

eExam Question Bank

Coursecode:

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<input type="checkbox"/>	Question Type	Question	A	B	C	D	Answer	Remark
<input type="checkbox"/>	FBQ	A vector is completely defined by <input type="text"/> quantities , each with its appropriate units	2	two				<input type="button" value="eExam"/>
<input type="checkbox"/>	FBQ	$\frac{\partial H}{\partial p_k} = \dot{q}_k$ $\frac{\partial H}{\partial q_k} = -\dot{p}_k$ and $\frac{\partial H}{\partial t} = -\frac{\partial L}{\partial t}$ are known as the <input type="text"/> equations of Hamilton	canonical	canonical				<input type="button" value="eExam"/>
<input type="checkbox"/>	FBQ	The equation $H = \sum_{k=1}^n p_k \dot{q}_k - L(q_k, \dot{q}_k, t)$ gives the classical Hamiltonian function for a system of particles, each of mass m_k and described by the generalized coordinates q_k . For a system of particles in a conservative field, the Hamiltonian function given represents <input type="text"/> of the system	total energy	total energy				<input type="button" value="eExam"/>
<input type="checkbox"/>	FBQ	$\frac{d}{dt} \left(\frac{\partial L}{\partial \dot{q}_k} \right) = \frac{\partial L}{\partial q_k}$ represent the <input type="text"/> 's equations of motion for a conservative system subject to, at worst, only holonomic constraints	Lagrange	Euler-Lagrange				<input type="button" value="eExam"/>

<input type="checkbox"/>								
<input type="checkbox"/>	FBQ	<p>In the application of the variational principle to a physical system, the quantity</p> L <p>in the equation</p> $L = T - V$ <p>is called the <input type="text"/></p>	Lagrangian	Lagrangian function				eExam
<input type="checkbox"/>	FBQ	<p>Given the</p> $Q_k = F_i \frac{\partial x_i}{\partial q_k}$ <p>,</p> Q_k <p>represents <input type="text"/></p>	generalized force	generalised force				eExam
<input type="checkbox"/>	FBQ	$p_k = \frac{\partial T}{\partial \dot{q}_k}$ <p>represents <input type="text"/></p> <p>momentum</p>	generalised	generalized				eExam
<input type="checkbox"/>	FBQ	<p>Restrictions imposed on the free motion of a particle (or a system of particles) are generally called <input type="text"/></p>	constraints	contraint				eExam
<input type="checkbox"/>	FBQ	<p>The degree of <input type="text"/> is important in the design of a good suspension system of a car to ensure comfortable ride.</p>	damping	damping				eExam
<input type="checkbox"/>	FBQ	<p>In a series LC circuit, the quantity</p> $\frac{1}{LC}$ <p>is equal to the square of the <input type="text"/> (where L and C are the inductance and capacitance respectively)</p>	angular velocity	angular frequency				eExam
<input type="checkbox"/>	FBQ	<p>The equation of a simple pendulum is given as $\ddot{x} + g \frac{x}{l} = 0$. The quantity $\frac{g}{l}$ is equal to the of the <input type="text"/></p>	angular velocity	angular frequency				eExam
<input type="checkbox"/>	FBQ	<p>If the displacement of a simple harmonic oscillator as a function of time t given as $x = A \cos(\omega t + \phi)$, the quantity ϕ is called the <input type="text"/> constant</p>	phase	phase				eExam
<input type="checkbox"/>	FBQ	<p>$\Delta \phi = \int_{\phi_1}^{\phi_2} \phi$. Note ϕ is the potential in a conservative force field.</p>	0	zero				eExam

