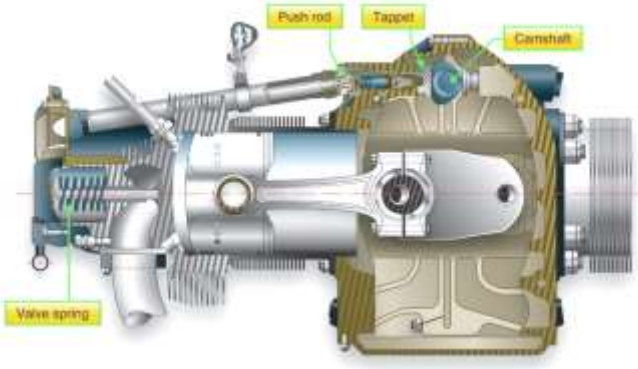
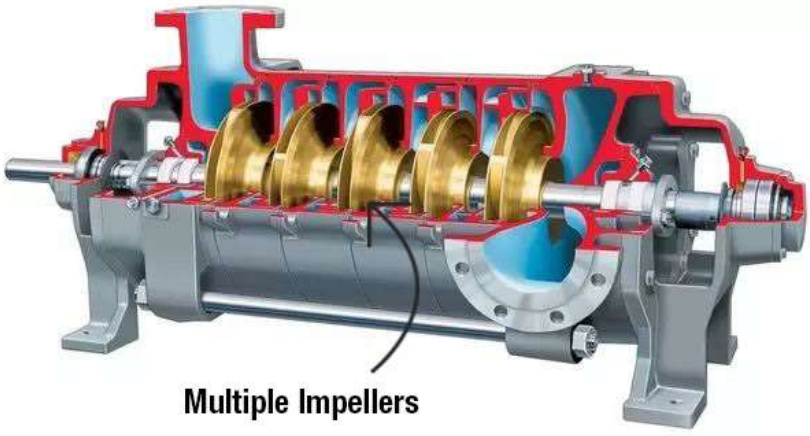
Unit Wise Real Time Applications/Live Examples

Department: Mechanical Engineering Semester: I Academic Year: 2024-25

Class: BE Div: A Course: Dynamics of Machinery

Unit No. -Name	Real life Applications
UNIT 1: Balancing	
UNIT 1: Balancing	
UNIT 1: Balancing	

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UNIT 1: Balancing	
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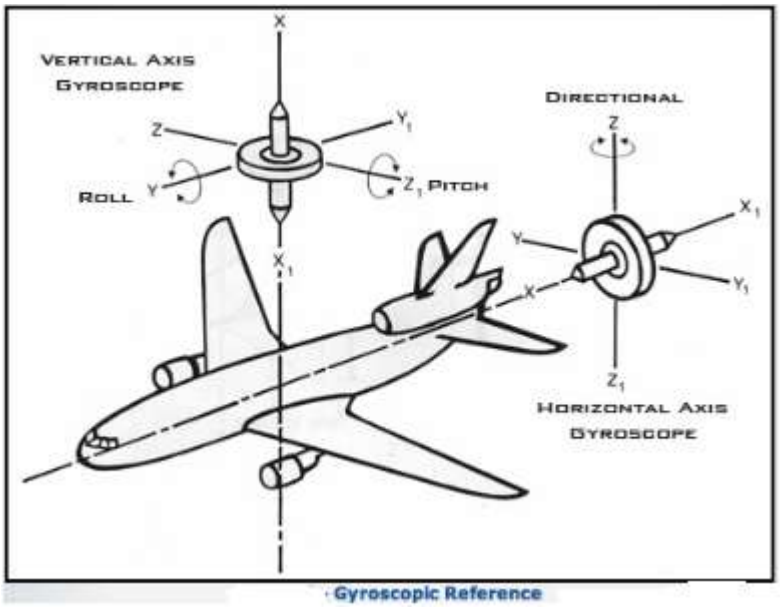
Unit No. -Name	Real life Applications
UNIT 2: Gyroscope	 Gyroscopic Reference
UNIT 2: Gyroscope	

