AT8004 NEW GENERATION AND HYBRID VEHICLES

DETAILED SYLLABUS

OBJECTIVE:

- To illustrate the new generation vehicles and their operation and controls

UNIT I INTRODUCTION

Electric and hybrid vehicles, flexible fuel vehicles (FFV), solar powered vehicles, vehicles, fuel cells vehicles.

UNIT II POWER SYSTEM AND NEW GENERATION VEHICLES

Hybrid Vehicle engines, Stratified charge engines, learn burn engines, low heat rejection engines, hydrogen engines, HCCI engine, VCR engine, surface ignition engines, VVTI engines. High energy and power density batteries, fuel cells, flexible fuel systems.

UNIT III VEHICLE OPERATION AND CONTROL

Computer Control for pollution and noise control and for fuel economy – Transducers and actuators - Information technology for receiving proper information and operation of the vehicle like optimum speed and direction.

UNIT IV VEHICLE AUTOMATED TRACKS

Preparation and maintenance of proper road network - National highway network with automated roads and vehicles - Satellite control of vehicle operation for safe and fast travel, GPS.

UNIT V SUSPENSION, BRAKES, AERODYNAMICS AND SAFETY

Air suspension – Closed loop suspension, compensated suspension, anti skid braking system, retarders, regenerative braking, safety gauge air bags- crash resistance. Aerodynamics for modern vehicles, safety systems, materials and standards.

TEXT BOOKS:

1. Bosch Hand Book, SAE Publication, 2000

2. Heinz, "Modern Vehicle Technology" Second Edition

REFERENCES:

1. Advance hybrid vehicle power transmission, SAE.

2. Light weight electric for hybrid vehicle design.

3. Noise reduction, Branek L.L., McGraw Hill Book company, New York, 1993.