

Code No: RT42243A

**R13**

**Set No. 1**

**IV B.Tech II Semester Supplementary Examinations, July/August - 2017**

**AUTOMOTIVE SAFETY**

**(Automobile Engineering)**

**Time: 3 hours**

**Max. Marks: 70**

*Question paper consists of Part-A and Part-B*

*Answer ALL sub questions from Part-A*

*Answer any THREE questions from Part-B*

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**PART-A (22 Marks)**

1. a) Write down the energy equations when two moving vehicles are making a head on collision. [4]
- b) Define active and passive safety system [3]
- c) What is the principle of operation of an air bag in a vehicle? [4]
- d) Explain the concept of frontal object detection briefly. [4]
- e) State the principles of environment information system. [4]
- f) What do you mean by navigation systems? [3]

**PART-B (3x16 = 48 Marks)**

2. a) Discuss the concept of crumple zone and its effects on safety. [8]
- b) Explain the Deceleration on impact with stationary and movable obstacle with neat sketch. [8]
3. a) Briefly explain various active safety systems in automobiles. [8]
- b) Give the broad classification of active safety systems and explain them in detail. [8]
4. a) Discuss the working principles of collision warning system with neat sketch. [8]
- b) Briefly explain the construction and working principles of ABS system. [8]
5. a) With relevant sketches explain the construction and working of the pressure control system [8]
- b) Explain in detail the construction and working of environment information system with a neat sketch. [8]
6. a) Explain the construction and working principles of collapsible steering column. [8]
- b) With a schematic diagram explain the concept of bumper design for safety. [8]
7. a) Describe the driver assistance system? [8]
- b) Describe the global positioning system? [8]