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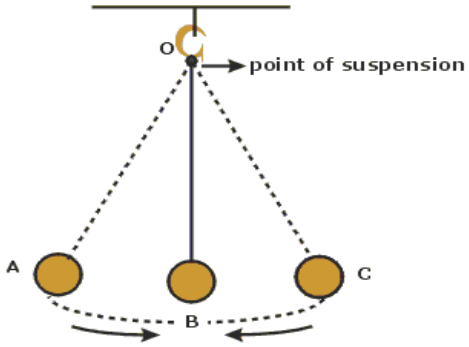
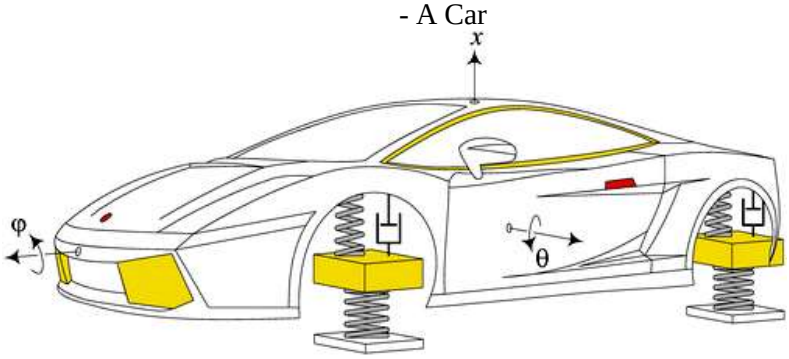
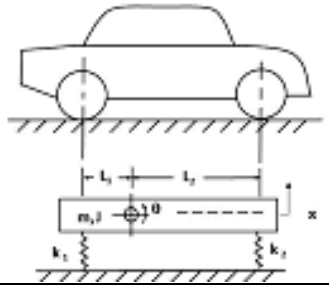
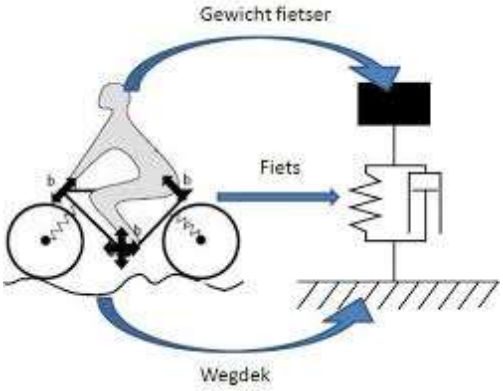
Unit No. -Name	Real life Applications
UNIT 3: Single Degree of Freedom Systems – Free Vibration	Single degree of freedom freedom system- Pendulum 
UNIT 3: Single Degree of Freedom Systems – Free Vibration	musical instruments, vibrating screens, shakers, conveyers, dryers 
UNIT 3: Single Degree of Freedom Systems – Free Vibration	Physical Systems and Physical Models - A Car 
UNIT 3: Single Degree of Freedom Systems – Free Vibration	Model with Two Degrees of Freedom - Pitching Included in the Model 

Unit No. -Name	Real life Applications
UNIT 3: Single Degree of Freedom Systems – Free Vibration	Physical Systems and Physical Models - A Bicycle 
UNIT 3: Single Degree of Freedom Systems – Free Vibration	Transverse Vibrations - mass moves perpendicular to the axis of a beam (or a spring). Restoring force comes from the flexural rigidity of the beam like structures that resist bending. 

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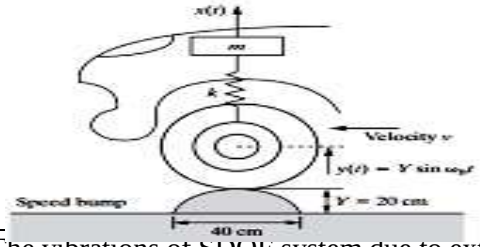
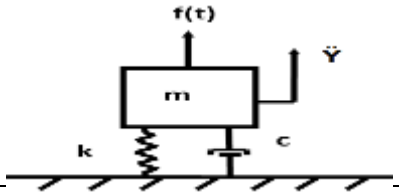
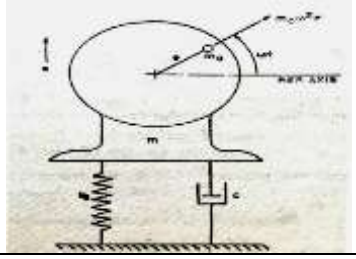
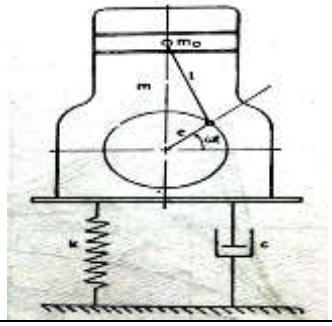
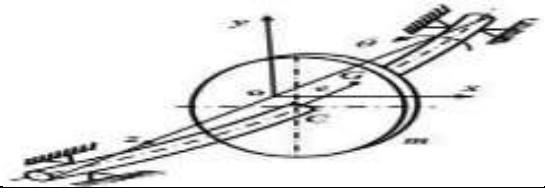
UNIT 4: Single Degree of Freedom Systems - Forced Vibrations	Deterministic Forcing Function-A Car Passing Over aHalf Sinusoidal Bump 
UNIT 4: Single Degree of Freedom Systems - Forced Vibrations	Force Excitation-The vibrations of SDOF system due to external harmonic force (Forced Vibrations due to Force Excitation) 
UNIT 4: Single Degree of Freedom Systems - Forced Vibrations	Forced Vibrations due to Rotating Unbalance 
UNIT 4: Single Degree of Freedom Systems - Forced Vibrations	Reciprocating masses like piston of an IC engine cause unbalance forces – Reciprocating unbalance 
UNIT 4: Single Degree of Freedom Systems - Forced Vibrations	Critical Speed of Shaft (Whirling Speed) 

