SET	A

INDIAN SCHOOL MUSCAT
FINAL EXAMINATION 2023
086 SCIENCE
CLASS IX

MARKING SCHEME

TOTAL MARKS :80

SECTION - A		
1.	Examples of non-uniform acceleration: **a ball thrown upwards and falling back, a car going around a curve, and an object affected by gravity**.	1
2.	Displacement	1
3.	Universal gravitational constant, G is independent of the nature of the particle, medium between the particles, and time. **Its value is constant anywhere in the Universe**, and hence it's called 'Universal'.	1
4.	The law of conservation of energy states that **the amount of energy is neither created nor destroyed**. For example, when you roll a toy car down a ramp and it hits a wall, the energy is transferred from kinetic energy to potential energy.	1
5.	The work done is said to be negative work **when force and displacement are in opposite direction**. Example: When an object is thrown upwards, the force of gravity is in downward direction whereas displacement acts in upward direction.	1
6.	At compressions	1
7.	Greater than 20,000Hz	1
17	**(a) A Both A and R are true and R is the correct explanation of A**	
Section - B		
23	**Speed is the time rate at which an object is moving along a path, while velocity is the rate and direction of an object's movement**. Or any two differences **OR** u= 0 v = 40 kmph = 40 x 5/18 = 11.11m/s t = 10 x 60 = 600 s a = v-u /t = (11.11 -0)/600 the acceleration of the train is 0.**018 m s $^{-2}$** .	1+1 ½ ½ ½ ½
24	(i) Inertia, **property of a body by virtue of which it opposes any agency that attempts to put it in motion or, if it is moving, to change the magnitude or direction of its velocity**. (ii) (a) Stone (b) train	2
27	i) Newton's second law of motion – Magnitude of applied force is equal to rate of change of momentum **(if F = ma**, or force is equal to mass times acceleration. Is given give ½ marks) (ii) Here, Mass of vehicle, m=1500 kg And, Acceleration, a =-1.7 \`ms^(2)\` Now, Force, F=m x a F=1500xx(-1.7)N\` F=-2550N\` Thus, the force between the vehicles and the road is **2550 Newton's**.	1½ ½ ½ ½

28	Any Three Difference between Transverse and Longitudinal Waves **OR** The relationship of the speed of sound, its frequency, and wavelength for a wave. wave speed = Distance / time Distance covered in oscillation = λ Time taken in oscillation = T $v = \lambda / T$ put $f = 1/T$ $v = f\lambda$	1+1+1 ½ ½ ½ 1 ½
35	(i) Statement of State universal law of gravitation **$F = G(m_1m_2)/R^2$.** (ii) acceleration due to gravity on earth = g Weight of body on earth W = mg acceleration due to gravity on moon $g_m = g/6$ Weight of body on moon $W_m = mg_m = mg/6 = W/6$	2 1 1 1
37	a) **The energy possessed by a body by virtue of its specific position (or changed configuration)** is called the potential energy. b) Joule c) W = m g h = 5 x 10 x 10 = 500 J (Or) W = m g h = 5 x 10 x 10 = 500 J	1 1 ½ + 1½

SET	B

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CLASS IX

MARKING SCHEME

TOTAL MARKS :80

SECTION - A		
1.	The movement of a body following a circular path is called a circular motion. Now, **the motion of a body moving with constant speed along a circular path** is called Uniform Circular Motion. Here, the speed is constant but the velocity changes.	1
2.	C)	1
3.	**When a body moves exclusively under the influence of the Earth's gravity**, it is said to be in freefall. The motion of the ball will be accelerated as a result of external force acting on it. This free-fall acceleration is also known as acceleration due to gravity.	1
4.	1:2	1
5.	The work done is said to be negative work **when force and displacement are in opposite direction**. Example: When an object is thrown upwards, the force of gravity is in downward direction whereas displacement acts in upward direction.	1
6.	Pitch of the sound depends upon **its frequency**. As the pitch of the sound is directly proportional to frequency, Low-frequency sounds are said to have low pitch whereas sounds of high frequency are said to have the high pitch.	1
7.	Reflection of sound is used **to measure the speed and distance of underwater objects**. This method is called SONAR. Working of a stethoscope – the sound of patient's heartbeat reaches the doctor's ear through multiple reflections of sound.	1
17	**(a) Both A and R are true and R is the correct explanation of A**	
23	**Speed is the time rate at which an object is moving along a path, while velocity is the rate and direction of an object's movement**. Or any two differences **OR** u= 0 v = 40 kmph = 40 x 5/18 = 11.11m/s t = 10 x 60 = 600 s a = v-u /t = (11.11 -0)/600 the acceleration of the train is 0.**0185 m s $^{-2}$** .	1+1 ½ ½ ½ ½
24	(i) Inertia, **property of a body by virtue of which it opposes any agency that attempts to put it in motion or, if it is moving, to change the magnitude or direction of its velocity**. (ii) (a) Stone (b) train	1 ½ +½
27	i) Newton's second law of motion – Magnitude of applied force is equal to rate of change of momentum **(if F = ma**, or force is equal to mass times acceleration written , give ½ marks) (ii) Here, Mass of vehicle, m=1500 kg And, Acceleration, a =-1.7 \`ms^(2)\`	1½

