PRN:		Course Code :	MET 2704.1

Final Year **B. Tech** End Semester Examination Summer 2024

Mechanical Vibrations

Day and Date: 29 MAY 2024 , Wed Max Marks: **100**

Time : 10:30AM To 01:30PM Duration: **03** hrs

Instructions: All questions are compulsory.

		Marks	Bloom's Level	CO
Q.1	**Attempt the following**			
a)	Explain the causes and effects of vibration.	08	2	CO1
b)	Explain different vibration parameters in detail.	08	1	CO1
	OR			
b)	Explain Vector and Complex method of representing vibration.	08	2	CO1
Q.2	**Attempt the following**			
a)	Explain different types of damping.	08	2	CO2
b)	Explain response of systems to different types of excitations.	08	1	CO2
	OR			
b)	Explain logarithmic decrement and derive the equation for the same.	08	2	CO2
Q.3	**Attempt any two from the following**			
a)	Explain about principal modes and natural frequencies.	08	2	CO3
b)	What are vibration dampers and absorber?	08	1	CO3
c)	A 75 kg machine is mounted on springs of stiffness 11.76 x 105 N/m with damping factor of 0.2. A 2 kg piston within the machine has a reciprocating motion with stroke of 0.08 m and a speed of 3000 rpm. Assuming the motion of piston to be harmonic, determine the amplitude of vibration of the machine and the vibratory force transmitted to the foundation.	08	1	CO3
Q.4	**Attempt any two from the following**			
a)	Explain the concept of free vibrations of Multi DOF System.	08	2	CO4
b)	Derive the equation used in Holzer's method.	08	1	CO4
c)	Explain Rayleigh's method in detail.	08	1	CO4
Q.5	**Attempt any Two of the following**			
a)	Explain FFT analyzer in detail.	09	2	CO4
b)	Explain the different instruments for measuring displacement, velocity, acceleration and frequency of vibration.	09	1	CO5
c)	Explain with neat sketch different type of exciters used in vibration analysis.	09	1	CO5
Q.6	**Attempt any Two of the following**			
a)	What do understand by frequency dependent human response to sound?	09	2	CO5
b)	Explain noise standards and limits.	09	1	CO5
c)	What are Non auditory effects of noise on people?	09	1	CO5

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