Name of the Institute:	R.K. INSTITUTE OF ENGG. & TECH.
Department:	Mechanical Engineering
Semester:	4th SEM.
Subject Name with code:	THEORY OF MACHINES & MECHANISM TH:1
Total No. of Class (Required):	45 FROM-22/12/2025 TO-18/04/2026
Faculty Name:	Mr. SATYABRATA NAYAK

Class No.	Brief Description of the Topic/Chapter to be taught	Remarks
1	Simple mechanism: Link ,kinematic pair and types (Lower pair and higher pair)	
2	kinematic chain, mechanism, Inversion	
3	four bar link mechanism and its inversion	
4	Cams and Followers: Concept; Definition and application of Cams and Followers;	
5	Classification of Cams and Followers;	
6	Different follower motions and their displacement diagrams like uniform velocity, SHM	
7	uniform acceleration and Retardation;	
8	Power Transmission: Types of Drives – Belt, Chain, Rope, Gear drives & their comparison;	
9	Belt Drives - flat belt, V– belt & its applications;	
10	Material for flat and V-belt; Angle of lap, Belt length. Slip and Creep;	
11	Determination of Velocity Ratio, Ratio of tight side and slack side tension;	
12	Centrifugal tension and Initial tension;	
13	Condition for maximum power transmission (Simple numerical);	
14	Chain Drives – Advantages & Disadvantages; Selection of Chain & Sprocket wheels; Methods of lubrication; Gear Drives – Spur gear terminology;	
15	Types of gears and gear trains, their selection for different applications;	
16	Train value & Velocity ratio for compound, reverted and simple epicyclic gear train;	
17	Methods of lubrication; Law of gearing;	
18	Rope Drives – Types, applications, advantages & limitations of Steel ropes.	
19	Flywheel and Governors: Flywheel - Concept, function and application of flywheel with the help of turning moment diagram for single cylinder 4-Stroke I.C. Engine (no Numerical);	
20	Coefficient of fluctuation of energy	
21	Coefficient of fluctuation of speed and its significance;	
22	Governors - Types and explanation with neat sketches (Centrifugal, Watt and Porter);	
23	Governors - Types and explanation with neat sketches (Centrifugal, Watt and Porter);	

24	Concept, function and applications & Terminology of Governors (sensitivity, stability and isochronisms);	
25	Concept, function and applications & Terminology of Governors (sensitivity, stability and isochronisms);	
26	Simple numerical on Watt and Porter Governor.	
27	Comparison between Flywheel and Governor	
28	Comparison between Flywheel and Governor	
29	Brakes, Dynamometers, Clutches & Bearings: Function of brakes and dynamometers; Types of brakes and Dynamometers;	
30	Comparison between brakes and dynamometers;	
31	Construction and working of i) shoe brake, ii) Band Brake, Numerical problems to find braking force and braking torque for shoe & band brakes;	
32	Concept of Self Locking & Self energizing brakes	
33	Construction and working of i) Rope Brake Dynamometer, ii) Hydraulic Dynamometer Clutches- Uniform pressure and Uniform Wear theories;	
34	Function of Clutch and its application; Construction and working of i) Single plate clutch, ii) Multiplate clutch	
35	iii) Centrifugal Clutch iv) Cone clutch and v) Diaphragm clutch. (Simple numerical on single and Multiplate clutch)	
36	Bearings – i) Simple Pivot, ii) Collar Bearing, iii) Conical pivot.	
37	Torque & power lost in friction (no derivation).	
38	Simple numerical.	
39	Balancing & Vibrations: Concept of balancing;	
40	Balancing of single rotating mass;	
41	Balancing of single rotating mass;	
42	Graphical method for balancing of several masses revolving in same plane;	
43	Concept and terminology used in vibrations, Causes of vibrations in machines;	
44	Concept and terminology used in vibrations, Causes of vibrations in machines;	
45	their harmful effects and remedies.	

HOD
MECHANICAL

SUBJECT
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