<input type="checkbox"/>								
<input type="checkbox"/>	FBQ	for small displacements from equilibrium position, the restoring force of a simple harmonic oscillator obeys <input type="text"/> law	Hooke's	Hooke's				eExam
<input type="checkbox"/>	FBQ	(1) The paths of planets about the sun are elliptical in shape, with the center of the sun being located at one focus. (2) An imaginary line drawn from the center of the sun to the center of the planet will sweep out equal areas in equal intervals of time. (3) The ratio of the squares of the periods of any two planets is equal to the ratio of the cubes of their average distances from the sun. The three statements constitute what is known as <input type="text"/> 's laws	Kepler	Kepler				eExam
<input type="checkbox"/>	FBQ	The motion of a particle in a central force field always takes place in a <input type="text"/>	plane	plane				eExam
<input type="checkbox"/>	FBQ	In the equation $\vec{N} = \vec{r} \times \vec{F}$, \vec{N} represents <input type="text"/>	torque	moment				eExam
<input type="checkbox"/>	FBQ	For a particle moving under the central conservative force, the equation $\frac{1}{2} \dot{r}^2 + \frac{L^2}{2mr^2} + V(r) = E$ is called the <input type="text"/> energy equation	radial	radial				eExam
<input type="checkbox"/>	FBQ	In the equation $\vec{L} = \vec{r} \times \vec{p}$, \vec{L} represents <input type="text"/>	angular momentum	angular momentum				eExam
<input type="checkbox"/>	FBQ	The equations $\begin{matrix} \dot{x}_1 = \sum_{k=1}^{3N} \frac{\partial x_1}{\partial q_k} \dot{q}_k \\ \vdots \\ \dot{x}_N = \sum_{k=1}^{3N} \frac{\partial x_N}{\partial q_k} \dot{q}_k \end{matrix}$ represent the cartesian velocity components expressed in terms of general	velocities	velocities				eExam
<input type="checkbox"/>	FBQ	If a system of particles is described by a set of generalised coordinates q_1, \dots, q_{3N} , then \dot{q}_k for $k=1, 2, \dots, 3N$ is called the generalized <input type="text"/> associated with the coordinates	velocity	velocity				eExam
<input type="checkbox"/>	FBQ	The generalised force associated with angular quantities is a <input type="text"/>	torque	moment				eExam
<input type="checkbox"/>	FBQ	A particle that moves along a straight line has <input type="text"/> degree of freedom	1	one				eExam
<input type="checkbox"/>	FBQ	Constraints that can be represented as functions of space and time are said to be <input type="text"/>	holonomic	holonomic				eExam

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<input type="checkbox"/>	FBQ	The mathematical term used for describing the circulation of a vector is the <input type="text"/>	curl	curl					eExam
<input type="checkbox"/>	FBQ	If $\vec{a} \times \vec{b} = 0$, then, \vec{a} and \vec{b} are <input type="text"/>	parallel	parallel					eExam
<input type="checkbox"/>	FBQ	The measure of the outward flow of the vector from its source is the <input type="text"/> of the vector	divergence	divergence					eExam
<input type="checkbox"/>	FBQ	The dot or scalar product of a force and a displacement vectors defines <input type="text"/>	work	work					eExam
<input type="checkbox"/>	FBQ	A force which acts on a particle in such a way that there is interconversion between kinetic and potential energies is said to be <input type="text"/>	conservative	conservative					eExam
<input type="checkbox"/>	FBQ	If the addition of vector by geometric method gives a close figure, the the resultant of the vectors is <input type="text"/>	0	zero					eExam
<input type="checkbox"/>	FBQ	If \vec{F} is a force and \vec{r} the radius vector from the origin of the position of a particle acted upon the force, then $\vec{F} \times \vec{r}$ represents the <input type="text"/> of the force about the origin	moment	torque					eExam
<input type="checkbox"/>	FBQ	The gradient of a scalar field fuction is a <input type="text"/> quantity	vector	vector					eExam
<input type="checkbox"/>	FBQ	If the curl of a vector is zero, then the vector is said to be <input type="text"/>	irrotational	irrotational					eExam
<input type="checkbox"/>	FBQ	Undisturbed orbital motion under the influence of a central force satisfies <input type="text"/> 's law of areas	Kepler	Kepler					eExam
<input type="checkbox"/>	FBQ	The term $r \dot{\theta}^2$ in the expression $\ddot{r} - r \dot{\theta}^2$ represents <input type="text"/> acceleration	centripetal	radial					eExam
<input type="checkbox"/>	FBQ	The aspect of mechanics that describes the motion of particles without that regard to the dynamical laws that determine which motion actually occurs is referred to as <input type="text"/>	kinematics	kinematics					eExam
<input type="checkbox"/>	FBQ	If $\oint \vec{F} \cdot d\vec{r} = 0$, then \vec{F} is a <input type="text"/> force	conservative	conservative					eExam

