

Code No: 117AV

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B. Tech IV Year I Semester Examinations, November/December - 2016****AUTOMOTIVE ELECTRICAL AND AUTOTRONICS****(Automobile Engineering)****Time: 3 hours****Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A**(25 Marks)**

- 1.a) What are the new developments in electrical storage? [2]
- b) What is the Function of charging system in an automobile? [3]
- c) What are the functions of a starter motor? [2]
- d) What are the requirements of an ignition system for an SI Engine? [3]
- e) What is meant by heat range of spark plug? [2]
- f) What is meant by heat range of the voltage regulator? [3]
- g) "Battery is the heart of electrical system in an automobile" Explain. [2]
- h) What are the characteristics of force and velocity on power propulsion? [3]
- i) Explain hybrid control strategy. [2]
- j) List out different types of clutches. [3]

PART-B**(50 Marks)**

2. What are the different types of batteries? Briefly explain the construction and working of a lead-acid battery. [10]

OR

- 3.a) What are the differences between alternator and D.C generator for automotive use? [5+5]
- b) Discuss the merits and demerits of generation of direct current.

- 4.a) What are the main components in conventional ignition system and explain each of it? [5+5]
- b) What is the purpose of an ignition system in a petrol engine?

OR

5. Explain briefly construction and working of series and shunt automotive starter motor. [10]

- 6.a) What are the advantages and disadvantages of 6 volt and 12 volt electrical system? [5+5]
- b) Write differences between low and high voltage automotive cables.

OR

- 7.a) Explain automatic wiring system with neat wiring diagram. [5+5]
- b) Write short note on head lamp construction.

- 8.a) Write various differences between electric vehicles and hybrid vehicles. [5+5]
b) Write about HEV powertrain sizing.

OR

9. Explain Hybrid vehicle based on:
a) Architecture
b) Transmission assembly. [5+5]

10. Write short note on:
a) DC drives
b) AC drives
c) SRM drives. [10]

- 11.a) Explain the Anti-lock braking system and the effect of weight transfer during braking. [10]
b) What are power brakes? Explain the working of servo and electric brakes. [5+5]

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