Code No: 138BR

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, September - 2020
ELECTRIC AND HYBRID VEHICLES
(Electrical and Electronics Engineering)

Time: 2 Hours **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks
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1. Explain the term rolling resistance and aerodynamic drag in vehicles and derive the expression for vehicle translational speed from fundamentals. [15]

2. Obtain the mathematical modeling of electric vehicle to describe its performance. [15]

3.a) Explain the impact of different transportation technologies on environment and energy supply.
b) What are the basic techniques to improve Vehicle Fuel Economy? Explain. [9+6]

4.a) Illustrate the power flow control in hybrid electric drive train.
b) Write a short notes on fuel efficiency analysis in hybrid electric drive-trains. [8+7]

5. Draw and explain the block diagram of switched reluctance motor drive system. [15]

6. Discuss various electric drive train topologies. [15]

7.a) Explain the super capacitor based energy storage and also state its limitations.
b) Write a short note on sizing the power electronics to hybrid vehicles. [8+7]

8. Explain the design of a Hybrid Electric Vehicle (HEV) as a case study. [15]

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