

7/12/2023

[Max Marks: 80]

Duration: 3hrs

- N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Illustrate your answer with neat sketches wherever necessary.

- Q.1 Attempt any four from following five questions
- a Discuss the basic concepts of hybrid traction, introduction to various hybrid drive-train topologies. [05]
 - b Describe Vehicle power demand analysis [05]
 - c Differentiate between AWD and 2WD [05]
 - d List different EV models available on road in India also state their driving range. [05]
 - e Write short note on Degree of hybridization [05]
- Q.2 a Discuss impact of Electric Vehicle on power grid and environment. [10]
- b Illustrate Plug in Hybrid Electric Vehicles with neat sketch and state its advantages over mild hybrid [10]
- Q.3 a Write mathematical equation and explain; Brake thermal efficiency, Indicated Thermal efficiency, Mechanical efficiency and Brake specific fuel consumption. [10]
- b With a neat sketch describe the construction and working of Rack and Pinion type of steering gear [10]
- Q.4 a Determine brake thermal and indicated thermal efficiencies of a 4-stroke CI engine whose power developing capacity is 15 KW. The fuel consumption is 3.5 liters/hr. Mechanical efficiency of engine = 85%. Take specific gravity of oil = 0.85 and its CV = 42 MJ/kg. [10]
- b Describe the construction and working of two leading type of brake shoe arrangement, with its advantages and disadvantages. [10]
- Q.5 a Describe with neat sketch the construction and working of 3 forward and 1 reverse speed constant mesh gearbox. [10]
- b Describe the construction and working of Double Wishbone type of Suspension System [10]
- Q.6 a What do you mean by tyre mechanics? What are its effects on vehicle handling and stability [10]
- b Describe with neat sketch the construction and working of Multiplate dry friction clutch. [10]
