

# GUJARAT TECHNOLOGICAL UNIVERSITY

## PDDC SEMESTER : VI

### MECHANICAL ENGINEERING

Subject Name: **DYNAMICS OF MACHINERY**

Sr. No.	Course Contents	Total Hrs
1.	<b>Balancing:</b> Need for balancing, Static balance, balancing of rotating masses in same and different planes, Numericals	03
2.	Dynamic balancing, balancing of reciprocating masses, Numericals	03
3.	Balancing of locomotives, Partial balancing of locomotives, swaying couple, hammer blow, variation in tractive effort, Numericals	03
4.	Balancing of multi cylinder in line engines, direct and reverse crank concept, Numericals	03
5.	Balancing of V and radial engines, Numericals ,balancing machines	04
6.	<b>Mechanical Vibrations:</b> -Introduction, Degree of freedom, Types of vibrations, uses effects and remedy; free natural vibrations, Newton method and energy method for single degree of freedom.	03
7.	Damped vibrations; under damped, critically damped and over damped systems, response curves for single degree of freedom system. Numericals.	04
8.	Forced vibrations with and without damping in single degree of freedom, rotating and reciprocating unbalance, base excitations, numericals .	04
9.	Vibration Isolation and transmissibility; Force transmissibility, Motion transmissibility. Forced vibration with rotating and reciprocating Unbalance. Materials used in vibration isolation, Numericals	03
10.	Longitudinal and Transverse Vibrations, whirling of shaft with a single disc with and without damping, Dunkerley's method for simply supported beams.	03
11.	Torsional vibrations, torsionally equivalent system, stepped shafts and tapered shafts, two rotor, three rotor and geared systems, Numericals	03
12.	Stodola's and Holzer's method for multi rotor systems, Numericals	02
13.	Two degree and Multi degree Vibrations, wave equation, boundary conditions in beams, solution of wave equation, Rayleigh's method, Numericals.	03
14.	Vibration measuring instruments, vibrometer, accelerometer and frequency measuring instruments.	04

#### Text Books:

1. Mechanical Vibrations By Shrikant Bhawe, Pearson Publication
2. Theory Of Machines by S.S.Rattan , Tata Mc-Graw Hill
3. Theory Of Machines & Mechanisms by P.L.Ballaney , Khanna Publishers, Delhi
4. Mechanical Vibrations by G.K.Groover & A.K.Nigam, Nemchand Bros., Roorkee

#### Reference Books:

1. Theory of Machines And Mechanisms by J.E.Shigley, Tata Mcgraw Hill
2. Dynamics Of Machines by F. Haidery , Nirali Prakashan, Pune
3. Theory of Machines by V.P.Singh, Dhanpatrai Pub., Delhi
4. Mechanical Vibration by Schaum Series, Mc-Graw Hill