Code No: **R1942241** **R19** **Set No. 1**

IV B.Tech II Semester Regular Examinations, April– 2023

NOISE, VIBRATIONS AND HARSHNESS

(Automobile Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks
*****

UNIT I

1 a) What are 2D continuous systems? Derive the expressions for the bending moments and effective shear forces for the same. [7]

b) Define sound. With help of equation connecting inertial quantities mass density, uniform pressure, uniform temperature in case of fluid. [8]

(OR)

2 a) Describe in detail about beam with a nonsymmetric cross section and curved beams. [7]

b) Explain how speed of sound changes with respect to the values of altitude and temperature with help of relevant equations. [8]

UNIT II

3 a) Explain about psychological effects that noise causes on humans. [7]

b) Discuss in detail about
i). Effective Perceived Noise Level.
ii). Community noise level. [8]

(OR)

4 a) List different items that are to be included in the measurement report when environmental noise is measured. [7]

b) Explain about the term's threshold shift and Presbyacusis that relate to hearing sensitivity and how hearing sensitivity can be assessed based on these terms. [8]

UNIT III

5 a) Elaborate traditional intake and exhaust system designand development techniques [7]

b) Elaborate the development cycle for intake systems and list the principal intake system components and their functions. [8]

(OR)

6 a) How is acoustic behaviour of complex flowduct systems predicted. [7]

b) Classify the noise due to the operation of the intake and exhaust systems. [8]

|''||||'|''||''|''||

UNIT IV

7	a)	Elaborate two international standards are most often employed to measure noise at the operator station for a large majority of off-highway vehicles	[7]
	b)	List various sources in vehicles that cause internal noises.	[8]
		(OR)	
8	a)	With help of a schematic diagram explain the origin of interior noise in vehicles.	[7]
	b)	Discuss in detail about structure borne noise transmission paths and airborne noise transmission paths for internal noise of a vehicle.	[8]

UNIT V

9	a)	Describe primary calibration of an accelerometer standard using laser interferometry with help of a neat sketch.	[7]
	b)	Explain in detail about various laser vibration measuring methods.	[8]
		(OR)	
10	a)	Elaborate about different types of vibration transducers and their applications.	[7]
	b)	Discuss in detail about the classifications of vibration data and with help of a flowchart explain classifications of vibration environment.	[8]

|''||||'|''||''|''||