differential equation of a spring-mass system has a dimension of _____.
Answer: T-2

FBQ10: The k/m in the above equation is replaced byangular frequency of the oscillatory motion, because
Answer: they have 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: When b<wo, we refer to it as a case of ____ damping.
Answer: Weak

FBQ13: the amplitude of this equation is _____.
Answer: m

FBQ14: Amplitude is defined as _____.
Answer: Maximum displacement of an oscillating body

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: If the frequency of the driving force equals the frequency of the undamped oscillator, its amplitude will become ____
Answer: infinitely large

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: Waves can be classified as ___ and ___
Answer: Longitude and transverse

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, in metre. The amplitude is_____.
Answer: 0.25

FBQ25: The displacement of a particle executing simple harmonic motion is given by, in metre. Find its velocity.
Answer: -πsin(4πt + 0.078)

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

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 π on reflection.
Answer: Negative

FBQ30: When Z1 equals to Z2, it means that the amplitude of a transmitted wave is equal to the amplitude of the _____ wave.
Answer: incident

FBQ31: Stationary waves result because of the superposition of two waves of same frequency, ____ and _____ travelling in opposite directions and confined between two points.
Answer: Amplitude and wavelength

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: What is the wave in which the motion of the particles of the medium perpendicular to the direction of propagation of the wave called?
Answer: Electromagnetic

FBQ35: What is the spring factor of an LC oscillating circuit?
Answer: 1/C

MCQ1: sound wave is a typical examples of a _____
Answer: longitudinal wave

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

MCQ3: The frequency of wave is 0.002 Hz. Its time period is _____.
Answer: 500s

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 ‘a’, the time period of the pendulum will _____.
Answer: Decrease

MCQ5: In simple harmonic motion, velocity at equilibrium position is _____.
Answer: Maximum

MCQ6: Over-damping results to _____.
Answer: slower return to equilibrium

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

Multiple Choice Questions (MCQs) 7: A damped system is characterised by all of the following except _____.
Answer: critical damping

MCQ8: A damped system is characterised by all of the following except _____.
Answer: critical damping

MCQ9: The total energy of a particle executing SHM is proportional to _____.
Answer: square of amplitude of motion

MCQ10: Which of the following options is incorrect of damping motion?
Answer: Enthalpy change

MCQ11: Which of the following represent stokes law?
Answer:

MCQ12: In the equation Fd= -ɣv, the negative sign indicates that _____.
Answer: the damping force opposes motion

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

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

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 loosen the guitar string

MCQ17: A note of frequency 1200 vibrations/s has an intensity of 2.0μW/m2. What is the amplitude of the air vibrations caused by this sound?
Answer: 1.28×10-4 m

MCQ18: A particle of mass 10 kg is executing SHM of time period 2 s and amplitude 0.25 m. What is the magnitude of maximum force on the particle?
Answer: 24.65N

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: 179.5s-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: velocity

MCQ25: 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 relaxation time.
Answer: 43.5s

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: 250

MCQ27: The quality factor of a tuning fork of frequency 512Hz is 610^4. Calculate the time in which its energy is reduced to e-1 of its energy in the absence of damping.
Answer: 18.7s

MCQ28: The quality factor of a tuning fork of frequency 512Hz is 610^4. How many oscillations will the tuning fork make in this time?
Answer: 95.7102

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: 1256

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

MCQ32: In cars, springs are damped by _____.
Answer: Shock absorbers

MCQ33: (i) Substitute it in the equations of motion and compare the ratios of normal mode amplitudes (ii) Solve the resultant equation. (iii)Write down the equation of motion of coupled masses (iv) Assume a normal mode solution.Arrange these according to the general procedure for calculating normal mode frequencies.
Answer: iii,iv,i,ii

MCQ34: In an LC oscillating circuit, the spring factor is _____.
Answer: 1/C

MCQ35: What is a single, isolated disturbance that propagates through space with time, carrying energy and momentum called?
Answer: pulse