

**M.Tech. IN ADVANCED INFORMATION
TECHNOLOGY - EMBEDDED SYSTEM DESIGN
(MTECHSD)**

Term-End Examination

December, 2014

00484

MINE-046 : EMBEDDED AUTOMOTIVE SYSTEMS-I

Time : 3 hours

Maximum Marks : 100

Note :

- (i) *Section I is compulsory.*
- (ii) *In Section II, answer any five questions.*
- (iii) *Assume suitable data wherever required.*
- (iv) *Draw suitable sketches wherever required.*
- (v) *Italicized figures to the right indicate maximum marks.*

SECTION I

1. Discuss the design of Anti-lock Braking System (ABS) and explain the design issues in detail on the basis of sensor requirements and control algorithm.

15+15

SECTION II

2. (a) Explain the job of the Electronics Control Unit (ECU) in a family vehicle. 10
- (b) What is a smart temperature sensor ? 4
3. Compare power steering to normal steering on the following points : 14
- (i) Driver Safety 7
- (ii) Vehicle Control 7
4. (a) What is Knocking ? Explain the operation of knocking sensor with a neat sketch. 7
- (b) Explain the role of Transmission Control module in automobile controlling. 7
5. Explain how the embedded systems are utilized in automobiles to provide the following : 14
- (i) Vehicle communication 7
- (ii) Vehicle safety 7
6. What are the data acquisition system requirements in an automotive system ? 14
7. (a) What is Common rail pressure sensor ? Explain its operation with a neat sketch. 7
- (b) "Each wheel must follow a different circle in steering mechanism." Justify. 7

8. (a) Differentiate between Glow plug and Spark plug. 7
- (b) Explain the principle of operation of Extension cycle and Compression cycle of a suspension system with a neat sketch. 7
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