

AUTOMOTIVE TRANSMISSION SYSTEMS (3-0-0)

Module - I (6 Hrs.)

Mechanical Drive - Requirements for a transmission system. Design aspects - different types of clutches: principle, construction, torque capacity and design aspects, free wheel. Determination of gear ratios for vehicles. Performance characteristics at different speeds. Different types of gear boxes – sliding, constant and synchromesh gearbox. Problems with the performance of automobiles such as resistance to motion, tractive effort, engine speed, power and acceleration.

Module - II (6 Hrs.)

Hydrodynamic Drive - Fluid coupling-principle of operation. Constructional details, torque capacity. Performance characteristics, reduction of drag torque. Torque converter: principle of operation, constructional details and performance characteristics. Converter coupling - principle of operation -construction details - torque capacity – characteristic performance.

Module – III (6 Hrs.)

Hydrostatic Drive - Various types of hydrostatic systems – principles of hydrostatic drive system, advantages and limitations, comparison of hydrostatic drive with hydrodynamic drive, construction and working of typical jenny hydrostatic drive.

Module – IV (6 Hrs.)

Electric Drive - Principle of operation -construction details - torque capacity – characteristic performance. Principle of early and modified Ward Leonard control system. Advantages & limitations. Performance characteristics.

Module – V (6 Hrs.)

Automatic transmission and application - Principle of working of epi-cyclic gear train, need for automatic transmission, four speed longitudinally mounted automatic Transmission-Chevrolet “Turbo-glide” transmission, continuously variable transmission (CVT)–types–operations of a typical CVT, Ford model gear box, Wilson gear box, coil electromagnetic transmission, hydraulic control system for automatic transmission.

Books:

- Heldt. P.M., Torque converters, Chilton Book Co., 1992.
- Newton and Steeds, Motor Vehicles, Life Publishers, 1985.
- Judge A.W., Modern Transmission Systems, Chapman and Hall Ltd., 1990.
- SAE Transactions 900550 & 930910.
- Hydrostatic Transmissions for Vehicle Applications, I Mech. E Conference, 1981-88.
- Course. W.H., Anglin., D.L., automotive transmission and power trains construction, McGraw-Hill, 1976.