

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**B.E. - SEMESTER – VIII EXAMINATION – OCTOBER 2012**

**Subject code: 180203****Date: 29/10/2012****Subject Name: Special Purpose Vehicles****Time: 02.30pm - 05.00pm****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

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|------------|-----|--|-----------|
| <b>Q.1</b> | (a) | Write classification of Special Purpose vehicles.  | <b>07</b> |
|            | (b) | Draw a sketch of Single Drum type Road Roller and explain details of Engine Power system, Steering System and Braking system of the same.  | <b>07</b> |
| <b>Q.2</b> | (a) | Draw sketch showing the Construction of a Tipper and Explain its Purpose, and Working in detail.   | <b>07</b> |
|            | (b) | Draw sketch of Back hoe Loader and Explain its Purpose and Working in detail.  | <b>07</b> |
| <b>OR</b>  |     |  |           |
|            | (b) | Draw sketch of Dozer and Explain its Purpose and Working in detail.  | <b>07</b> |
| <b>Q.3</b> | (a) | With a neat Sketch of Mobile Crane, explain its construction and working principle.  | <b>07</b> |
|            | (b) | Explain the hydrodynamic steering system used in Special Purpose vehicles.   | <b>07</b> |
| <b>OR</b>  |     |  |           |
| <b>Q.3</b> | (a) | Explain the types of cranes and its utility.   | <b>07</b> |
|            | (b) | Draw sketch showing the Construction of a Shovel and Explain its Purpose, and Working in detail.   | <b>07</b> |
| <b>Q.4</b> | (a) | Explain the fifth wheel arrangement of Truck Semi-trailer and different applications of semi-trailers.                                     | <b>07</b> |
|            | (b) | Explain in detail the reasons for requirement of multi-axle vehicles.  | <b>07</b> |
| <b>OR</b>  |     |  |           |
| <b>Q.4</b> | (a) | Explain the architecture and parameters of design considerations for various types of Electric vehicles.                                   | <b>07</b> |
| <b>Q.4</b> | (b) | Explain the architecture and different type of Hybrid Electric Vehicle layouts.  | <b>07</b> |
| <b>Q.5</b> | (a) | Draw a sketch of Tractor and explain the complete layout of each & every component.  | <b>07</b> |
|            | (b) | Draw different implements used on a farm tractor and explain its purpose.  | <b>07</b> |
| <b>OR</b>  |     |  |           |
| <b>Q.5</b> | (a) | Explain the design considerations, lay out and performance parameters of an Innovative Special Purpose Vehicle, you would like to develop. | <b>07</b> |
|            | (b) | Explain in detail the Tracked vehicles used by Armed forces.   | <b>07</b> |