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<input type="checkbox"/>	FBQ	The statement $T+V=E(\text{constant})$, where T is the kinetic energy and V the potential energy is known as the <input type="text"/> theorem	work-energy	work-energy					eExam
<input type="checkbox"/>	FBQ	If $\vec{F}=0$, then \vec{F} is <input type="text"/>	conservative	conservative					eExam
<input type="checkbox"/>	FBQ	If the work done in moving a particle from place to place in a force field is independent of the path followed by the particle, then the force field is said to be <input type="text"/>	conservative	hshsshsh					eExam
<input type="checkbox"/>	FBQ	A damped oscillation driven by external periodic impulses whose frequency is the same as the natural frequency of the oscillator <input type="text"/>	resonates	hshsshsh					eExam
<input type="checkbox"/>	FBQ	If the resistance to a simple harmonic oscillation is very strong, the motion is said to be heavily <input type="text"/>	damped	hshsshsh					eExam
<input type="checkbox"/>	FBQ	In reality, the amplitude of a simple harmonic oscillator gradually decreases in the presence of dissipative forces. Such motion is said to be <input type="text"/>	damped	hshsshsh					eExam
<input type="checkbox"/>	FBQ	In an LC circuit, the quantity $\frac{1}{\sqrt{LC}}$ represents <input type="text"/>	angular frequency	hshsshsh					eExam
<input type="checkbox"/>	FBQ	The displacement of a simple harmonic oscillator is given as $x=A\cos(\omega t+\phi)$. The quantity ϕ is the <input type="text"/> of the oscillation. (symbols have their usual meaning)	phase	phase angle					eExam
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<input type="checkbox"/>	FBQ	The inertial factor in the spring mass system is m . The inertial factor in the LC circuit is <input type="text"/>	1/C	1/C					eExam
<input type="checkbox"/>	FBQ	Any motion that repeats itself at a regular intervals of time is said to be <input type="text"/>	periodic	periodic					eExam
<input type="checkbox"/>	FBQ	The equation $\frac{d\theta}{dt} + U^2 = \frac{2m}{L^2} (E-V)$ is the statement of conservation of <input type="text"/>	energy	energy					eExam
<input type="checkbox"/>	FBQ	For an oscillating system, if the restoring force obeys Hooke's law for small displacement from equilibrium position, the the motion is <input type="text"/>	simple harmonic	simple harmonic					eExam

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<input type="checkbox"/>	FBQ	If the displacement of a simple harmonic oscillator as a function of time t is given as $x=A\cos(\omega t + \phi)$, the quantity ϕ is called the <input type="text"/> constant	phase	phase			
<input type="checkbox"/>	FBQ	ϕ is <input type="text"/> . Note ϕ is the potential in a conservative force field.	0	zero			
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<input type="checkbox"/>	FBQ	If $\oint \vec{F} \cdot d\vec{r} = 0$, then \vec{F} is a <input type="text"/> force	conservative	conservative			
<input type="checkbox"/>	FBQ	The statement $T+V=E(\text{constant})$, where T is the kinetic energy and V the potential energy is known as the <input type="text"/> theorem	work-energy	work-energy			
<input type="checkbox"/>	FBQ	If $\nabla \times \vec{F} = 0$, then \vec{F} is <input type="text"/>	conservative	conservative			
<input type="checkbox"/>	FBQ	If the work done in moving a particle from place to place in a force field is independent of the path followed by the particle, then the force field is said to be <input type="text"/>	conservative	hshsshsh			
<input type="checkbox"/>	FBQ	A damped oscillation driven by external periodic impulses whose frequency is the same as the natural frequency of the oscillator <input type="text"/>	resonates	hshsshsh			
<input type="checkbox"/>	FBQ	If the resistance to a simple harmonic oscillation is very strong, the motion is said to be heavily <input type="text"/>	damped	hshsshsh			
<input type="checkbox"/>	FBQ	In reality, the amplitude of a simple harmonic oscillator gradually decreases in the presence of dissipative forces. Such motion is said to be <input type="text"/>	damped	hshsshsh			
<input type="checkbox"/>	FBQ	In an LC circuit, the quantity $\frac{1}{\sqrt{LC}}$ represents <input type="text"/>	angular frequency	hshsshsh			
<input type="checkbox"/>	FBQ	The displacement of a simple harmonic oscillator is given as $x=A\cos(\omega t + \phi)$. The quantity ω is the <input type="text"/> of the oscillation. (symbols have their usual meaning)	phase	phase angle			

<input type="checkbox"/>								
<input type="checkbox"/>	FBQ	The term normal mode frequency is associated with <input type="text"/> oscillation	coupled	coupled				
<input type="checkbox"/>	FBQ	The inertial factor in the spring mass system is m . The inertial factor in the LC circuit is <input type="text"/>	1/C	1/C				
<input type="checkbox"/>	FBQ	Any motion that repeats itself at a regular intervals of time is said to be <input type="text"/>	periodic	periodic				
<input type="checkbox"/>	FBQ	The equation $\frac{1}{2}I\omega^2 + U = \frac{2m}{L^2} \left(E - V \right)$ is the statement of conservation of <input type="text"/>	energy	energy				
<input type="checkbox"/>	FBQ	For an oscillating system, if the restoring force obeys Hooke's law for small displacement from equilibrium position, the the motion is <input type="text"/>	simple harmonic	simple harmonic				

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