



अभियांत्रिकी महाविद्यालय अजमेर Engineering College, Ajmer

(राजस्थान सरकार के तहत एक स्वायत्त संस्थान)

(An Autonomous Institute under Government of Rajasthan)

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Ref. No. ECA/Mech/1293

Date: 13th Aug. 2020

Notice

The RTU back / Old back online exam of Engineering Mechanics is scheduled on August 16, 2020 (Sunday). The time of the examination will be 11-12 am. Additional 15 minutes for exam will be provided in addition to the scheduled time for uploading the answer sheets. The exam will be held on google classroom. The department will share the class code with you in the whatsapp group created for this purpose.

The syllabus of back/ old back exam of "205-Engineering Mechanics" is attached with this notice.

Course Coordinators

(Sh. M.C.Khatri & Sh. V.K. Verma)

Mob. 8764352589 & 9928994661

1. Principal (for kind information)
2. Head - AS&H & Mechanical
3. Notice board
4. Department file

205 ENGINEERING MECHANICS

Unit 1

Statics Of Particles and Rigid Bodies: Fundamental laws of mechanics, Principle of transmissibility, System of forces, Resultant force, Resolution of force, Moment and Couples, Varignon's Theorem, Resolution of a force into a force and a couple, Free body diagram, Equilibrium, Conditions for equilibrium, Lami's theorem.

Virtual work: Principle of Virtual Work, Active forces and active force diagram.

Unit 2

Centroid & Moment of Inertia: Location of centroid and center of gravity, Moment of inertia, Parallel axis and perpendicular axis theorem, Radius of gyration, M.I of composite section, Polar moment of inertia, M.I of solid bodies.

Lifting Machines: Mechanical advantage, Velocity Ratio, Efficiency of machine, Ideal machine, Ideal effort and ideal load, Reversibility of machine, Law of machine, Lifting machines; System of Pulleys, Simple wheel and axle, Wheel and differential axle, Weston's differential pulley block, Worm and worm wheel, Single purchase winch crab.

Unit 3

Friction: Types of Friction, Laws of friction, Angle of friction, Angle of repose, Ladder, Wedge, Belt Friction.

Belt Drive: Types of belts, Types of belt drives, Velocity ratio, Effect of slip on Velocity ratio, Length of belt, Ratio of tensions and power transmission by flat belt drives.

Unit 4

R.T.U., Kota Scheme and Syllabus B.Tech. (1st and 2nd Semesters) effective from Session 2012-13

17 | Page

Kinematics of Particles and Rigid Bodies: Velocity, Acceleration; Types of Motion, Equations of Motion, Rectangular components of velocity and acceleration, Angular velocity and Angular acceleration, Radial and transverse velocities and accelerations, Projectiles motion on plane and Inclined Plane, Relative Motion.

Kinetics of Particles and Rigid Bodies: Newton's laws, Equation of motion in rectangular coordinate, radial and transverse components, Equation of motion in plane for a rigid body, D'Alembert principle.

Unit 5

Work, Energy and Power: Work of a force, weight, spring force and couple, Power, Efficiency, Energy, Kinetic energy of rigid body, Principle of work and energy, Conservative and Nonconservative

Force, Conservation of energy.

Impulse and Momentum: Linear and angular momentum, Linear and angular impulse, Principle of momentum for a particle and rigid body, Principle of linear impulse and momentum for a particle and rigid body, Principle of angular momentum and Impulse, Conservation of angular momentum, Angular momentum of rigid body.

Suggested Readings

1. Vector Mechanics for Engineers, Beer and Johnston, Tata McGraw-Hill.
2. Engineering Mechanics, Hibbeler, Pearson Education.
3. Engineering Mechanics, Meriam and Kraige, John Wiley & Sons.
4. Engineering Mechanics, Timoshenko and Young, Tata McGraw-Hill.
5. Engineering Mechanics, Shames, Pearson Education.
6. Engineering Mechanics, Boreasi and Schmidt, CL-Engineering.
7. Engineering Mechanics, Andrew Pytel & Kiusalas, Cengage Learning.