	Now, Force, F=m x a F=1500xx(-1.7)N` F=-2550N` Thus, the force between the vehicles and the road is **2550 Newton's**.	½ ½ ½
28	Any Three Difference between Transverse and Longitudinal Waves **OR** The relationship of the speed of sound, its frequency, and wavelength for a wave. wave speed = Distance / time Distance covered in oscillation = λ Time taken in oscillation = T $v = \lambda /T$ put $f = 1/T$ $v = f\lambda$	1+1+1 ½ ½ ½ 1 ½
35	(i) Statement of State universal law of gravitation $\mathbf{F = G(m_1m_2)/R^2}$. (ii) acceleration due to gravity on earth = g Weight of body on earth W = mg acceleration due to gravity on moon $g_m = g/6$ Weight of body on moon $W_m = mg_m = mg/6 = W/6$	2 1 ½ ½ 1
37	a) **The energy possessed by a body by virtue of its specific position (or changed configuration)** is called the potential energy. b) Joule c) (c) W = m g h = 5 x 10 x 10 = 500 J (Or) W = m g h = 5 x 10 x 10 = 500 J	1 1 ½ +11/2

SET	C

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TOTAL MARKS :80

SECTION - A		
1.	Greater than 20,000Hz	1
2.	C)	1
3.	At Compressions.	1
4.	The work done is said to be negative work **when force and displacement are in opposite direction**. Example: When an object is thrown upwards, the force of gravity is in downward direction whereas displacement acts in upward direction.	1
5.	The movement of a body following a circular path is called a circular motion. Now, **the motion of a body moving with constant speed along a circular path** is called Uniform Circular Motion. Here, the speed is constant but the velocity changes.	1
6.	The law of conservation of energy states that **the amount of energy is neither created nor destroyed**. For example, when you roll a toy car down a ramp and it hits a wall, the energy is transferred from kinetic energy to potential energy.	1
7.	**When a body moves exclusively under the influence of the Earth's gravity**, it is said to be in freefall. The motion of the ball will be accelerated as a result of external force acting on it. This free-fall acceleration is also known as acceleration due to gravity.	1
17	**(a) Both A and R are true and R is the correct explanation of A**	
23	**Speed is the time rate at which an object is moving along a path, while velocity is the rate and direction of an object's movement**. Or any two differences OR u= 0 v = 40 kmph = 40 x 5/18 = 11.11m/s t = 10 x 60 = 600 s a = v-u /t = (11.11 -0)/600 the acceleration of the train is 0.**0185 m s $^{-2}$** .	1+1 ½ ½ ½ ½
24	(i) Inertia, **property of a body by virtue of which it opposes any agency that attempts to put it in motion or, if it is moving, to change the magnitude or direction of its velocity**. (ii) (a) Stone (b) train	1 ½ ½
27	i) Newton's second law of motion – Magnitude of applied force is equal to rate of change of momentum **(if F = ma**, or force is equal to mass times acceleration. Is given give ½ marks) (ii) Here, Mass of vehicle, m=1500 kg And, Acceleration, a =-1.7 \`ms^(2)\` Now, Force, F=m x a F=1500xx(-1.7)N\` F=-2550N\` Thus, the force between the vehicles and the road is **2550 Newton's**.	1½ ½ ½ ½

28	Any Three **Difference Between Longitudinal and Transverse Wave** (or) The relationship of the speed of sound, its frequency, and wavelength for a wave. wave speed = Distance / time Distance covered in oscillation = λ Time taken in oscillation = T $v = \lambda / T$ put $f = 1/T$ $v = f \lambda$	1+1+1 ½ ½ ½ ½
35	(i) Statement of State universal law of gravitation $\mathbf{F = G(m_1 m_2)/R^2}$. (ii) acceleration due to gravity on earth = g Weight of body on earth W = mg acceleration due to gravity on moon $g_m = g/6$ Weight of body on moon $W_m = mg_m = mg/6 = W/6$	2 1 ½ ½ 1
37	a) **The energy possessed by a body by virtue of its specific position (or changed configuration)** is called the potential energy. b) Joule c) (c) W = m g h = 5 x 10 x 10 = 500 J (Or) W = m g h = 5 x 10 x 10 = 500 J	1 1 ½ +11/2