

[Total No. of Questions - 9] [Total No. of Printed Pages - 2]
(2125)

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B. Tech 8th Semester Examination
Emerging Automotive Technologies (OS)
ME-8017

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Candidates are required to attempt five questions in all selecting one question from each of the section A, B, C and D, and all the subparts of the questions in section E. Use of non-programmable calculators is allowed.

SECTION - A

1. What are the different types of fuel cells and explain the construction and working of any three? (15)
2. Explain the potential and challenges faced by the fuel cell vehicles. Also write down the advantages and disadvantages of hydrogen fuel. (15)

SECTION - B

3. (a) Explain direct fuel injection system with diagram. (8)
(b) Explain the construction and working of catalytic converter. (7)
4. (a) Explain the electronic throttle control. (7)
(b) What is variable valve timing and the method used to effect variable valve timing? (8)

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SECTION - C

5. (a) Explain the types of hybrid systems. (8)
(b) How hybrid vehicles works and also explain the advanced technologies used in hybrids. (7)
6. Explain the deep discharge and rapid charging ultra capacitors. (15)

SECTION - D

7. (a) What is X-By wire technology and its advantages over hydraulic systems? (7)
(b) Explain the use of automotive micro controllers. (8)
8. Explain semi-active and fully active suspension system and also write down the advantages of fully active suspension system. (15)

SECTION - E

9. Attempt all part in this question. All questions carry equal marks.
 - (a) What is meant by wheel wobbling?
 - (b) What are the causes for high speed shimmy?
 - (c) Explain about braking efficiency.
 - (d) What do you mean by steering by wire?
 - (e) What is brake by wire?
 - (f) Why do we need hybrid vehicles?
 - (g) Explain about regenerative braking.
 - (h) What is ABS and explain it?
 - (i) Why there is need to control automobile emission?
 - (j) Explain the working of power braking system.

(10×4=40)