Paper / Subject Code: 42873 / Automotive Power Systems (DLOC - III)

BE Sem VII (R-2019, C Scheme) "Mechanical" Dec' 2023

30/12/2023

Time : (3 Hours) **(80 Marks)**

N.B.

1) **Question No. 1 is compulsory.**
2) **Solve Any Three of the remaining Five questions.**
3) **Assume suitable data if necessary and state it clearly.**
4) **Draw suitable sketches whenever required.**

Q.1 Solve any Four out of Six.

A. Explain Conventional fuels used in I.C. Engines (5)
B. What are the Objectives & Limitations of Turbochargers? (5)
C. What are the constituents of exhaust emissions? (5)
D. Explain the Electric traction system used in EV. (5)
E. Describe the historical development of EV. (5)
F. Explain Energy Sources for EV & HEV. (5)

Q.2

A. Explain the Battery ignition system in detail with a suitable sketch. (10)
B. What is Electronic Control Module (ECM)? Describe it's working with a suitable sketch. (10)

Q.3

A. Explain drive train topologies of HEV with suitable sketches. (10)
B. I) What are the Methods of controlling emissions? (5)
II) What is the Necessity of engine cooling and the disadvantages of overcooling? (5)

Q.4

A. How would you calculate the torque, power, battery capacity, RPM for EV? (10)
B. Explain the construction and working of the induction motor. (10)

Q.5

A. Explain the construction and working of Lead Acid batteries. (10)
B. Explain the Functions and working of the ignition coil. (10)

Q.6

A. What are the types of lubricants and their properties? (5)
B. What are EURO and BHARAT norms related to exhaust gas emissions? (5)
C. What are battery specifications? Explain minimum five specifications. (5)
D. What are the components of a charging station? (5)

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