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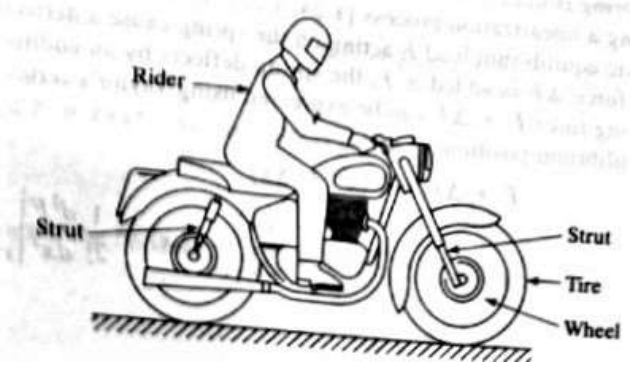
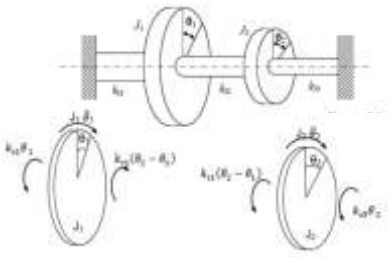
Unit No. -Name	Real life Applications
UNIT 5: Two Degree of Freedom Systems – Undamped Vibrations	**Two Degree of Freedom Systems - Bicycle** 
UNIT 5: Two Degree of Freedom Systems – Undamped Vibrations	There are two masses connected with three springs as shown. Let masses be constrained to move only in vertical direction 
UNIT 5: Two Degree of Freedom Systems – Undamped Vibrations	**Two DOF systems – Torsional systems** There are two rotors mounted on a shaft and the shaft is considered fixed at both ends 

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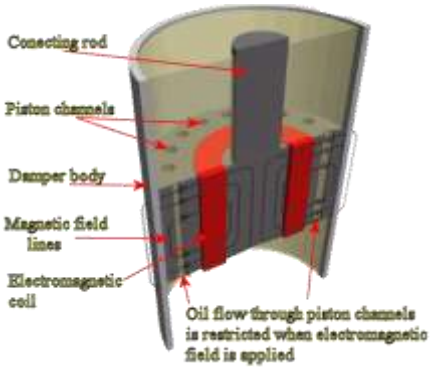
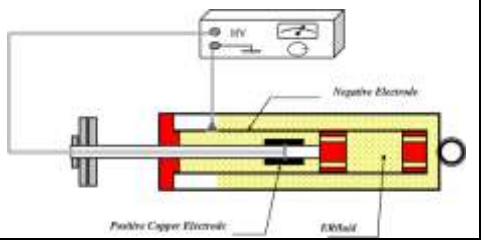
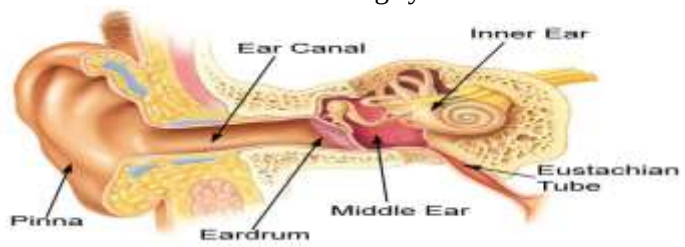
Unit No. -Name	Real life Applications
UNIT 6: Measurement and Control of Vibration	Vibration of the aircraft due to jet noise - Designing the outlet of exhaust gases from turbine properly. Jet noise causes vibrations of fuselage 
UNIT 6: Measurement and Control of Vibration	Minimizing vibration of chimneys due to wind  
UNIT 6: Measurement and Control of Vibration	**Magneto-Rheological Dampers** 
UNIT 6: Measurement and Control of Vibration	**Electro-Rheological Dampers** 

Unit No. -Name	Real life Applications
UNIT 6: Introduction to Noise	Human Hearing system 
UNIT 6: Introduction to Noise	SOURCES OF SOUND  
UNIT 6: Introduction to Noise	SOUND NEEDS A MEDIUM TO PROPOGATE 
UNIT 6: Introduction to Noise	Sound Level Meters 

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