

AMAE-15 AUTOMOTIVE TRANSMISSION

UNIT-1 CLUTCH AND GEAR BOX

- 1.1 Requirement of transmission system,
- 1.2 Different types of clutches,
- 1.3 Principle & Construction of Single plate coil spring and Diaphragm spring clutches.
- 1.4 Need and Objectives of Gear box.
- 1.5 Construction and operation of Sliding mesh, Constant mesh and Synchromesh gearboxes.
- 1.6 Determination of gear ratios for vehicles.
- 1.7 Performance characteristics in different speeds.
- 1.8 Problems on performance of automobile such as Resistance to motion, Tractive effort, Engine speed & Power and acceleration.

UNIT-2 HYDRODYNAMIC TRANSMISSION

- 2.1 Fluid coupling
- 2.2 Principle-Constructional details.
- 2.3 Torque capacity. Performance characteristics. Reduction of drag torque in fluid coupling.
- 2.4 Torque converter-Principle-constructional details, performance characteristics.
- 2.5 Multistage torque converters and Polyphase torque converters.

UNIT-3 EPICYCLIC GEARBOXES USED IN AUTOMATIC TRANSMISSION

- 3.1 Principle of Planetary gear trains - Wilson Gear box, Cotal electromagnetic transmission
- 3.2 Hydraulic control system for Automatic Transmission.

UNIT-4 AUTOMATIC TRANSMISSION APPLICATIONS

- 4.1 Need for automatic transmission, Four speed longitudinally mounted automatic transmission -
- 4.2 Chevrolet "Turboglide" Transmission,
- 4.3 Continuously Variable Transmission (CVT) - Types- Operations of a typical CVT.

UNIT-5 HYDROSTATIC AND ELECTRIC DRIVE

- 5.1 Hydrostatic drive; various types of hydrostatic systems- Principles of Hydrostatic drive system. Advantages and limitations.
- 5.2 Comparison of hydrostatic drive with hydrodynamic drive, construction and working of typical Janny hydrostatic drive.
- 5.3 Electric drive-types- Principle of early and modified Ward Leonard Control system Advantages & limitations.

References Books:

1. SAE Transactions 900550 & 930910. Hydrostatic transmissions for vehicle applications, I Mech E Conference, 1981-88.
2. Crouse,W.H., Anglin,D.L.," Automotive Transmission and Power Trains construction", McGraw Hill, 1976.
3. Heinz Heisler, "Advance vehicle Technology", Butterworth-Heinemann, 2002